BSE Food Safety Risk Assessment Report

Mexico

Last Update: July 2014

Risk Assessment Production Process Section

Food Standards Australia New Zealand

Executive summary

Food Standards Australia New Zealand (FSANZ) is the regulatory body responsible for conducting Bovine Spongiform Encephalopathy (BSE) food safety assessments of countries that seek to export beef or beef products to Australia. FSANZ analyses the information provided by applicant countries and assigns them a BSE risk status. The requirements detailed in the *Australian Questionnaire to Assess BSE Risk*[1] are based on those of the World Organisation for Animal Health (OIE)*Terrestrial Animal Health Code* (2009).[2] Mexico made a submission in 2011 to be assessed under the current BSE policy.

Mexico was previously assessed by the Australian BSE Country Categorisation Committee for Human Food Products (ABCCC) in 2002 for the purpose of country categorisation, and assigned to Category B.

FSANZ has carried out an assessment of legislative measures concerning control and prevention of BSE in Mexico, and an in-country assessment to verify the application and enforcement of these measures was conducted. Five main control areas were examined:

(1) Import controls to prevent the release of the BSE agent through imports of animals or animal-derived products.
(2) Feed ban controls to prevent contamination of the animal feed supply with the BSE agent.
(3) Food safety controls to prevent contamination of the human food supply with the BSE agent.
(4) Traceability and animal identification systems to ensure animals and animal-derived products can be effectively identified and recalled if required.
(5) Surveillance programs to ensure that BSE-affected animals are identified and removed from the feed and food production systems.

Mexico has legislative controls and systems to prevent the introduction and amplification of the BSE agent within the Mexican cattle population and contamination of the human food supply with the BSE agent. In-country assessment by FSANZ personnel confirmed that legislative requirements relevant to BSE prevention and control are effectively implemented.

The risk of the BSE agent being released into the Mexican cattle population through imports of meat-and-bone meal (MBM), live cattle, or bovine products is effectively controlled. Importation of MBM of bovine origin has been prohibited in Mexico since 1994. Only MBM of porcine, poultry or fish origin may be imported into Mexico and then only if they are sourced from rendering plants that have been approved by the competent authority, the Secretariat of Agriculture, Livestock Production, Rural Development, Fisheries, and Food (SAGARPA). SAGARPA will not approve foreign rendering plants that also process proteins of ruminant origin.

Importation of cattle is permitted only from countries that have no history of BSE, with the exceptions of Mexico's North American Free Trade Agreement (NAFTA) partners Canada and the USA. Cattle imported from Canada or the USA must be destined for approved production units for use for breeding, must be given a permanent individual identification at the border, and are subject to permanent quarantine. Imported cattle are sampled for BSE at slaughter or if they die on the production unit. Mexico permits importation of beef only under the zoosanitary requirements recommended by the OIE. Importation of specified risk materials (SRM) is prohibited, and beef and other bovine products for human consumption must originate from slaughterhouses approved by SAGARPA. In the eight years 2005 to 2012 inclusive, beef was imported only from countries assessed by the OIE as having

controlled or *negligible* risk of BSE, or assessed by the USDA as being free of BSE. Similarly for the ten years from 2003 to 2012, other bovine products were imported only from countries assessed by the OIE as having *controlled* or *negligible* risk of BSE, or assessed by the USDA as being free of BSE.

Importation of animal feeds, other than pet foods, that contain ruminant proteins has been restricted since 2004. Pet foods may only be imported if the ruminant proteins in them originate from Australia or New Zealand, both countries with a *negligible* risk of BSE.

Revisions of legislation related to imports of cattle and products derived from cattle illustrates that Mexico has been diligent in monitoring the BSE status of other countries, and in monitoring growing scientific knowledge concerning BSE.

The feed ban has been effectively implemented in Mexico since 2004, so that the risk of BSE entering and recycling within the bovine feed system or entering the human food supply in Mexico is negligible. The use of MBM of ruminant origin in ruminant feeds has been prohibited since 1999. Both feed mills and rendering plants have been subject to SAGARPA audits since 2004, with testing of feed samples for prohibited proteins since 2007. SAGARPA requirements for the labelling of bags of processed feed are detailed, and include the requirement for warning statements to ensure that feed containing animal protein is not fed to ruminants. Rendering plants that process ruminant MBM are required to label MBM as not to be used for ruminant feed, and traceability of MBM is maintained for at least five years after sale. Producers of cattle and dairy products are required to keep comprehensive records of purchased feed, and feed is subject to on-farm testing by SAGARPA.

Food safety controls are established in Mexico to ensure effective protection of beef and beef products from potential BSE contamination. Thorough ante-mortem inspection is required of all slaughterhouses, both those supplying the domestic market and those producing beef and beef products for export. Only federally inspected (TIF) slaughterhouses may supply the export market, and SRM removal and destruction is mandatory at TIF slaughterhouses. Meat hygiene practices, such as slaughtering different age groups separately, also contribute to minimisation of the risk of cross-contamination. Plants processing beef to other products for export, such as packing plants, canning plants and cold-storage plants, must also be TIF establishments and may only purchase beef for processing from TIF slaughterhouses. Consequently, beef and beef products originating from cattle that were not slaughtered in a TIF slaughterhouse cannot be exported from Mexico.

Detailed label requirements on beef products for both the domestic and export markets are mandatory. Exported beef and beef products can be traced back to the day of slaughter and to the farm of origin, and both trace-back and trace-forward simulations are carried out regularly in TIF slaughterhouses. TIF slaughterhouses are experienced in meeting the requirements of export markets that require this level of traceability.

Mexico has appropriate control programs for the identification and notification of BSE clinical suspects, and for the laboratory diagnosis of animals infected with BSE. A BSE awareness program has been active since 1994, which is directed at all people involved in the handling and production of cattle and their products. BSE has been a notifiable disease in Mexico since 1994, and a Contingency Plan to be followed in the event of a diagnosis of BSE was first established in 2000.

Mexico has an extensive and well-staffed system for regulatory and veterinary involvement in the beef production industry. This system was established for the control and prevention of diseases such as rabies and foot-and-mouth disease (FMD), but also provides enforcement of regulations for the prevention of BSE. The Mexico-United States Commission for the Prevention of FMD and other Exotic Diseases of Animals (CPA) has a national network of

eight regional offices that are prepared to handle animal disease emergencies. Simulations of exotic disease outbreaks are carried out regularly. An internet-based system for monitoring for exotic and emerging diseases, SINEXE, was launched in 2009. There are penalties for failing to report a suspicious case, and an incentive in the form of compensation for cattle that die with neurological signs or no apparent cause of death.

Active surveillance for BSE has been in place since 1997. There is a network of nine regional laboratories that conduct initial BSE screening tests. Samples that yield suspicious results on initial screening tests are further tested at the Biosecurity Level 3 laboratory in Palo Alto. Should it be required, final confirmation would be made at the reference laboratory for North America, which is in Canada. All BSE test methods are in compliance with the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, with the exception of the PrioSTRIP test which has been validated by the European Union (EU). Technical competency is maintained through annual refresher courses, proficiency training, inter-laboratory testing and international collaborations.

The Mexican federal identification system for livestock, SIINIGA, is at an advanced stage of establishment. This system registers animal production units (UPPs), producers, and livestock service providers. It provides unique lifetime identification for cattle and maintains records in an online database. It has been mandatory since 2005 for cattle imported from other North American countries to be registered in SIINIGA at the border. The SIINIGA ear tag includes a microchip and this is employed by farmers to monitor the health and production of their animals.

Mexico also has a network of zoosanitary cordons for monitoring and movement of all cattle, and documentation requirements at slaughterhouses that enable tracing of cattle back to the property of origin.

Mexico carries out Type A surveillance in compliance with the guidelines in the OIE's *Terrestrial Animal Health Code,* and has accumulated surveillance points well in excess of the number recommended by the OIE.

In conclusion, Mexico has comprehensive and well established controls to prevent the introduction and amplification of the BSE agent within the cattle population and to prevent contamination of the human food supply with the BSE agent. This BSE food safety risk assessment concludes that imported beef and beef products sourced from Mexico are safe for human consumption and recommends **Category 1** status for Mexico.

Acronyms

ABCCC	Australian BSE Country Categorisation Committee
AMEPA	Asociación Mexicana de Productores de Alimentos A.C. (Mexican Association of Balanced Feed Producers)
BCI	Central Bank of Information
BSE	Bovine Spongiform Encephalopathy
CENAPA	El Centro Nacional de Servicios de Constatación en Salud (National Center of Animal Health Verification)
CENASA	El Centro Nacional de Servicios de Diagnóstico en Salud Animal (National Center of Animal Health Diagnosis Services)
CNS	Central nervous system
CPA	La Comisión México-Estados Unidos para la Prevención de la Fiebre Aftosa y otras Enfermedades Exóticas de los Animales (The Mexico-United States Commission for the Prevention of FMD and other Exotic Diseases of Animals)
CZI	Import Zoosanitary Certificate
DGIAAP	Dirección General de Inocuidad Agroalimentaria, Acuícola y Pesquera (General Head Office of Food Safety, Aquaculture and Fisheries)
DGIF	Dirección General de Inspeccion Fitozoosanitaria (General Head Office of Phytozoosanitary Inspection)
DGSA	Dirección General de Salud Animal (General Head Office of Animal Health)
DINESA	National Mechanism for Emergencies in Animal Health
DRG	Dorsal root ganglia
ELISA	Enzyme linked immunosorbent assay
EMA	Entidad Mexicana de Acreditación A.C. (Mexican Accreditation Entity)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FSANZ	Food Standards Australia New Zealand
GEESA	State Group for Animal Health Emergency
GMP	Good Manufacturing Practices
HACCP	Hazard Analysis and Critical Control Point
INEGI	Instituto Nacional de Estadística y Geografía (National Institute of Statistics and Geography)
LFSA	Federal Law on Animal Health

MBM	Meat-and-bone meal
NAFTA	North American Free Trade Agreement
OIE	Office International des Epizooties (World Organisation for Animal Health)
PGN	Padrón Ganadero Nacional (National Livestock Census)
PSG	Provider of livestock services
PVIF	Punto de Verificación e Inspección Federal (Federal Verification and Inspection Point)
QA	Quality Assurance
SAGARPA	Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación **(**Secretariat of Agriculture, Livestock Production, Rural Development, Fisheries, and Food)
SEDENA	Secretaría de La Defensa Nacional (Secretariat of National Defense)
SEMARNAT	Secretaría de Medio Ambiente Y Recursos Naturales (Secretariat of Environment and Natural Resources)
SENASICA	Servicio Nacional de Sanidad, Inocuidad, y Calidad Agroalimentaria (National Service of Food and Agriculture, Health, Safety and Quality)
SINEXE	Sistema de Información Nacional de Enfermedades Exóticas y Emergentes (National Information System for Exotic and Emerging Diseases)
SINIIGA	Sistema de Identificación Individual de Ganado (System for Individual Identification of Cattle)
SIVE	National Epidemiological Surveillance System
SOP	Standard Operating Procedure
SRM	Specified Risk Material
SSA	Secretaría de Salud (Secretariat of Health)
TIF	Tipo Inspección Federal (Federal Inspection Type; refers to slaughterhouses)
TSE	Transmissible spongiform encephalopathy
UK	United Kingdom of Great Britain and Northern Ireland
UPP	Unidad de producción pecuaria (Animal production unit)
USA	United States of America
USDA	United States Department of Agriculture
VAL	Authorized Local Office
VAS	Authorized State Office

Glossary

Australian Questionnaire is the *Australian Questionnaire to Assess BSE Risk* which lists the data requirements for countries wishing to export beef or beef products to Australia and seeking to be assessed for BSE risk.

BSE agent is the infectious misfolded protein, or prion, that causes BSE.

Specified risk material (SRM). The definition of SRM in Mexico is based on the federal regulation 9 CFR 310.22 of the USA and is consistent with that of the OIE. According to this legislation, SRM comprise: (1) the brain, skull, eyes, trigeminal ganglia, spinal cord, vertebral column (excluding the vertebrae of the tail, the transverse processes of the thoracic and lumbar vertebrae, and the wings of the sacrum), and dorsal root ganglia from cattle 30 months of age and older; and (2) the distal ileum of the small intestine and the tonsils from all cattle.

Table of Contents

Introduction

Food Standards Australia New Zealand (FSANZ) is the regulatory body responsible for assessing the BSE food safety risk of, and assigning a status to, countries that seek to export beef or beef products to Australia. Individual countries are responsible for submitting comprehensive data to FSANZ around their BSE risk and associated risk management and controls. FSANZ assesses the information and data submitted by the applicant country in accordance with requirements set out in the *Australian Questionnaire to Assess BSE Risk*[1](the Australian Questionnaire). Legislation and standards underpinning BSE controls are also examined as part of the food safety assessment and these were provided as appendices to Mexico's response to the Australian Questionnaire.

In general, data requirements in the Australian Questionnaire are based on those of *Chapter 11.5 – Bovine Spongiform Encephalopathy* of the OIE *Terrestrial Animal Health Code* (2009)[a]. The Australian Questionnaire also seeks additional information on animal traceability and identification, and animal slaughtering and processing systems.

Mexico submitted an application to FSANZ for country categorisation of BSE food safety risk on 21 June 2011. This report describes the BSE food safety risk assessment conducted by FSANZ to determine the risk that the BSE agent is present in beef and beef products imported from Mexico.

BSE History

No cases of BSE have been confirmed in Mexico to date.

Mexico is a member of the OIE. In May 2008, the OIE recognized Mexico as a Member Country having a c*ontrolled* risk for BSE in accordance with Article 11.5.4 of the *Terrestrial Animal Health Code* (the Terrestrial Code). This status has been reiterated since by the OIE, most recently in 2013. Mexico will seek an upgrade to their BSE status from the OIE in 2014.

In 2008 the OIE considered that Mexico met the requirements of the Terrestrial Code with regard to the BSE monitoring and surveillance system, the awareness programme, the compulsory notification and investigation, and laboratory examination. However the OIE expressed concern about importation of live cattle and bovine products from the USA, which at the time had *controlled* risk status, and also about the methods used in rendering plants, detection of cross-contamination in feed mills, and inspection on farms. Significant strengthening of the controls across these areas has taken place in Mexico since this time. Mexico has an extensive and well-staffed system for regulatory and veterinary involvement in the beef production industry. This system was established for the control and prevention of diseases such as rabies and foot-and-mouth disease, but has been reinforced to provide enforcement of regulations for the prevention of BSE (see Appendix 1 for the structure of the competent authority oversight in Mexico and Appendix 2 for details on legislation for BSE control.

Importation of beef and beef products from Mexico to Australia is currently permitted by the Australian Department of Agriculture subject to certification requirements that have been in operation since 2002, when Mexico was classified by FSANZ as a Category B country under Australia's previous BSE policy.

[a] The OIE Terrestrial Animal Health Code was most recently revised in 2013, but the data requirements with regard to BSE remain substantially the same and the Australian Questionnaire has therefore not been revised

Potential for release of the BSE agent through imported materials

The importation of specific commodities is a possible avenue through which the BSE agent can be released into a country's cattle population. Commodities that could introduce the BSE agent, if contaminated, include: MBM, live cattle, and a range of products of bovine origin.

Section 1.1 of the Australian Questionnaire requests information on annual volumes of MBM that have been imported into a country during the last eight years. If applicable, countries are also required to provide evidence that rendering parameters are sufficient to inactivate the BSE agent should it be present.

Section 1.2 of the Australian Questionnaire requires details of live cattle that have been imported during the past seven years. Evidence of the origin of the cattle must be supplied, as well as the BSE risk status of the exporting countries. Similarly, Section1.3 of the Australian Questionnaire requires data concerning the origin and annual volumes of products of bovine origin (beef and beef products) that have been imported during the past eight years.

This Chapter addresses the above requirements by describing the history of importation of MBM, live cattle, and beef products into Mexico, as well as relevant legislation, certification and other controls that underpin the integrity of the system.

1 Importation of Animals or Animal-derived Products

1.1 Legislation

The following regulations create the basis for SAGARPA's authority to control BSE risk:

- *Federal Animal Health Law.* From the perspective of BSE control, the *Federal Animal Health Law* gives SAGARPA the required powers to act as the Competent Authority. Responsibilities include oversight of animal health and welfare, livestock production practices, import and export of animals and animal products, risk analysis, animal disease surveillance, management of national animal health emergencies, oversight of Type Inspection Federal (Federal Inspection Type; TIF) slaughterhouses and processors, and control of products for use in or consumption by animals.
- *Internal Rules of the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food* specifies in detail the powers of the various directorates, services and institutes within SAGARPA.
- *Resolution by which is established the classification and codification of goods that are subject to regulation of the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food.* This Resolution ensures the risk–based regulation and control that can be exerted over imported live animals and animal products, despite the possible use of a wide range of descriptors in import documentation.
- *Agreement by which diseases and pests of animals: exotic/foreign, and endemic, of obligatory notification in the Mexican United States are listed* includes bovine spongiform encephalopathy in a list of exotic notifiable diseases.
- Mexican Official Standard NOM-060-ZOO-1999, *Zoosanitary specifications for the transformation of animal offal and their use in animal feeds.* This Standard establishes mandatory specifications for the use and transformation of animal offal, as well as the marketing and end-use of meals of animal origin, to ensure

transmissible spongiform encephalopathies cannot be spread by these processes.

English translations of these regulations were provided in the submission.

Regulations for the import of plants, animals, products of plant or animal origin, and products for agricultural use are described in *Procedure: Phytosanitary and zoosanitary certification for the import of plants, animals, products and by-products of animal and plant origin, and chemical pharmaceutical, biological and food products intended for agricultural and livestock use, at ports, airports, and borders*. An English version was included in the submission.

Inspection of agricultural and livestock imports is conducted by personnel authorised by the General Head Office of Phytozoosanitary Inspection (DGIF). All imports of plant or animal origin must have either a Phytosanitary Certificate for Import or a Zoosanitary Certificate for Import, as applicable.

The zoosanitary requirements for animals or animal products are decided on a case-by-case basis by country, taking into account the zoosanitary situation of the exporting country, the type and characteristics of the material(s) being imported, and provisions issued by SAGARPA. If a country that has been affected by BSE petitions Mexico to accept an animal product that might pose a risk, staff of the General Head Office of Animal Health (DGSA) will perform a risk analysis, on the basis of which DGSA will authorize or refuse the request to import animal products into Mexico.

Livestock and animal products are inspected by law at the first point of entry into Mexico, whether it is a port, airport and land border. It is the responsibility of importers to satisfy the National Service of Agroalimentary Health, Safety and Quality that the imported goods are compliant with Mexican regulations (zoosanitary requirements). If goods are compliant, an Import Zoosanitary Certificate (CZI) will be issued. A specimen CZI was included with Mexico's submission to FSANZ.

2 Importation of MBM or greaves

2.1 Overview

Importation of animal protein sourced from ruminants poses a food safety risk as it is the primary route through which cattle are exposed to BSE infectivity.

2.2 Legislation

Importation of bovine MBM from countries affected by BSE has been prohibited in Mexico since 1994. Only MBM of porcine, poultry or fish origin may be imported into Mexico and porcine and poultry MBM must be sourced from rendering plants approved by SAGARPA. SAGARPA will not approve plants that also process proteins of ruminant origin.

Mexican Official Standard NOM-060-ZOO-1999, *Zoosanitary specifications for the transformation of animal offal and their use in animal feeds*, specifies that imported animal feeds and feed ingredients that are presented already packaged at importation must be labelled to indicate the species of origin of the animal proteins included. If the label indicates that the protein is of ruminant origin, the label must also indicate that the contents must not be used for feeding of ruminants. Products imported in bulk must be accompanied by similar information in the commercial sales receipt issued for their marketing in Mexico.

2.3 Details of MBM imports

Data on MBM imports were included in the Mexican submission. They showed that between 2003 and 2010 inclusive, between 56,000,000 and 110,000,000 kilograms of meal of animal origin were imported annually, invariably from the USA, which was considered by the OIE to have c*ontrolled* status. The rendering plants from which the MBM came were subject to SAGARPA approval and contingent on the plants not processing proteins of ruminant origin, as described in Section 2.2. According to the Mexican Association of Balanced Feed Producers, A.C. (AMEPA), 80-85% of imported meal is derived from swine, and the rest is from poultry.

3 Importation of live cattle

3.1 Overview

Importation of live cattle represents a potential food safety risk if imported cattle are sourced from countries that do not have adequate control programs in place to minimise the risk of BSE exposure.

3.2 Legislation

Importation of cattle from Canada or the USA, both of which have had cases of BSE, is only permitted for breeding. Any bovine animal imported from these countries is subject to permanent quarantine from entry into Mexico until it dies or is slaughtered. The animal production unit (UPP) where the animal is kept must be registered in the National Livestock Census (PGN), a registry maintained by SAGARPA. The UPP must also be approved by the Comisión México-Estados Unidos para la Prevención de la Fiebre Aftosa y otras Enfermedades Exóticas de los Animales (Mexico-United States Commission for the Prevention of FMD and other Exotic Diseases of Animals; CPA). Upon entry into Mexico, the animal is identified under the National System of Individual Identification of Livestock (SINIIGA). Imported animals may not be moved from the UPP where they are kept without the authorization of the CPA.

If imported cattle die spontaneously or are culled on the UPP, the CPA must be notified so that samples can be taken to test for BSE. Imported cattle may only be sent to a slaughterhouse specified by the CPA, and are directed by the CPA to municipal slaughterhouses rather than TIF slaughterhouses so that products from them are consumed on the domestic market rather than being exported. Slaughter of imported cattle must include rigorous pre- and post-mortem examination as well as collection of samples for BSE testing. Carcasses and viscera must be held refrigerated until a negative BSE result is received. SRM from imported cattle are not allowed in the human food or ruminant feed chains and must be incinerated on-site or sent to a rendering plant authorized by SAGARPA. Control of rendered products, to ensure that bovine MBM are not used in ruminant feed, is presented in Section 6.3.

3.3 Details of live cattle imports

Cattle are imported into Mexico for genetic improvement of the national herd. They are generally between 24 and 30 months of age when imported. Details of cattle imported into Mexico from 2005 to July 2012 are presented in **Table 1**.

Table 1: Cattle Imported into Mexico, 2005 - 2012

Source	2005	2006	2007	2008	2009	2010	2011	2012	Total
Australia	27589	11290	18280	13067	0	0	0	0	**70226**
Canada	0	0	9	3792	1451	1665	900	377	**8185**
Costa Rica	0	2075	0	0	0	0	0	0	**2075**
Guatemala	2794	13	0	0	0	0	0	0	**2807**
New Zealand	29734	25124	17321	11151	0	0	0	0	**83330**
Nicaragua	39630	602799	32948	31301	0	0	0	0	**706678**
USA	6	875	10475	31587	17888	20056	11033	6913	**98833**
Totals	**99753**	**642176**	**79033**	**90898**	**19339**	**21721**	**11933**	**7290**	**972134**

Australia and New Zealand are considered by the OIE to have *negligible* risk of BSE. Canada, Costa Rica and Nicaragua are considered by the OIE to have *controlled* risk of BSE. Guatemala has not been classified with regards to BSE risk by the OIE, but it is classified as free of BSE by USDA-APHIS. The USDA has utilised its own assessment methodology for country BSE status where countries do not have an OIE classification. The USDA methodology is based on the OIE criteria for country assessment and additionally includes an in-country inspection component that verifies the effectiveness of controls.

3.4 Monitoring and fate of imported cattle

Under Mexican Official Norm NOM-054-ZOO-1996, a preventative quarantine is applied if there is reason to suspect a notifiable disease. There have been no suspected cases of BSE in imported cattle to date.

Tracking of cattle after importation was performed following the occurrence of BSE in Japan, the USA and Canada.

The number of imported cattle, the number of these cattle that died, and the number sampled for the interval 2005-2010 are presented in **Table 2**..

Table 2: Mortality and Sampling Data for Imported Cattle, 2005-2010

CPA Region	Number of Cattle Imported	Number of Deaths in Imported Cattle	Number of Dead Imported Cattle Sampled for BSE	% of Dead Imported Cattle Sampled
I	5252	162	162	100%
II	77563	11871	11010	93%
III	1064	18	8	44%
IV	10969	347	328	95%
V	246	9	5	56%
VI	217	13	10	77%
VII	66	4	4	100%
VIII	5345	936	924	99%
Totals:	**100722**	**13360**	**12451**	

4 Importation of beef and beef products

4.1 Overview

This Section focuses on the risk of releasing the BSE agent through the importation of beef-containing food products intended for human consumption.

4.2 Legislation

Mexico imports beef but imposes the zoosanitary requirements recommended by the OIE. Importation of SRM is prohibited. In addition, beef and bovine products imported for human consumption must be sourced from slaughter facilities and processing plants authorized by SAGARPA.

4.3 Type of imported beef or beef products

4.3.1 Fresh or frozen beef

The countries of origin of beef imported into Mexico between 2005 and 2012 inclusive, their BSE risk status and the type of beef are summarised in **Table 3**. China is the only country that has not been given a BSE risk classification by the OIE, but has been classified by the USDA as free of BSE. The USDA has utilised its own assessment methodology for country BSE status where countries do not have an OIE classification. The USDA methodology is based on the OIE criteria for country assessment and additionally includes an in-country inspection component that verifies the effectiveness of controls. Furthermore only deboned beef is permitted for import from China, thereby reducing the risk of contamination from the BSE agent to negligible.

Table 3: Countries of origin of beef imported into Mexico, 2005-2012 inclusive

Country	BSE risk status[1] (source)	Beef on bone[2]	Deboned beef
Australia	Negligible risk (OIE)	Yes	Yes
Canada	Controlled risk (OIE)	Yes	Yes
Chile	Negligible risk (OIE)	Yes	Yes
China	Free of BSE (USDA)	No	Yes[4]
Costa Rica	Controlled risk (USDA)	Yes	Yes
Korea	Controlled risk (OIE)	Yes[3]	No
New Zealand	Negligible risk (OIE)	No	Yes
Nicaragua	Controlled risk (USDA)	Yes	Yes
Panama	Negligible risk (OIE)	No	Yes
Uruguay	Negligible risk (OIE)	No	Yes
USA	Negligible risk (OIE)	Yes	Yes

[1]OIE assessment is stated if available, otherwise USDA-APHIS assessment (http://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/apm_pdf/app_c_foreigndiseasecountstat.pdf) is stated
[2]Includes carcasses, half-carcasses and cuts that include bone
[3]Non commercial, occasional small-size imports for tastings

4.3.2 Other products of bovine origin

The countries of origin of other bovine products for human consumption imported into Mexico in 2003 to 2012 inclusive, their BSE status and the type of product are summarised in **Table 4.** Since 2001 there has been increasing acceptance of imports that do not pose a risk of

BSE transmission, reflecting increasing scientific knowledge of BSE transmission.

Thailand is the only country that has not been given a BSE risk classification by the OIE, but has been classified by the USDA as free of BSE. Furthermore, only small non-commercial volumes are imported from Thailand.

Table 4: Countries of origin of bovine products, other than beef, imported into Mexico, 2003-2012 inclusive

Country	BSE risk status[1] (source)	Product/s
Argentina[2]	Negligible risk (OIE)	Canned beef; veal sausages
Australia	Negligible risk (OIE)	Canned beef; veal sausages; sausages other than veal
Belgium	Negligible risk (OIE)	Veal sausages
Brazil[2]	Negligible risk (OIE)	Canned beef
Canada	Controlled risk (OIE)	Canned beef; veal sausages; other, including flours and edible meat or offal
Chile	Negligible risk (OIE)	Canned beef; veal sausage; sausages other than veal
Colombia	Negligible risk (OIE)	Canned beef
Costa Rica	Controlled risk (OIE)	Canned beef
Denmark	Negligible risk (OIE)	Veal sausages
France	Controlled risk (OIE)	Veal sausages; sausages other than veal
Germany	Controlled risk (OIE)	Veal sausages; sausages other than veal
Hungary[2]	Controlled risk (OIE)	Veal sausages
India[2]	Negligible risk (OIE)	Veal sausages
Italy	Controlled risk (OIE)	Veal sausages; other, including flours and edible meat or offal
Japan[2]	Controlled risk (OIE)	Veal sausages
Nicaragua	Controlled risk (OIE)	Veal sausages
Spain	Controlled risk (OIE)	Canned beef; veal sausages; sausages other than veal
Taiwan[2]	Controlled risk (OIE)	Veal sausages
Thailand[2]	Free of BSE (USDA)	Canned beef; veal sausages
Uruguay	Negligible risk (OIE)	Sausages other than veal
USA	Controlled risk (OIE)	Canned beef; veal sausages; sausages other than veal; other, including flours and edible meat or offal

[1]OIE assessment is stated if available, otherwise USDA-APHIS assessment (http://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/apm_pdf/app_c_foreigndiseasecountstat.pdf) is stated

[2]Non commercial, occasional small-size imports for tastings

5 Summary: potential for release of the BSE agent through imported materials

The documentation submitted by Mexico supports a conclusion that the risk of the BSE agent being released into the Mexican cattle population through imports of MBM, live cattle, or bovine products is controlled.

Importation of MBM of bovine origin has been prohibited in Mexico since 1994. Only MBM of porcine, poultry or fish origin may be imported into Mexico and then only if they are sourced from rendering plants that have been approved by SAGARPA (porcine and poultry). SAGARPA will not approve foreign rendering plants that also process proteins of ruminant origin.

Importation of cattle is generally permitted only from countries that have no history of BSE, although importations are permitted from Mexico's NAFTA partners Canada and the USA. Cattle imported from Canada or the USA must be destined for approved production units for use for breeding, must be given a permanent individual identification at the border, and are subject to permanent quarantine. Imported cattle are sampled for BSE at slaughter or if they die on the production unit, and culled imported cattle are only directed to the domestic beef market.

Mexico permits importation of beef only under the zoosanitary requirements recommended by the OIE among others. Importation of SRM is prohibited, and beef and other bovine products for human consumption must originate from slaughterhouses approved by SAGARPA. In the eight years 2005 to 2012 inclusive, beef was imported only from countries assessed by the OIE as having *controlled* or *negligible* risk of BSE, or assessed by the USDA as being free of BSE. Similarly during the ten year period 2003-2012 inclusive, other bovine products were imported only from countries assessed by the OIE as having *controlled* or *negligible* risk of BSE, or assessed by the USDA as being free of BSE.

Revisions of legislation related to imports of cattle and products derived from cattle illustrates that Mexico has been diligent in monitoring the BSE status of other countries, and in monitoring growing scientific knowledge concerning BSE.

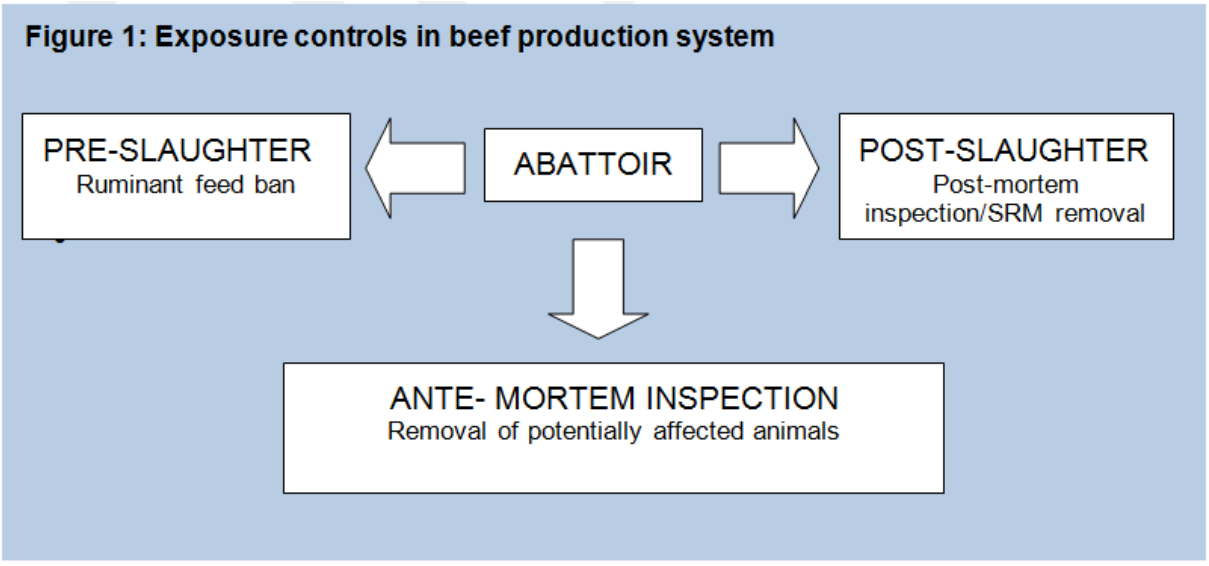
Exposure control

The exposure of cattle to BSE infectivity and amplification within the feed system is controlled by preventing the feeding of ruminant-derived protein to ruminants. Depending on the BSE status of a country (such as whether a case of BSE has occurred and/or risk factors for BSE exist), prevention is achieved through regulations in three key areas across the beef production system:

- ***Pre-slaughter*** controls which prevent the feeding of ruminant protein to ruminants
- ***At slaughter*** controls which cover animal inspection procedures to ensure potentially affected animals are removed from the animal feed and food production systems
- ***Post-slaughter*** controls which ensure that potentially infected tissues are removed and do not enter the animal feed and food production systems

Scientific evidence published since the BSE epidemic in the UK has established that feed ban regulations and procedures to prevent cross-contamination of ingredients used for cattle feed are critical control measures for preventing the recycling and amplification of BSE. Measures to prevent non-ambulatory (downer) cattle from entering the animal feed and human food chain should also be adopted. For countries where BSE has occurred or risk factors exist, controls should also extend to exclusion of potentially infectious tissue (specified risk material; SRM) from animal feed including pet food and human food products. Controls throughout the beef production chain to prevent exposure to BSE are summarised in **Figure 1.**

Figure 1: Exposure controls in beef production system



This Chapter describes the control measures that are in place in Mexico that prevent the contamination and recycling of the BSE agent in cattle feed as well as assuring that food for human consumption is free of the BSE agent.

6 Pre-slaughter controls: ruminant feed ban

6.1 Overview

Under the Australian BSE Questionnaire, countries must demonstrate that an effective ruminant feed ban has been effectively implemented. More specifically, evidence is required to support that ruminant-derived MBM has not been fed to cattle for the last 8 years.

6.2 Legislation

Animal feed plants are regulated by the *Federal Law on Animal Health* (LFSA), and Mexican Official Norms. Mexican Official Norm NOM-061-ZOO-1999 *Zoosanitary specifications of food products for consumption by animals* prohibits the use of MBM of ruminant origin, or any mix that contains it, in balanced ruminant feed. This ban is also imposed in NOM-060-ZOO-1999, which states that the use of meals of ruminant origin, or any mixture that includes them, is prohibited for use in ruminant feeding. This Norm also prohibits the use of raw animal tissues or offal in rations for ruminants, horses, swine or birds.

Plants processing animal feed are required to comply with Official Norm NOM-025-ZOO-1995 *Animal Health characteristics and zoosanitary specifications for facilities, equipment and operation of establishments manufacturing food products for animal use or to be taken thereby*. This Norm specifies the structural characteristics required to ensure proper hygiene. Clauses particularly relevant to BSE control include: the requirement that warehouses must have specific and identified areas for different products; that there must be physical separation of materials that pose a contamination risk; that substances that may make a product hazardous may not be transported with products; and that establishments must have an Authorized Veterinarian, a professional in production and a profession in quality control. Some of the requirements of this Norm are also found in Mexican Official Standard NOM-022-ZOO-1995 *Characteristics and zoosanitary specifications for facilities, equipment and operation of establishments that market chemical, pharmaceutical, biological and food products for use in animals or consumption by them*. The Standard also applies to establishments dedicated to storage and marketing of raw materials and/or finished chemical, pharmaceutical, biological or food products. The standard specifies structural requirements and practices of care and handling of products and raw materials. The purpose of this Standard is to ensure that products maintain the quality specifications provided by the manufacturer.

Another relevant piece of legislation is Mexican Official Standard NOM-012-ZOO-1993 *Specifications for regulating chemical, pharmaceutical, biological and food products for their use in animals or consumption by them*. Provisions of this Standard of particular relevance to BSE control include the following:

- All products and materials entering an establishment's warehouse must have a quality control certificate from the supplier
- There must be physical separation of raw materials, finished products, approved materials and materials still in quarantine
- Storage must be such that contamination and confusion is prevented
- Raw materials must be identified, inventoried and stored in appropriate areas
- Imported raw materials must be subject to laboratory analysis in an approved laboratory
- Retention samples must be taken from each batch of finished product
- Labels for animal feeds must indicate the species the feed is intended for as well as nutritional information, lot number and name and address of the manufacturer.

6.3 Use of bovine materials in animal feedstuffs

MBM of bovine origin produced in Mexico is mainly used in the manufacture of feed for poultry, swine, farmed fish and domestic pets. Inclusion levels are in the range of 1 to 2% in animal feed. The use of MBM of ruminant origin for feeding cattle has been prohibited since 1999 (NOM-061-ZOO-1999 *Zoosanitary specifications of food products for consumption by animals*). Feed manufacturing plants that use MBM of bovine origin in non-ruminant feeds are subject to random audit, according to the level of risk of each establishment.

Of the total dairy herd less than 8% of animals are kept as family or backyard cows. These are the only livestock considered to be at risk of being fed feed of ruminant origin that was intended for other species. However, the legal prohibitions on this practice apply equally to these cattle as to other more intensive cattle establishments.

The ban on use of MBM of ruminant origin in ruminant feed is enforced by the sampling and testing of ruminant feeds as well as by annual verification visits to each establishment. Verification visits include visual inspection as well as review of documents. Samples of processed animal feeds are sent to the National Center of Animal Health Verification Services (CENAPA) for analysis under the National Program for Monitoring and Surveillance for BSE. Analysis is by PCR and specific for the ruminant genome. CENAPA has also recently implemented analysis by microscopy, using an internationally accepted technique. All testing of feed samples is conducted under a quality management system.

Summaries of results of inspections of rendering plants and cattle feed-mills from 2003 through to 2010 were included in the submission. These results show that companies were audited and required to correct any violations relevant to BSE control. Violations relevant to BSE control included inadequate records of suppliers and customers, failure to have a warning statement on product labels or bills of sale that the feed was not to be used for ruminant nutrition, ruminant DNA in feed, and absence of a responsible licenced veterinarian.

6.4 Measures to prevent cross-contamination of ruminant and non-ruminant protein

Although separation of production lines in feed mills is not mandatory in Mexico, according to SAGARPA most feed mills have voluntarily adopted the practice of having separate production lines, or separate facilities such as different buildings. Only the very small feed mills do not have separate production lines.

Feed mills that do not have separate production lines have, as part of their Quality Systems, written procedures for measures to prevent cross-contamination of ruminant feeds with proteins of ruminant origin used in non-ruminant feeds.

6.5 Evaluation of the ruminant feed ban

The feed ban was evaluated as part of the in-country inspection conducted by FSANZ. Assessment included visits to intensive dairy farms, a feed mill and a rendering plant, in addition to discussions with SAGARPA personnel.

6.5.1 Competent authority

Importation of animal feeds containing proteins of ruminant origin has been banned since 2004. This includes pet foods, unless the ruminant proteins in the pet foods come from Australia or New Zealand, both *negligible* risk countries.

Laws enforced by SAGARPA and in place since 2004 mandate the authorisation of

production and compliance of BSE related controls for feed mills. The National Service of Food and Agriculture, Health, Safety and Quality (SENASICA) is also involved in supervision and verification activities of feed mills and rendering plants. Since 2009, Risk Maps has been developed and used when programming the "Annual Verification Program." There are four levels of risk identified, as follows:

- **Very high risk** applies to rendering plants and feed mills that are producing ruminant feed and using active principles such as medications and growth promotants, as ingredients
- **High risk** applies to feed mills producing feed for ruminants but not using active principles as ingredients
- **Middle risk** applies to feed mills producing feeds containing active ingredients but not producing feed for ruminants
- **Low risk** applies to feed companies that only import finished product.

In Mexico 100% of feed mills are verified on an annual basis, as stated in the NOM-012-ZOO-1993 "Specifications for regulating chemical, pharmaceutical biological and food products for their use in animals or consumption by them". The audit conducted by SAGARPA personnel includes reviewing documents, verifying conditions, and, since 2007, taking samples to test for prohibited proteins, although the OIE guidelines do not mandate sampling.

Rendering plants must also be authorized by SAGARPA that is valid for five years, and each plant is subject to annual verification. Rendering plants are classified according to whether or not they handle ruminant material. Those that handle ruminant material are classified as Type 2. Each rendering plant must have a veterinarian in charge who participates in monitoring compliance with applicable animal health regulations and are examined by online examination every two years. SENASICA lists all authorized rendering plants on their website and feed mills are only permitted to buy proteins of animal origin from plants on the list.

6.5.2 Feed Mill

The feed mill included in the in-country inspection is one of two belonging to the same company. Both feed mills operate under Good Manufacturing Practices (GMP) and are working towards Hazard Analysis and Critical Control Point (HACCP) accreditation. 13-15% of product is exported to 14 countries. The feed mill included in the visit produces feeds for young ruminants, piglets and young poultry, although production of ruminant feed is being phased out. Feeds for piglets or poultry may contain fish meal or protein derived from plasma. Separate buildings are used to keep ruminant feed production separate from production of feed containing animal proteins. The plant management and Quality Assurance personnel remarked that if prohibited protein was found in a feed sample, the whole plant's production would be stopped.

All suppliers of raw materials must be pre-approved by the company, and supplier performance is monitored. All raw materials are tested before being accepted into manufacturing. Suppliers are subject to audit by the company at least once a year. Suppliers of fishmeal are required to submit a declaration that the product is solely of marine origin.

All feeds produced by the feed mill are sold in bags of 25 kg or 40 kg. Warning labels that products are not to be fed to ruminants are required and were sited. SAGARPA inspects the feed mill at least once a year, and takes feed samples at least once a year. In addition to SAGARPA's sampling, the company itself tests every lot of product for prohibited proteins, for those products that require registration. The company also conducts traceability

exercises, both forward and backward, at least once per year.

6.5.3 Rendering Plant

One rendering plant, attached to a federally inspected (TIF) slaughterhouse, was included in the in-country inspection.

The rendering plant operated under GMP conditions and handles ruminant material; as such it is classed as a Type 2 rendering plant. The rendering plant produces MBM, blood meal and tallow. MBM and blood meal are sold in bulk while tallow is sold in tanker trucks. The tallow is not food grade and is destined for soap manufacture. MBM is principally destined for pet food for dogs and cats, although some is sold for inclusion into poultry feed. MBM is always sold with a warning that it is not to be used for ruminant feeding, which is on the bill of sale/invoice. All bags of MBM have numbers and can be traced to the day of MBM production.

6.5.4 Farms

Two intensive dairy farms were included in the in-country assessment.

The first farm produces its own fodder such as alfalfa and corn silage, and purchases high-energy ingredients such as soybean meal and cracked corn for custom mixing into concentrates on the farm. The producer had a high awareness of BSE prevention having completed courses on BSE administered by the CPA, and was aware that the use of ruminant protein in bovine feed had been banned since 1999. The farm imports many cattle from the USA, and in the letter associated with each shipment, the CPA reiterates the importance of the feed ban. Required documentation from the United States Department of Agriculture (USDA) that accompanies imported cattle describes their status with regard to a wide range of diseases and includes a statement that the cattle were never fed MBM or greaves while in the USA.

The producer keeps comprehensive records of purchased feeds including records of feed supplement ingredients, and records of analytical results of purchased supplements. Documentation from the feed mill that accompanies purchased feed includes a declaration that the feed is free of proteins of animal origin. The feed on the farm is subject to testing for prohibited animal proteins according to two programs. One program applies to all UPPs that have imported cattle, and the other is for UPPs that participate in a Good Livestock Production program administered by the government. Under the imported cattle program, feed samples are collected by the CPA, while under the Good Livestock Production program, the feed is sampled by the producer. In both cases, feed samples are taken from the final mixed feed.

The second farm produces its own silage, but buys in soybean meal, canola oil, palm oil, minerals, adsorbents for mycotoxins and brewer’s yeast as a source of B vitamins. The mixed feed is sampled by the CPA at least once each year. The producer on the second farm also showed high awareness of, and commitment to, BSE prevention, and comprehensive record-keeping was in place on this UPP.

7 Ante-mortem slaughter controls

7.1 Overview

Older cattle that are non-ambulatory (downer cattle, fallen stock) and/or showing signs of neurological disease consistent with an established BSE case definition present the highest risk of infection with the BSE agent. Such animals should be targeted and prevented from entering the ruminant feed and human food chains.

7.2 Legislation

Animal slaughter in Mexico is subject to Mexican Official Standard NOM-033-ZOO-1995 *Humane sacrifice of domestic and wild animals*. The Standard was subject to clarification in 1996 and to modification in 1997.

Mexican Official Standard NOM-009-ZOO-1994 *Sanitary meat processing* specified the legal requirements for ante-mortem inspection, as well as post-mortem inspection of carcases, disposal of animals or products unfit for human consumption, and other aspects of meat hygiene. The Standard was subject to modification in 1996.

Standards of slaughterhouse design and operation, including management of downer and suspect animals, ante- and post-mortem inspection, disposal of by-products unfit for human consumption, and records that must be kept, are also specified in Mexican Official Standard NOM-194-SSA1-2004 *Products and Services. Sanitary specification in establishments dedicated to slaughtering and rendering of animals for wholesale food market, storage, transport and retailing. Sanitary specifications of products and* Mexican Official Standard NOM-008-ZOO-1994 *Zoosanitary specifications for building and equipping establishments for slaughtering animals and those dedicated to industrializing meat products.* These Mexican Official Standards also cover the retention of carcasses until tests are conducted and the release or destruction of carcasses after test results are received.

7.3 Ante-mortem procedures

Animal arrival at a slaughterhouse must be in the presence of the Official or Approved Veterinary Doctor, who verifies the accompanying documentation and carries out the first inspection. If inspection on arrival is not possible, the animals must be held in pens until inspection can be conducted. Cattle must have a minimum of three hours rest between arrival and slaughter, and this time includes time for the ante-mortem inspection. During ante-mortem inspection, animals are examined both stationary and while in movement. If animals are not slaughtered within 24 hours of ante-mortem inspection, another veterinary examination is required.

7.4 Slaughtering methods

Bovine animals in slaughterhouses are stunned by captive bolt, followed within 30 seconds by exsanguination. The captive bolt is applied to the centre of the frontal bones of the skull in European cattle (*Bos primigenius taurus*) and to the occipital area in Zebu cattle (*Bos primigenius indicus*). Emergency slaughter of bovine animals is by small pistol shot to the brain or heart.

8 Post-slaughter controls: post-mortem inspection, SRM removal, and rendering procedures

8.1 Overview

8.2 Legislation

Post-mortem inspection is mandated for all slaughterhouses by Mexican Official Standard NOM-009-ZOO-1994 *Sanitary meat processing.*

Mexico does not have nationwide legislation requiring removal of SRM, because consumption of brain and spinal cord is very common practice in the human population in Mexico. This is not prohibited because BSE has not been detected in Mexico to date. BSE has been a notifiable disease in Mexico since 1997 and active surveillance has been in place since 2004. However, only TIF slaughterhouses are permitted to slaughter cattle for the production of beef and beef products for export, and all TIF export slaughterhouses have a procedure that describes the identification of carcasses and the removal of SRM. This procedure is in compliance with 9 CFR 310.22 and with the *Manual of Identification, Separation and Removal of SRM for BSE in TIF exporting establishments*. Approximately 1.3 million cattle are slaughtered each year at TIF slaughterhouses. If cattle for export beef and cattle for domestic consumption are slaughtered on the same day, the cattle for export beef are slaughtered first, ensuring separation.

8.3 Post-mortem procedures

Health and sanitary inspection of carcasses, viscera and head are carried out by the Official or Approved Veterinary Doctor and/or assistant official personnel as employees of SAGARPA. Any carcass which is found to have a lesion in any part of the anatomy is moved to a detention rail for examination by the Official or Approved Veterinary Doctor. The carcase, head and viscera are all identified with the same number and must remain in the slaughtering area until a final decision is obtained from the Official or Approved Veterinary Doctor.

Carcasses and products approved for human consumption are marked with red ink. Viscera are marked to enable trace-back to the carcass of origin. Carcasses may also be marked with a metallic stamp. Markings of inspected carcasses include the unique number of the slaughter establishment and the outcome of the inspection. The initials TIF will precede the establishment number if the establishment is a TIF slaughterhouse. All marking must be performed under the supervision of official personnel. Meat or products too small to be stamped or marked must be transported in closed containers that are labelled to indicate that the contents have been inspected and approved.

8.4 Handling of suspect diseased cattle

If the Veterinary Doctor suspects a sick animal upon ante-mortem inspection, the animal must be held and transferred to a dedicated pen for suspect animals. Clinical examination and appropriate sampling, including for BSE tests, are conducted for diagnostic purposes and to make the decision whether to slaughter or condemn the animal. Sampling of suspect animals for BSE is undertaken by CPA personnel. When slaughter of such animals proceeds, it must take place after healthy animals are slaughtered, with separation from other animals throughout the process. The carcasses of such animals are housed in a special cage after slaughter and not released until negative BSE tests are obtained.

The Official or Approved Veterinary Doctor determines the disposition of dead or downer cattle in the pens. They may be rendered to meat meal or rendered and incinerated. If fallen

or downer cattle are sent for render, BSE sampling is undertaken at the rendering establishment. Downer cattle may be approved for slaughter but must be transported to the kill floor in a vehicle used exclusively for that purpose.

The *Sanitary Industrialization of Meat Law and Regulations, Federal Inspection* (1953) mandates that cattle that on ante-mortem inspection are found to have signs of rabies, tetanus, ante-partum paralysis, shipping fever or fatigue, are to be marked as 'confiscated'. Animals marked as 'confiscated' must be slaughtered and eviscerated in an area separate from the area where healthy animals are slaughtered. This is significant because an animal with BSE would be likely to appear very similar to an animal with rabies or ante-partum paralysis.

Following post-mortem inspection, any carcases, viscera, heads or localised lesions trimmed off carcasses that are considered unfit for human consumption are marked with black ink to indicate that they have been rejected, and are rendered or incinerated as determined by the Official or Approved Veterinary Doctor. If these rejected materials are handled manually prior to disposal, they must be denatured with crude phenol (carbolic acid; phenic acid) or other substances authorized by the Ministry of Agriculture and Water Resources in order to prevent their being used for human consumption. Rejected materials must be immediately separated and placed in special containers or compartments, must be stored separately to edible products, and must be under the control of official personnel assigned to the plant.

8.5 Rendering processes

Not all fallen stock in Mexico are rendered. In areas where livestock production is extensive or semi-extensive, mortality of cattle is 2-3% and fallen stock are most commonly left in pastures unless they are close to a community or house in which case they are buried. In areas with higher animal density, dead animals may be sent for rendering. Skins are typically sent to the leather goods industry and cartilage to the gelatin industry. Dead or fallen animals on UPPs are investigated as part of the surveillance program for BSE if the cause of death is unknown or if neurological signs were present prior to death.

SRM are not generally processed at rendering plants because in Mexico these tissues are usually used for human consumption. The bovine tissues most commonly rendered include tallow, bones, horns, hooves and less commonly viscera. Rendering plants are regulated by the Federal Law on Animal Health, gazetted July 27 2007, which incorporates provisions regarding animal health as well as placing a focus on GMP, including tracking of raw materials and finished products.

TIF slaughterhouses are required to have rendering plants, incineration facilities or both, under the *Sanitary Industrialization of Meat Law and Regulations, Federal Inspection* (1953) and NOM-009-ZOO-1994 *Sanitary meat processing.*

The processes used in rendering plants are mandated in the Mexican Official Norm, NOM-060-ZOO-1999*Zoosanitary Specifications for the transformation of animal offal and their use in animal feeds*. This document regulates the use and transformation of animal offal and also addresses the use of rendered animal products, including specifying a ban on the use of meat and bone meal of ruminant origin in the manufacture of ruminant feed. Rendering plants are classified, under this Norm, based on whether or not they process ruminant tissues other than skins or tannery products. The Norm requires that rendering plants are subject to verification by a veterinary doctor approved as a verification unit at least once every 12 months.

The Norm establishes the following mandatory parameters for rendering, based on what type of tissue or other animal by-product is being rendered:

- Temperature not less than 80°C
- Time not less than 30 minutes
- Humidity not exceeding 10%.

Mexico has not implemented the rendering parameters recommended by the OIE for reduction of BSE infectivity, because the BSE agent has not been detected in the national bovine population, and therefore the expense of implementing these standards is considered unjustifiable.

Currently there are 73 rendering plants classified at a national level. Twenty-three are classed as Type 1 because they do not handle ruminant tissues, 42 are classed as Type 2 because they handle ruminant tissues, and the remaining eight are marketing plants that do not produce meal from animal by-products. Most animal by-products that are rendered originate from cattle or swine.

8.6 Evaluation of pre-slaughter, post-slaughter and rendering controls

Two TIF slaughterhouses, one of which has its own rendering plant, were included in the in-country inspection of Mexico.

8.6.1 Ante-mortem procedures

The first slaughterhouse sources cattle from the state in which it is located, and other nearby states. All cattle must have a Guide of Transit, and cattle from out of state must also have a Certificate of Movement. The Guide of Transit lists the origin of the animals, the owner and the destination, and allows trace-back. The Certificate of Movement confirms that the animals comply with SAGARPA health requirements. Documentation is inspected when the cattle arrive, and humane requirements of shipment are verified. All animals must have some form of identification, such as a metal ear-tag that shows the animal has been tested for bovine tuberculosis, a SINIIGA ear-tag, or a brand. Identifications are recorded.

Approximately 60% of the cattle slaughtered at the slaughterhouse are over the age of 30 months, although relatively few are culls from the dairy industry. Animals older than 30 months are slaughtered on different days to younger stock. In general, cattle received as a lot from a single lot are processed as a single lot, but if cattle younger than 30 months and older than 30 months arrive in the same lot, they are sorted into separate pens and processed as separate lots.

Ante-mortem inspection must include both group and individual assessment, both while stationary and while moving. The slaughterhouse never accepts fallen stock or downer animals. Any animal noted to be abnormal in ante-mortem inspection is separated and held in a dedicated pen. CPA is notified of any cattle with neurological signs. The suspect animal is stunned and terminated, and CPA collects the brainstem sample for BSE testing. Carcasses of clinical suspects are labelled and held in a dedicated location until negative test results are received through the CPA. In the case of condemned animals, the carcass will be moved intact to the rendering plant where the CPA collects the brainstem sample.

Imported cattle are always separated from domestic-born stock. The slaughterhouse submits brainstem samples from all imported cattle and also two or three randomly selected cattle over 30 months each day. Carcasses are retained in a dedicated location until negative results of testing are received.

Beef and meat products from cattle younger than 30 months can be traced back to the

slaughter lot, while meat from cattle over 30 months can be traced to the individual animal.

The second slaughterhouse included in the in-country inspection had its own feedlot adjacent to the slaughterhouse, with 90% of the cattle slaughtered on any given day coming from the feedlot, with the balance arriving directly from approved suppliers. Most cattle are slaughtered at less than 30 months of age, but dentition is checked when cattle are received.

Shipments of cattle arriving to the feedlot or slaughterhouse have documentation that must include the Zoosanitary Movement Certificate, SINIIGA numbers, producer, and person responsible for sending the cattle to the slaughterhouse, the number and sex of cattle in the shipment, records of the vehicle, and tuberculosis records. All cattle must have tuberculosis ear-tags. Every animal that enters the feedlot is assigned a company ear-tag with an individual number, which allows traceability. Imported cattle were not accepted at this slaughterhouse.

Lot numbers are assigned by day of slaughter and by age. If all cattle slaughtered on one day are in the same age group, there will be only one lot for that day. If a group of cattle over 30 months and less than 30 months are slaughtered on the same day, they are assigned a separate lot number, so there are two lot numbers on that day.

8.6.2 Post-mortem procedures

SRM removal was observed at both slaughterhouses included in the in-country inspection visit. After stunning by captive bolt and exsanguination, the hole in the skull is plugged and the age range is confirmed by dentition. The head is separated from the body, the tonsils are removed and transferred to a dedicated container as SRM, and the cheek meat and the tongue rostral to the circumvallate papillae are harvested as safe for human consumption. The rest of the head, including brain and eyes, are disposed of as SRM without opening the cranial cavity. Offal is inspected by a veterinarian immediately upon removal, is then sent to the viscera room where the terminal 2.4 metres of the ileum are removed and disposed of as SRM. At the first slaughterhouse visited, spinal cord removal was performed using knives, whereas the second slaughterhouse employed a suction device. Knives used for SRM removal are colour-coded and personnel responsible for removing SRM have helmets marked to show that they collect SRM, and the containers into which SRM are transferred are also marked. SRM are denatured and dyed in the containers before being sent to rendering.

The tonsils, brain, eyes, terminal ileum and spinal cord are removed as SRM from all cattle regardless of age. In addition, dorsal root ganglia (DRG) of the spinal cord are treated as SRM in cattle over 30 months of age, although the second slaughterhouse rarely processed cattle over 30 months of age. When half-carcasses of cattle over 30 months are boned, sufficient flesh is left on the vertebral column to ensure that DRG are not harvested in error, and vertebral columns of cattle over 30 months are disposed of as SRM.

It is the Official Veterinarian’s responsibility to ensure that Standard Operating Procedures (SOPs) for SRM removal are followed. Veterinarians in TIF slaughterhouses are trained in meat hygiene measures, including those related to BSE, by the federal government, while the company is responsible for the training of the technical operators on the slaughter line. Veterinarians were present at workstations to verify that tonsils and spinal cords had been removed. All SRM removal processes are subject to inspection by the Quality Assurance personnel at least two times during every shift. Personnel, equipment and disposal containers involved in SRM removal and disposal were clearly identified, and the inclusion of marker dye to the SRM in the containers was noted.

8.6.3 Rendering procedures

Controls applied at the rendering facility attached to the first slaughterhouse are described in subsection 6.5.3. The second slaughterhouse did not operate its own rendering facility but had a contract with an independent renderer, which is an option permitted by law. SRM containers were weighed in bulk before leaving the slaughterhouse premises, and then stored in a dedicated area prior to daily collection by the rendering plant.

9 Summary: exposure control

The feed ban has been effectively implemented in Mexico since 2004 by ensuring compliance through comprehensive audit and inspection programs. The use of MBM of ruminant origin in ruminant feeds has been banned since 1999, and rendering plants and animal feed plants are subject to regulation and verification by SAGARPA to ensure compliance. Both feed mills and rendering plants have been subject to SAGARPA audits since 2004, with testing of feed samples for prohibited proteins since 2007. Testing is by microscopy or by detection of ruminant DNA by PCR.

Measures are in place to prevent cross-contamination in feed mills that produce ruminant feed and other animal feeds and that do not have separate production lines.

Importation of animal feeds, other than pet foods, that contain ruminant proteins has been prohibited since 2004. Pet foods may only be imported if the ruminant proteins in them originate from Australia or New Zealand.

SAGARPA requirements for the labelling of processed feed are detailed, and include the requirement for warning statements to ensure that feed containing animal protein is not fed to ruminants. Rendering plants are required to label MBM as not to be used for ruminant feed, and traceability of MBM is maintained for at least five years after sale.

Both feed mills and rendering plants are subject to classification by SAGARPA according to their risk with regard to the feed ban, and this classification is used to plan audits and inspections. Producers of cattle and dairy products are required to keep comprehensive records of purchased feed, and feed is subject to on-farm testing by SAGARPA.

Thorough ante-mortem inspection is required of all slaughterhouses, both those supplying the domestic market and those producing beef and beef products for export. Only TIF slaughterhouses may supply the export market, and SRM removal and destruction is mandatory at TIF slaughterhouses. Plants processing beef to other products for export, such as canned beef, must also be TIF establishments and may only purchase beef for processing from TIF slaughterhouses.

BSE food safety controls

The Australian Questionnaire requires countries to have in place effective controls during the slaughtering process so that food for human consumption is prevented from becoming contaminated with materials that may be BSE-infected. It also requires a country to demonstrate effective and timely systems for the accurate identification, traceability and recall of meat and meat products in the event of a food safety issue. The following Chapter addresses these requirements within Mexico.

10 Beef production systems

10.1 Hygiene practices for the minimisation of cross-contamination

Prevention of cross-contamination with the BSE agent is addressed through HACCP food safety and quality systems at the slaughterhouse and meat processing levels. General standards of meat hygiene are also mandated in the NOM-009-ZOO-1994 *Sanitary meat processing.*

10.2 Evaluation of slaughter hygiene practices for minimisation of cross-contamination

SRM removal and disposal procedures are described in subsection 8.6.2. Identification and tracking of carcasses and half-carcasses on the slaughter floor and in chilling is important both for prevention of cross-contamination and for traceability purposes, and is described in subsection 11.2. Half-carcasses of young cattle and cattle over 30 months are chilled in separate, dedicated chillers.

11 Traceability systems for beef and beef products

In the event of a BSE case, traceability systems should be able to achieve timely and effective identification, tracing and recall of beef and beef products from all BSE affected animals. The system should be able to identify and trace beef and beef products from the point of retail sale back to the point of manufacturing and (where applicable) to the point of slaughter. The system should integrate with cattle identification and traceability measures such that the origin of contaminated beef or beef products can be traced back to any animals of interest if required.

11.1 Legislation

Labelling requirements are specified in NOM-050-SCFI-2004 *Commercial Information – General Labelling of Products* (Annex 11.1). Products must include a generic description, lot number, name and address of the slaughter establishment, and country of origin. Pre-packaged products must also include packaging and expiration dates, storage instructions and ingredients. Carcases, half-carcasses and quarter-carcasses must be labelled with the slaughter date.

All TIF slaughterhouses are required to use their official identifying number on stamps, labels, trademarks, packaging and crating, under the *Sanitary Industrialization of Meat Law and Regulations, Federal inspection* (1953), as well as rule of Federal Animal Health Law.

11.2 Evaluation of traceability systems

Traceability measures for cattle arriving at the inspected slaughterhouses are described in subsection 8.6.1.

At the first slaughterhouse, each slaughtered animal was identified by a slaughter number made up of the lot number and the order of slaughter, which stayed with both half-carcasses through to boning. The second slaughterhouse did not generally process cattle over the age of 30 months, but had similar procedures and marking systems to ensure that carcasses and heads of these cattle are clearly marked and are kept separate from those of younger cattle throughout the slaughter process. Carcasses and half-carcasses were tracked by position on the slaughter line throughout the process until boned.

Both slaughterhouses have a Quality Assurance (QA) department that conducts trace-back and trace-forward exercises regularly. From any given box of boned beef, the first slaughterhouse could trace the origin of the cattle, and the slaughter numbers of the cattle from which the beef was obtained. The slaughter numbers can be matched to identification marks on the cattle when they arrived at the slaughterhouse. Female cattle can be traced individually from field to box of boned beef, and males can be traced at least to accession lot. QA inspections and audits, which include traceability exercises, include internal audits, SENASICA inspections at least once every month, and client audits by multinational restaurant companies at least annually. Management remarked that in 2012 they had 36 external audits including those by SENASICA, Ministry of Health, and clients. Records are kept for at least five years.

The second slaughterhouse was HACCP certified and mock recalls were conducted twice yearly, and trace-back from a box of beef to the origin of the cattle from which the beef was obtained must be achieved within two hours to meet the requirements of their clients in the USA and in Japan. Trace-back from a box of beef to their own feedlot is extremely fast, and the origin of the cattle before arrival at the feedlot is also traceable. Their QA department conducts internal audits every quarter, and clients and SENASICA conduct external audits not less than once yearly. Records are kept for at least two years.

12 Summary: BSE food safety controls

Food safety controls are established in Mexico to ensure effective protection of beef and beef products from potential BSE contamination during slaughter and meat processing. Meat hygiene practices, such as slaughtering different age groups separately, minimise the risk of potential cross-contamination from the BSE agent. Detailed label requirements for both the domestic and export markets are mandated under NOM-050-SCFI-2004. TIF slaughterhouses are able to trace exported beef and beef products back to the day of slaughter and to the farm of origin. Trace-back and trace-forward simulations are carried out regularly in TIF slaughterhouses. Mexico exports beef to a number of countries that require this level of traceability, and TIF slaughterhouses are experienced in meeting the requirements of export markets.

BSE Control Programs and Technical Infrastructure

The following Chapter addresses the requirements in the Australian Questionnaire to have appropriate control programs that support a capability to adequately identify, notify, and diagnose cattle that display signs meeting the case definition of BSE. This assessment covers systems focused on the notification and disease investigation of clinical suspects, diagnostic methods to detect the presence of the BSE agent in infected tissues, and BSE awareness programs and education. This Chapter also assesses Mexico's cattle identification and traceability system which serves to underpin any BSE case investigation.

13 BSE Education and Awareness

Mexico has had an awareness program for BSE since 1994.SAGARPA performs this activity through the CPA, which is experienced in national training programs for public servants and workers in the agricultural sector. The objective of these training programs is to ensure that if an exotic disease emergency arises, there are trained personnel available to respond immediately.

The CPA has eight regional offices for the handling of exotic disease emergencies. Each office has an ongoing training program that includes courses, seminars and simulations. Activities are developed in cooperation with the Secretariat of Health (SSA), The Secretariat of Environment and Natural Resources (SEMARNAT) and the Secretariat of National Defence (SEDENA).

One of the priorities of the CPA is to form State Groups for Animal Health Emergency (GEESAs). The CPA presents a course and simulation on exotic diseases, titled AUTOSIM I, to veterinarians and other professionals selected in the state. The course is held over five days (40 hours). The main exotic diseases are covered in the first 28 hours, and the remaining 12 hours are spent on a simulation exercise which covers implementation of Emergency Plans. Those individuals who show organisational, leadership and decision-making skills under pressure in AUTOSIM I are given a second course and recruited into the regional GEESA.

Training and education about BSE is given to official veterinarians, authorized veterinarians, veterinarians in private practice, veterinary students, border inspectors, control point and collection center inspectors, agricultural technicians, livestock producers, feed manufacturers, zoo attendants, and all those involved in the handling and production of cattle and their products. This training covers awareness of clinical signs, the importance of the ban on feeding MBM to ruminants, and the epidemiology, control and prevention of BSE.

A course entitled *Recognition of the Main Emerging and Re-emerging Exotic Animal Diseases* is included in the last semesters of training of veterinary students and animal science students. This course includes coverage of transmissible spongiform encephalopathies. Workshop training is given to veterinary staff at slaughter facilities to ensure that they are able to obtain the ideal sample for diagnosis of BSE, and that they understand the process of shipping samples to the CPA laboratory.

In addition to training courses, BSE awareness is promoted to the general public, livestock producers and other people in the animal production industry through posters, flyers, manuals, booklets and calendars.

14 Disease notification and diagnoses

14.1 Overview

This Section focuses on procedures for notification and diagnoses of animals that are tested under the Mexican BSE surveillance and monitoring program.

14.2 Legislation

An Agreement that lists diseases and pests of animals that are subject to mandatory notification in Mexico was first gazetted in 1994, and was updated in 1999 and again in 2007. The current version was included in the submission. Since 1994 BSE has been included in Group 1, which is the list of notifiable diseases exotic to Mexico.

14.3 Identification and handling of BSE suspects

A Contingency Plan to deal with an outbreak of BSE was first prepared in 2000 by the CPA, and was updated in 2004 and 2007 in line with growing scientific knowledge of the disease. Confirmation of a BSE case by the national laboratory would trigger activation of the National Mechanism for Emergencies in Animal Health (DINESA) which is a mandatory mechanism under the Federal Law on Animal Health. The goal of the Contingency Plan is to rapidly eradicate BSE should it occur. Strategies include: identifying other animals of equivalent risk; slaughter and appropriate disposal of affected animals and those at equivalent risk; quarantine and depopulation of affected and suspicious farms; decontamination to destroy potentially infective material; and risk communication.

Differential diagnosis of BSE in Mexico includes rabies, listeriosis, ketosis, hypomagnesaemia, hypocalcaemia, thromboembolic meningoencephalitis, abscesses or neoplasia of the CNS, trauma, neurotoxic poisonings, polio encephalopathy, and downer cow syndrome. Notification of a case of a bovine animal with neurological clinical signs may be made by free telephone call, by email, or in person to a regional office. Following notification, a coordinator from the CPA visits the production unit.

The Information System of Exotic and Emerging Disease (SINEXE) was launched in 2009. This internet-based system uses bar codes to track samples that are submitted, and collates information about the case. Capture of information can be done via mobile devices. SINEXE also directs samples to appropriate areas within the laboratory, and communicates with the Department of Statistics and Evaluation which calculates surveillance points.

SAGARPA publishes an illustrated manual that covers sampling and sample dispatch for BSE. Contents of the manual include background information on BSE, clinical signs, estimation of bovine age from dentition, biosecurity measures including personal protective equipment, sampling technique in abattoirs, sampling technique in the field, packing and shipment of samples, notification details, and examples of the submission forms.

14.4 Diagnostic tests

Active surveillance for TSEs has been in place in Mexico since 1996 and no cases of BSE have been reported in Mexico to date. Originally the BSE reference laboratory was the National Center of Animal Health Diagnosis Services (CENASA) and the diagnostic test used was histopathology. However histopathology was considered to be insufficiently sensitive in animals not showing nervous signs. In 2004, histopathology was replaced with western blot testing which was performed at the CPA Biosecurity Level 3 Laboratory until 2005 when it was superseded by lateral flow immuno-chromatography (Prionics®-Check PrioSTRIP). All

test methods are in compliance with the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*, with the exception of the PrioSTRIP test, which has been validated by the EU.

There are regional laboratories in Aguascalientes, Chihuahua, Torreon and Villahermosa that screen samples for BSE using the PrioSTRIP. Recently a laboratory has been established in Celaya that uses enzyme-linked immunosorbent assay (ELISA) for BSE testing.

The number of BSE tests performed since 1997 are shown in **Table 5**.

Table 5: Bovine samples tested for BSE since 1997

Year	Histopathology	Western blot	PrioSTRIP	ELISA	Total
1997	42	-	-		42
1998	231	-	-		231
1999	150	-	-		150
2000	156	-	-		156
2001	305	-	-		305
2002	450	-	-		450
2003	465	-	-		465
2004	3	1981	-		1984
2005	-	3516	-		3516
2006	-	1667	1764		3431
2007	-	-	8784		8784
2008	-	-	14043		14043
2009	-	-	17285		17285
2010	-	-	14154		14154
2011	-	-	12533	10	12543
2012	-	-	11935	222	12157

One regional laboratory, which serves four states, was included in the in-country inspection. The laboratory processes 100 to 120 brainstem samples each week, with a usual turn-around time of approximately four hours. The laboratory uses PrioSTRIP and most samples come from slaughterhouses in the region. Staff estimated that unusable samples are received on average only twice a year. All samples are submitted by CPA personnel.

The laboratory finds up to five suspicious results each year. When a suspicious result is found the central laboratory in Mexico City and the submitter are notified and the test is repeated using four replicates. If the replicates are negative, the result is reported as negative. If the replicate results are suspicious, the sample is sent to Mexico City both in fresh and formalin-fixed form. The formalin-fixed tissue is for testing by immunohistochemistry and fresh tissue by western blot. If the results of these tests in Mexico City were to be positive, the case would be referred to the reference laboratory for North America, which is located in Canada.

14.5 Laboratory assurances and auditing

Inter-laboratory tests are conducted annually to ensure that technical competency is maintained. Collaborations are maintained with several internationally recognized laboratories and research centres in Spain, the USA, Canada and Switzerland. These collaborations include training of Mexican technical staff. The laboratories in Mexico that screen bovine brainstem samples for BSE using the PrioSTRIP method all have accreditation from the Mexican Accreditation Entity S. A. (EMA).

At the regional laboratory the laboratory systems and verification practices conformed to ISO quality system 17025. Other quality systems consisted of inter-laboratory proficiency testing, certification of all BSE test kits, validation of test kits, and EMA inspections.

14.6 Penalties and reporting incentives

Sanctions for failure to notify the National Epidemiological Surveillance System (SIVE) of a notifiable disease are provided by the *Federal Law on Animal Health*, Mexican Official Norm NOM-046-ZOO-1995 *National Epizootiological Surveillance System*, and Articles 253 and 254 of the Federal Penal Code.

Since 2008 compensation has been paid to UPP operators reporting fallen stock that showed neurological signs prior to death, or for which the cause of death is unknown, under the Compensation Program for the Notification of Neurological Cases. Between 2008 and 2010 inclusive, compensation was paid for 49 cattle under this program.

15 Cattle identification and traceability

15.1 Overview

Cattle traceability systems should enable effective and efficient identification, tracing and recall of beef and beef products from all BSE affected animals in the event that BSE has occurred. The system should be able to identify and trace beef and beef products from the point of retail sale back to the point of manufacturing and where applicable to the point of slaughter. The system should integrate with cattle identification and traceability measures such that the origin of contaminated beef or beef products can be traced back to any animals of interest if required. The system should ensure capability for effective and timely identification, tracing and removal of beef and beef products from markets and the distribution chain.

15.2 Legislation

Legislation in the form of a Mexican Official Norm is being drafted concerning the System for Individual Identification of Cattle (SINIIGA). The goal is to have the system in place within 18 months after the Official Norm is gazetted.

15.3 Current identification systems for cattle

Mexico is currently in the final stages of nationwide establishment of SINIIGA, which will allow individual tracking of all livestock from birth to death. Until SINIIGA is fully established, cattle not currently registered in SINIIGA can be traced to farm of origin through other identification markings such as brands and metal ear-tags showing that they have been subject to tuberculosis testing, and through sale and transport documents. Cattle that are transported on trucks must be accompanied by a Guide of Transit which includes the origin of the animal, the owner, and the destination, and cattle transported between states must also be accompanied by a Certificate of Movement confirming that the animal complies with SAGARPA health requirements.

The goal of SINIIGA is to allocate to every animal a unique number that accompanies them throughout their life, and enables tracking of their movements, from birth to their death or slaughter. All identification numbers, as well as the data relating to the animals that bear them, are recorded in the Central Bank of Information (BCI). SINIIGA is used for the identification of all hooved livestock and also for beehives.

Records of all Livestock Production Units (UPP) and Providers of Livestock Services (PSG) are incorporated into the National Livestock Census (PGN). Examples of PSGs include fatteners, collectors, slaughterhouses, quarantine stations, import/trading companies, and equestrian centres. Each UPP or PSG is assigned a unique and unrepeatable key, through which the information of the UPP or PSG (location and facilities), owner and livestock inventory, is logged in the PGN. In order to be able to participate in SINIIGA a farmer must be registered in the PGN and have a UPP key.

SINIIGA ear-tags for cattle are always placed in pairs to ensure that the number assigned to an animal is never lost. A hanging ear-tag, which includes a bar code, is placed in the left ear of the animal, and a button ear-tag is placed in the right ear. The button ear-tag may be either visual or electronic.

Figure 2: Hanging ear-tag for bovine left ear

Figure 3: Button ear-tag for bovine right ear.

The practical application of SINIIGA for traceability purposes was assessed as part of the in-country inspection visit.

Competent Authority

Information on SINIIGA is available at http://www.siniiga.org.mx/index.php

At the time of the in-country assessment, SIINIGA was not established throughout Mexico, with agreements between the federal government and a small number of state governments still in the process of finalization. According to the most recent Census of Agriculture, Livestock and Forestry, which was conducted by the National Institute of Statistics and Geography (INEGI) in 2007, approximately 78% of UPPs farming cattle in Mexico are registered in the PGN.

Information stored for cattle registered with SIINIGA includes a death report that states whether the animal was slaughtered or died on the farm, the date of death and, if the animal was slaughtered, the name of the slaughterhouse if it was a municipal or private facility, or the name and number if it was a TIF slaughterhouse.

Since 2005, it has been mandatory for all cattle imported into Mexico to be entered into SIINIGA and receive a SIINIGA ear tag at the border. Information recorded within SIINIGA at that time includes the UPP to which the cattle are being imported; their identification on arrival at the border and their SIINIGA number; the port of entry; the state, zip code and country of origin; the export certificate number; the animal health certificate number; the date of SIINIGA identification and the technician responsible; the address and telephone number of the importer; and the birth date, gender and breed of the animal.

When fully established, SINIIGA, together with the system for tracking animal transport, will allow the comprehensive monitoring of movements of cattle nationwide.

Production Units (Farms)

Two intensive dairy farms were included in the in-country visit. Both of these farms relied heavily on livestock imported from the USA and/or Canada. Identification of imported cattle and of calves born on the property was demonstrated at both farms.

At the first farm, calves born on the property received a farm ear-tag at birth and after two months a SINIIGA tag was applied to young stock, so that calves then have both the farm ear-tag and the SINIIGA ear-tag. The farmer demonstrated the farm database that listed cows by both their on-farm number and their SINIIGA number, and included sire, dam, lactation records, insemination records, calving records and veterinary records. The farm relied heavily on cattle imported from the USA as non-pregnant heifers, because replacement heifers are not available in Mexico. The farm imported more than 1000 animals in the last decade. Imported cattle are given a SINIIGA ear-tag at the border, and cannot enter Mexico without this tag. Cattle also have ear-tags from the US property of origin. CPA personnel attend the unloading of imported cattle when they arrive at the farm, and confirm their identity. Movement documents received with these cattle include detailed health records and records of all US and Mexican states crossed, and with the exception of the border inspection and ear-tagging, trucks are sealed in transit. The farmer is required to notify the CPA of the health status of all imported cattle every six months. The farmer keeps all records indefinitely, including records of cows that have gone to slaughter and the results of BSE tests.

When the farmer wishes to cull an imported animal, he must obtain permission from the CPA to send them to the municipal slaughterhouse. The CPA attends the slaughter and collects brainstem BSE samples and SINIIGA ear-tags from all imported animals. Domestically-bred cattle may be sent to the slaughterhouse without CPA permission and are subject to testing

at slaughter if they are clinically abnormal. Cattle that die on the farm are sent to the municipal slaughterhouse where the decision is made whether they should be rendered or whether the meat can be salvaged for local consumption.

The second farm visited was also heavily reliant on imported heifers from the USA or Canada but also utilised artificial insemination. The farm marked all cows with SINIIGA ear-tags and comprehensive computerized records of the cows were demonstrated. The farmer did not tend to send imported cattle for slaughter due to the high cost and they are usually disposed of on the farm. The CPA attends the farm to collect brainstem samples from cows that die. All imported animals are sampled for BSE when they die. In contrast, if an animal is domestically–bred, brainstem is only sampled for BSE if the cow had nervous signs prior to death.

Slaughterhouses

It is the responsibility of the vendor of cattle for slaughter to notify the SINEXE database that cattle are being sent to slaughter. TIF slaughterhouses record the identification markings of cattle, including SINIIGA ear-tags, brands and other identification markings. All cattle received at TIF slaughterhouses must have a metal ear-tag showing that they have been subject to tuberculosis testing. Incoming animals must be accompanied by a Guide of Transit which includes the origin of the animal, the owner, and the destination. Cattle coming from a different state must also be accompanied by a Certificate of Movement confirming that the animal complies with SAGARPA health requirements.

The slaughterhouses collect SINIIGA ear-tags that are collected from the slaughterhouse at least monthly by SINIIGA personnel, who update the database to show that the animal has been slaughtered.

15.4 Quarantine cordons and movement control in Mexico

Mexico has five quarantine cordons that divide the country into regions based on animal health status. Federal Verification and Inspection Points (PVIFs) are located strategically along the roads that connect the states of the country. The PVIFs are staffed by federal inspectors employed by the Secretariat of Agriculture, who inspect and verify all regulated goods, including bovine animals. An English-language translation of the General Head Office of Phytozoosanitary Inspection *Technical and Operative Guidelines for the Inspection of Phytozoosanitary Quarantine Cordons* was included in the submission. The quarantine cordons and PVIF locations are shown in **Figure 4**.

Figure 4: Quarantine cordons and PVIFs in Mexico

Cordón Norte
1. La Concha, Sin.
2. Vicente Guerrero, Dgo.
3. Sta. Clara, Dgo.
4. Tanque Escondido, Coah.
5. San Roberto, N.L.
6. Tula, Tamps.
7. AntiguoMorelos, Tamps.
8. Rayón, Tamps.
9. Altamira, Tamps.

Cordón Centro
10. Las Tamacuas, Gro.
11. La Cantina, Gro.
12. Zitácuaro, Mich.
13. Riva Palacio, Mich.
14. Maravatío, Mich.
15. Amealco, Qro.
16. Palmillas, Qro.
17. Las Rosas, Qro.
18. La Negrita, Qro.
19. Axtla de Terrazas, SLP
20. Tanquián de Escobedo, SLP
21. San VincenteTancuyalab, SLP
22. Ébano, SLP

Cordón Sur
23. PinotebaNacional, Oax.
24. Xochihuehuetlán, Gro.
25. Zapotitlán Palmas, Oax.
26. Huapanapan, Oax.
27. Teotitlán, Oax.
28. Tuxtepec, Oax.
29. Puente Papaloapan, Ver.
30. Puente de Alvarado, Ver.

CordónIstmo
31. Paraíso, Chis.
32. CincoCerros, Chis.
33. Boca del Monte, Oax.
34. Jesús Carranza, Ver.
35. Paralelo 18, Ver.
36. Tonalá, Tab.

Cordón Peninsular
37. Nvo. Campechito, Camp.
38. Palizada, Camp.
39. Pucté, Camp.
40. Sta. Adelaida, Camp.
41. San Elpidio, Camp.
42. El Naranjo, Camp.
43. Constitución, Camp.

16 Summary: BSE control programs and technical infrastructure

Mexico has appropriate control programs for the identification and notification of BSE clinical suspects, and for the laboratory diagnosis of animals infected with BSE. A BSE awareness program has been active since 1994, which is directed at all people involved in the handling and production of cattle and their products. Information about BSE is disseminated through a wide variety of methods including courses, workshops, posters, flyers, manuals, booklets and calendars.

The CPA has a national network of eight regional offices that can handle animal disease emergencies. Simulations of exotic disease outbreaks are carried out regularly with state veterinarians and other professionals. BSE has been a notifiable disease in Mexico since 1994, and a Contingency Plan to be followed in the event of a diagnosis of BSE was first established in 2000. The Contingency Plan was reviewed and updated in 2004 and 2007 to reflect increasing scientific knowledge about BSE. An internet-based system for monitoring of exotic and emerging diseases, SINEXE, was launched in 2009.

Active surveillance for BSE has been in place since 1996. There is a network of nine regional laboratories that conduct initial screening tests. Samples that yield suspicious results on initial screening tests are further tested by immunohistochemistry at the LBS3 laboratory in Palo Alto. The Palo Alto laboratory also has capability in western blotting and PrioSTRIP testing. Should it be required, final confirmation would be made at the reference laboratory for North America in Canada. All BSE test methods are in compliance with the OIE Manual of Standards, with the exception of the PrioSTRIP test which has been validated by the EU. Technical competency is maintained through annual refresher courses, proficiency training, inter-laboratory testing and international collaborations.

There are penalties for failure to report BSE suspect cases, and compensation is available to producers for fallen stock that had neurological signs or unexplained death.

The Mexican federal identification system for livestock, SIINIGA, is in the process of being legislated as mandatory.at the federal level. At the time of writing, 30 of the 32 states in Mexico have made livestock and beehive identification in SINIIGA compulsory under state laws, agreements or state decrees The PGN registers UPPs, producers, and livestock service providers. SINIIGA provides unique lifetime identification for cattle and other livestock and maintains records online in the BCI. It has been mandatory since 2005 for cattle imported from North American countries to be registered in SIINIGA at the border. Currently, traceability of cattle not registered in SINIIGA to their farm of origin is possible through the use of brands, ear-tags, sale documents and transport documents. SINIIGA permits more rapid traceability, in addition to identifying cattle individually rather than by group.

Mexico also has a network of zoosanitary cordons for monitoring and movement of all cattle, and documentation requirements at slaughterhouses that enable tracing of cattle back to the property of origin.

BSE Surveillance

Section 3 of the Australian Questionnaire requires countries to provide evidence of the number of BSE-related samples collected for each cattle subpopulation, with data stratified by year and age group. Such data are then used to derive BSE surveillance point calculations using the recommendations of the OIE *Terrestrial Animal Health Code*.[2] The degree and quality of surveillance for BSE within the cattle population of a country, combined with other systems for BSE control, helps to determine the BSE risk status of the country.

The BSE surveillance programme in Mexico complies with the guidelines in Articles 11.5.20 to 11.5.22 of the OIE's *Terrestrial Animal Health Code.* This Chapter provides further details of Mexico's surveillance activities and historical data.

17 Mexico's BSE surveillance program

The CPA commenced a program of surveillance of ruminant neuropathies in 1996. The program included both passive and active surveillance. Passive surveillance was introduced through visits to production units to inform producers of the importance of the mandatory notification measures and to gain their acceptance of, and compliance with, brain sample collections. At the same time active surveillance at slaughter facilities was initiated. From 2006 through 2012 inclusive, samples were examined from 3,982 cattle with neurological clinical signs; 60,941 cattle that were condemned, fallen or otherwise for disposal; 8,851 cattle found dead; and 8,482 cattle subject to routine slaughter (**Table 6**). Samples came from production units, federally inspected slaughterhouses, municipal slaughterhouses, private slaughterhouses and laboratories that conduct rabies diagnosis.

Table 6: Bovine CNS samples submitted for BSE surveillance 2006-2012 inclusive

Category	2006	2007	2008	2009	2010	2011	2012	Total
Routine slaughter	1594	3041	1172	735	698	668	574	8482
Cattle found dead	171	620	1146	1634	1827	1862	1591	8851
Condemned or fallen	1614	4587	10235	14127	11030	9605	9743	60941
Clinical suspects	52	536	1490	789	599	408	108	3982
Total	3431	8784	14043	17285	14154	12543	12016	82256

During 2003, a joint program was conducted between Mexico and the Food and Agriculture Organisation of the United Nations (FAO) titled 'Evaluation and Reinforcing of the Bovine Spongiform Encephalopathy (BSE) Prevention System and the Quality Control of Animal Feed'. This program led to reinforcement of the active surveillance of at-risk cattle including fallen stock, emergency-slaughtered stock, and cattle that died on farms or at slaughterhouses with no apparent cause of death. The program also led to enhanced training of slaughterhouse inspectors in disease recognition, shipment of samples and providing required information on forms.

Since 2004 the submission forms have been periodically modified in accordance with evolving OIE recommendations. In 2009 the CPA adopted an electronic platform accessible through portable and desk-top devices, in order to expedite submission of information. This platform is the National Information System for Exotic and Emerging Diseases (SINEXE). SINEXE comprises a group of related programs to control the sequence of actions in surveillance of BSE and other exotic diseases, including notification of suspected cases, active epidemiological surveillance, shipping of samples to laboratories, control of processing

of samples in laboratories, and sending of laboratory results.

18 Mexico BSE surveillance points data

Mexico practices Type A surveillance. Some active surveillance has been conducted since 1997, and data back to 2004 inclusive were included in the submission. Mexico has now accumulated enough surveillance points to qualify to change to Type B surveillance, but have chosen to continue to practice Type A surveillance.

Table 7: BSE Surveillance Points Data 2006 - 2012

Age range	Routine slaughter		Found dead		Emergency slaughter		Clinical suspects	
	Samples	Points	Samples	Points	Samples	Points	Samples	Points
	2006							
>1, <2	11	0	2	0	7	3	2	N/A
≥2, <4	664	66	9	2	131	52	30	7800
≥4, <7	781	156	84	76	1007	1611	12	9000
≥7, <9	94	9	73	29	390	273	8	1760
≥9	44	0	3	0	79	16	52	2340
Totals	**1594**	**231**	**171**	**107**	**1614**	**1955**	**104**	**20900**
	2007							
>1, <2	18	0	28	6	40	16	0	N/A
≥2, <4	348	35	88	18	471	188	63	16380
≥4, <7	1904	381	398	358	2660	4256	342	256500
≥7, <9	674	67	96	38	866	606	124	27280
≥9	97	0	10	1	550	110	7	315
Totals	**3041**	**483**	**620**	**421**	**4587**	**5176**	**536**	**300475**
	2008							
>1, <2	0	0	79	16	53	21	12	N/A
≥2, <4	566	57	904	181	1963	785	411	106860
≥4, <7	550	110	103	93	6707	10731	886	664500
≥7, <9	37	4	55	22	939	657	160	35200
≥9	19	0	5	1	573	115	21	945
Totals	**1172**	**171**	**1146**	**313**	**10235**	**12309**	**1490**	**807505**
	2009							
>1, <2	10	0	34	7	77	31	12	N/A
≥2, <4	232	23	1201	240	5440	2176	225	58500
≥4, <7	376	75	283	255	6912	11059	442	331500
≥7, <9	90	9	76	30	1033	723	81	17820
≥9	27	0	40	4	665	133	29	1305
Totals	**735**	**107**	**1634**	**536**	**14127**	**14122**	**789**	**409125**
	2010							
>1, <2	4	0	43	9	49	20	6	N/A
≥2, <4	170	17	957	191	3663	1465	209	54340
≥4, <7	368	74	791	712	6538	10461	351	263250
≥7, <9	144	14	34	14	580	406	27	5940
≥9	12	0	2	0	200	40	6	270
Totals	**698**	**105**	**1827**	**926**	**11030**	**12392**	**599**	**323800**
	2011							
>1, <2	2	0	15	3	11	4	5	N/A
≥2, <4	187	19	811	162	2270	908	121	31460
≥4, <7	407	81	1010	909	6729	10766	255	191250
≥7, <9	66	7	24	10	456	319	24	5280
≥9	6	0	2	0	139	28	3	135
Totals	**668**	**107**	**1862**	**1084**	**9605**	**12025**	**408**	**228125**
	2012							
>1, <2	1	0	11	2	6	2	10	0
≥2, <4	201	20	484	97	2534	1014	25	6500
≥4, <7	271	54	1077	969	6496	10394	63	47250
≥7, <9	99	10	17	7	519	363	7	1540
≥9	2	0	2	0	188	38	3	135
Totals	**574**	**84**	**1591**	**1075**	**9743**	**11811**	**108**	**55425**

Surveillance points data since 2004 inclusive are shown in Table 7. Surveillance points are rounded, and therefore data do not exactly match data provided by Mexico to the OIE.

Surveillance points data by year are shown in **Table 8**.

Table 8: Total Annual Surveillance Points, 2006-2012	
Year	Total Annual Surveillance Points
2006	23 193
2007	306 555
2008	820 298
2009	423 890
2010	337 223
2011	241 341
2012	68 395

Data from 2004 to 2010 show that the population of Mexico's national bovine herd has been steady in the range 31 million to 33 million (**Table 9)**. Of the total number of cattle in the 2010 census, 16,318,462 cattle, or approximately 50% of the total, were over 24 months of age.

Table 9: National Bovine Population of Mexico, 2004-2009			
	Beef herd	Dairy herd	Total
2004	29 013 488	2 234 246	31 247 734
2005	28 792 622	2 197 346	30 989 968
2006	28 941 438	2 221 686	31 163 124
2007	29 091 311	2 304 605	31 395 916
2008	29 420 059	2 340 903	31 760 962
2009	29 962 595	2 344 475	32 307 070
2010	30 267 511	2 374 623	32 642 134

The OIE points targets for a national herd size exceeding 1 million cattle over 24 months of age are 300,000 points for Type A surveillance and 150,000 for Type B surveillance. Over the seven years from 2006 to 2012 inclusive, Mexico's points total is 2220895, well in excess of the requirement for either Type A or Type B surveillance.

19 Summary: BSE surveillance

Mexico carries out Type A surveillance in compliance with the guidelines in Articles 11.5.20 to 11.5.22 of the OIE's *Terrestrial Animal Health Code*. Mexico has carried out active BSE surveillance since 1997.

Conclusions and BSE risk categorisation

Mexico has legislative controls and systems to prevent the introduction and amplification of the BSE agent within the Mexican cattle population and contamination of the human food supply with the BSE agent. In-country assessment by FSANZ personnel confirmed that legislative requirements relevant to BSE prevention and control are effectively implemented.

The documentation submitted by Mexico supports a conclusion that the risk of the BSE agent being released into the Mexican cattle population through imports of MBM, live cattle, or bovine products is effectively controlled. Importation of MBM of bovine origin has been prohibited in Mexico since 1994. Only MBM of porcine, poultry or fish origin may be imported into Mexico and then only if they are sourced from rendering plants that have been approved by SAGARPA. SAGARPA will not approve foreign rendering plants that also process proteins of ruminant origin.

Importation of cattle is permitted only from countries that have no history of BSE, with the exceptions of Mexico's NAFTA partners Canada and the USA. Cattle imported from Canada or the USA must be destined for approved production units for use for breeding, must be given a permanent individual identification at the border, and are subject to permanent quarantine. Imported cattle are sampled for BSE at slaughter or if they die on farm.

Mexico permits importation of beef only under the zoosanitary requirements recommended by the OIE. Importation of SRM is prohibited, and beef and other bovine products for human consumption must originate from slaughterhouses approved by SAGARPA. In the eight years 2005 to 2012 inclusive, beef was imported only from countries assessed by the OIE as having *controlled* or *negligible* risk of BSE, or assessed by the USDA as being free of BSE. Similarly for the ten years 2003-2012 inclusive, other bovine products were imported only from countries assessed by the OIE as having *controlled* or *negligible* risk of BSE, or assessed by the USDA as being free of BSE. Revisions of legislation related to imports of cattle and products derived from cattle illustrates that Mexico has been diligent in monitoring the BSE status of other countries, and in monitoring growing scientific knowledge concerning BSE.

Importation of animal feeds, other than pet foods, that contain ruminant proteins has been prohibited since 2004. Pet foods may only be imported if the ruminant proteins in them originate from Australia or New Zealand, both countries with a *negligible* risk of BSE. The feed ban has been effectively implemented in Mexico since 2004, so that the risk of BSE entering and recycling within the bovine feed system or entering the human food supply in Mexico is negligible. The use of MBM of ruminant origin in ruminant feeds has been prohibited since 1999. Feed mills and rendering plants have been subject to SAGARPA audits since 2004, with testing of feed samples for prohibited proteins since 2007. SAGARPA requirements for the labelling of bags of processed feed are detailed, and include the requirement for warning statements to ensure that feed containing animal protein is not fed to ruminants. Rendering plants are required to label MBM as not to be used for ruminant feed, and traceability of MBM is maintained for at least five years after sale. Producers of cattle and dairy products are required to keep comprehensive records of purchased feed, and feed is subject to on-farm testing by SAGARPA.

Food safety controls are established in Mexico to ensure effective protection of beef and beef products from potential BSE contamination. Thorough ante-mortem inspection is required of all slaughterhouses, both those supplying the domestic market and those producing beef and beef products for export. Only federally inspected (TIF) slaughterhouses may supply the export market, and SRM removal and destruction is mandatory at TIF slaughterhouses. Meat hygiene practices, such as slaughtering different age groups separately, also contribute to minimisation of the risk of cross-contamination. Plants processing beef to other products for

export, such as packing plants, canning plants and cold-storage plants, must also be TIF establishments and may only purchase beef for processing from TIF slaughterhouses. Consequently, beef and beef products originating from cattle that were not slaughtered in a TIF slaughterhouse cannot be exported from Mexico.

Detailed label requirements of beef products for both the domestic and export markets are mandatory. Exported beef and beef products can be traced back to the day of slaughter and to the farm of origin, and both trace-back and trace-forward simulations are carried out regularly in TIF slaughterhouses. TIF slaughterhouses are experienced in meeting the requirements of export markets that require this level of traceability

Mexico has appropriate control programs for the identification and notification of BSE clinical suspects, and for the laboratory diagnosis of animals infected with BSE, and an extensive and well-staffed system for regulatory and veterinary involvement in the beef production industry. This system was established for the control and prevention of diseases such as rabies and foot-and-mouth disease, but also provides enforcement of regulations for the prevention of BSE. A BSE awareness program has been active since 1994, which is directed at all people involved in the handling and production of cattle and their products. BSE has been a notifiable disease in Mexico since 1994, and a Contingency Plan to be followed in the event of a diagnosis of BSE was first established in 2000.The CPA has a national network of eight regional offices that can handle animal disease emergencies. Simulations of exotic disease outbreaks are carried out regularly. An internet-based system for monitoring of exotic and emerging diseases, SINEXE, was launched in 2009. There are penalties for failing to report a suspicious animal diseases case, and an incentive in the form of compensation for cattle that die with neurological signs or no apparent cause of death.

Active surveillance for BSE has been in place in Mexico since 1997 and there is a network of nine regional laboratories that conduct initial BSE screening tests. Samples that yield suspicious results on initial screening are further tested. Should it be required, final confirmation would be made at the regional reference laboratory in Canada. All test methods are in compliance with the OIE Manual of Standards, with the exception of the PrioSTRIP test which has been validated by the EU. Technical competency in laboratory testing is maintained through annual refresher courses, proficiency training, inter-laboratory testing and international collaborations.

The Mexican federal identification system for livestock, SIINIGA, is in an advanced stage of establishment. This system registers UPPs, producers, and livestock service providers. It provides unique lifetime identification for cattle and maintains records in an online database. It has been mandatory since 2005 for cattle imported from North American countries to be registered in SIINIGA at the border. The SIINIGA ear tag includes a microchip and this is employed by farmers to monitor the health and production of their animals. When fully established, SINIIGA will provide individual identification of all cattle. At present, cattle not registered in SINIIGA can be traced to farm of origin by identification marks including brands and ear-tags, and also by sale records and mandatory transport documents.

Mexico also has a network of zoosanitary cordons for monitoring and movement of all cattle, and documentation requirements at slaughterhouses that enable tracing of cattle back to the property of origin.

Mexico carries out Type A surveillance in compliance with the OIE's *Terrestrial Animal Health Code,* and has accumulated surveillance points well in excess of the number recommended by the OIE.

In conclusion, robust controls to prevent BSE from entering and recycling within the bovine feed system or entering the human food supply in Mexico have been in place for at least

eight years. The FSANZ BSE food safety assessment of Mexico recommends **Category 1** status for Mexico.

References

1. Food Standards Australia New Zealand. *Australian Questionnaire to Assess BSE Risk*. 2010 Mar 1.

2. Office International des Epizooties. *OIE Terrestrial Animal Health Code - Chapter 11.5. - Bovine spongiform encephalopathy*. 2010.

Appendix 1: Structure of the Competent Authority in Mexico

The following organisation charts, provided by the relevant government bodies in Mexico, clarify the structures of SAGARPA (**Figure 5**), SENASICA (**Figure 6**) and DGSA (**Figure 7**).

Figure 5: Organisation chart for SAGARPA

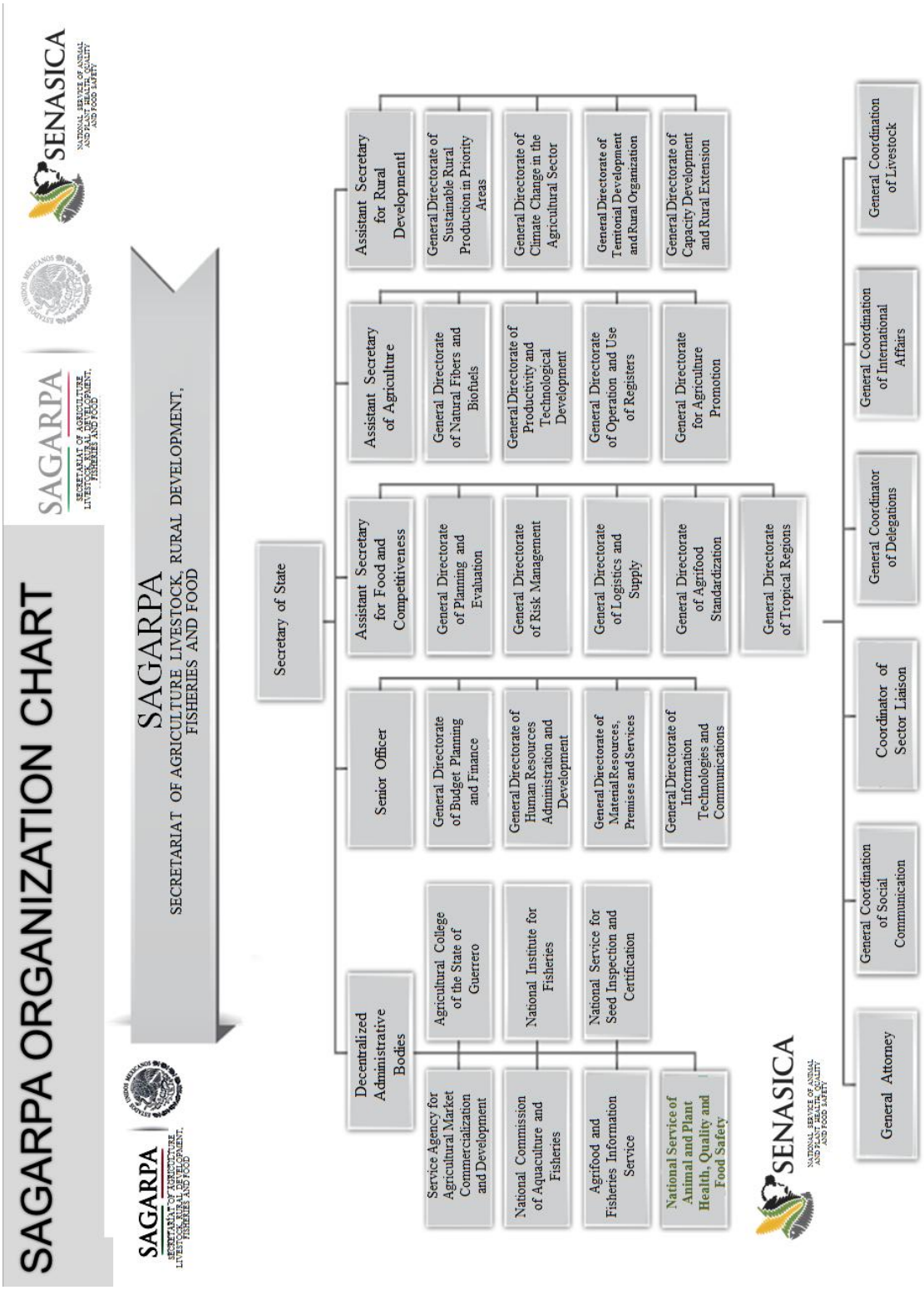


Figure 6: Organisation chart for SENASICA

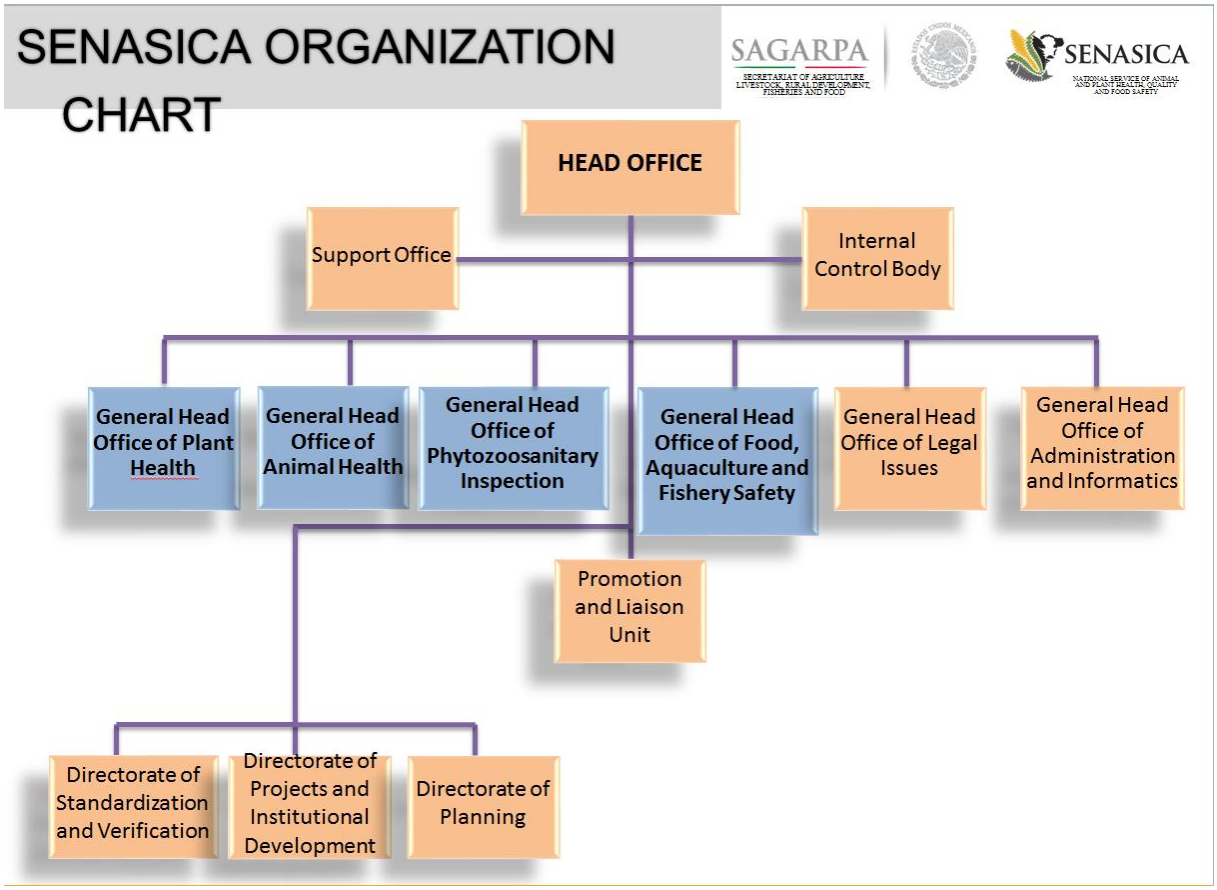
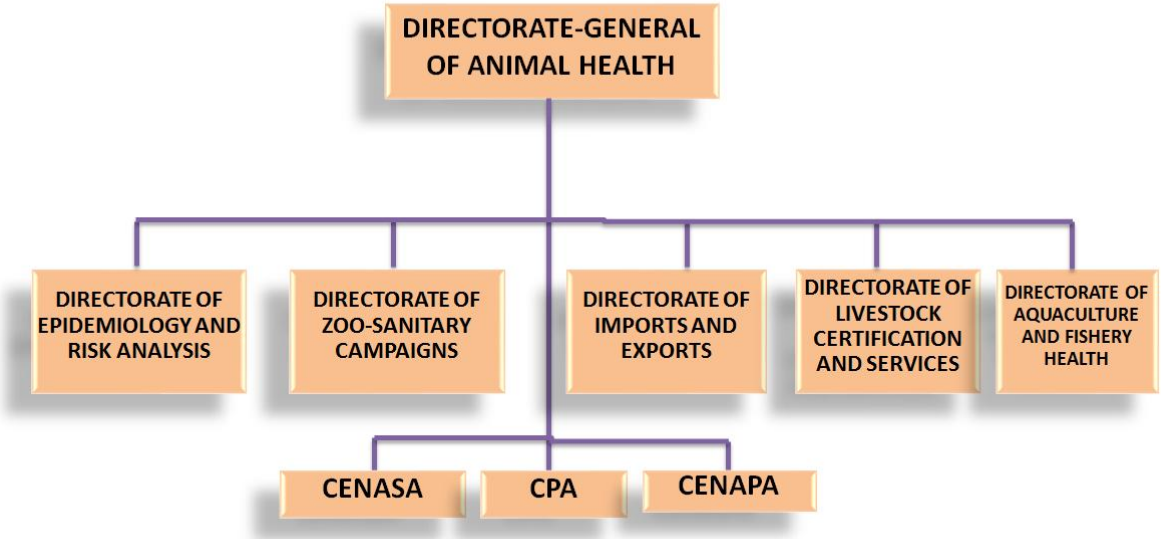


Figure 7: Organisation chart for DGSA



Appendix 2: Details of Legislation Related to BSE Control

Table 10: Mexican Legislation and Official Documents Concerning or Relevant to BSE Control	
Title/identification	Comments
Legislation and documents empowering SAGARPA	
Federal Animal Health Law (current version signed 2007)	Identifies SAGARPA as the Competent Authority and specifies the powers of SAGARPA.
Internal Rules of the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food	Describes the scope of competence of SAGARPA; establishes, describes and empowers the General Directorates, Commissions and Institutes within SAGARPA; describes the responsibilities of the Secretary and Under-Secretary, and the general coordination of operations.
Resolution by which is established the classification and codification of goods that are subject to regulation of the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food	Title is self-explanatory. 'Goods' include hormones, antibiotics and other pharmaceuticals; various classes of domestic and captive animals, including a number of classes of cattle; and a wide range of animal-derived products including products derived from cattle.
Agreement by which diseases and pests of animals: exotic/foreign, and endemic, of obligatory notification in the Mexican United States are listed	Title is self-explanatory. BSE is notifiable under this agreement.
Legislation and documents concerning importation of cattle or bovine products	
Procedure: Phytosanitary and zoosanitary certification for the import of plants, animals, products and by-products of animal and plant origin, and chemical, pharmaceutical, biological and food products intended for agricultural and livestock use, at ports, airports and borders.	Title is self-explanatory.
NOM-060-ZOO-1999 Zoosanitary specifications for the transformation of animal offal and their use in animal feeds	Prohibits the importation of tissues, offal or meals of bovine origin if the country of origin is affected by BSE, has commercial practices which expose it to risk of BSE, or has not been recognized as a country free of BSE by SAGARPA. Importers of tissues, offal or meals of bovine origin must present an official certificate from the country of origin that specifies: • Species of origin of protein • That tissues or offal came from slaughterhouses authorized by SAGARPA • That meal comes from rendering plants approved by SAGARPA • That the rendering conditions met the same requirements as specified in this standard for Mexican rendering facilities • That ingredients of animal origin in imported finished meals were obtained from plants approved by SAGARPA and met the same standards of processing as required for

	Mexican processors • That the same marketing and use requirements apply to imported meals as apply to domestically-manufactured meals • That product imported in bulk must specify on their commercial sales receipt the origin of animal proteins, and, if they are of ruminant origin, that they must not be fed to ruminants.
NOM 061—ZOO-1999 Zoosanitary specifications of food products for consumption by animals	Establishments that import finished products for feeding animals must have a Notice of Operation issued by SAGARPA Imported finished feed products must have a SAGAR regulation number. The importer must verify the guaranteed analysis that is specified in the draft labels, in an Approved Laboratory. The imported feed must have a label that specifies the ingredients, and for any ingredients of animal origin, the species of origin must be stated. The importer must remove from the market any finished product that represents a zoosanitary risk, and must also immediately notify SAGARPA The use of MBM of ruminant origin, or any other mixture that contains them, for the manufacture of ruminant feed is forbidden.
Legislation and documents relevant to exposure control through feed ban	
NOM-012-ZOO-1993 Specifications for regulating chemical, pharmaceutical, biological and food products for their use in animals or consumption by them	Mandates quality control certificates from suppliers for all products and raw materials received. Specifies requirements for warehouses including physical separation of raw materials, finished products, and materials in quarantine. Mandates storage to prevent cross-contamination or confusion. Specifies hygienic conditions during production and documentation of all procedures. Requires companies to either have their own quality control laboratory or to use a contract laboratory. Specifies that every batch of imported raw material or finished product must be analysed, and that representative samples of every batch of finished product from the establishment must be taken, as well as retention samples. Finished products may not be released onto the market until all quality control tests are completed. Lays down requirements for packaging, packing and labelling. Mandatory label details include information to allow trace-back such as name and address of the company, lot number and regulation number.
NOM-025-ZOO-1995 Animal health characteristics and zoosanitary specifications for facilities, equipment and operation of establishments manufacturing food products for animal use or to be taken thereby	Title is largely self-explanatory. With specific relevance to BSE, physical separation to prevent cross-contamination is mandated, as is cleanliness of manufacturing equipment and packaging. Establishments that prepare food products must have an authorized Veterinarian and a professional in quality control.
NOM 022-ZOO-1995 Characteristics and zoosanitary specifications for facilities, equipment and operation of establishments that market chemical, pharmaceutical, biological and food products for use in animals or consumption by them	Title is largely self-explanatory. Of specific relevance to BSE, mandates that establishments must have a separate area to receive, sample and weigh raw materials.
NOM-060-ZOO-1999 Zoosanitary specifications for the transformation of animal offal and their use in animal feeds	Prohibits the use of raw animal tissues or offal in ruminant, equine, swine or avian feed. Meals of animal species must be rendered in a rendering plant. Prohibits the use of meals of ruminant origin, or any mixture that includes them, in ruminant feed.

	Animal proteins of non-ruminant origin are permitted in ruminant feed only if they come from a registered rendering plant. Exceptions to the feed ban may be made for lard, processed lard, milk proteins, gelatin, fish meal and blood meal, but the responsibility rests with the processor to demonstrate to SAGARPA that there is no risk of TSE transmission. The sale of meals of ruminant origin for use in feeding ruminants is prohibited. Rendering plants must keep detailed records of sales of rendered product. Feed mills must keep records of purchases and sales, and may only purchase animal protein meals from registered rendering plants. Processed feeds that contain proteins of ruminant origin and that are produced for non-ruminant species must be labelled to indicate that they must not be fed to ruminants. UPP operators must keep detailed records of animal feeds purchased. This is applies to producers who keep non-ruminant species as well as those who keep ruminants.
NOM 061—ZOO-1999 Zoosanitary specifications of food products for consumption by animals	Finished feed products subject to zoosanitary control must have a SAGAR regulation number. The analysis stated on the label must be verified in an Approved Laboratory. If raw materials of animal origin are used in manufacture of animal feeds, the species of origin must be stated. If a manufacturer learns that there is a contaminant that poses zoosanitary risk in the feed, they must withdraw the product and must also immediately notify SAGARPA. These regulations apply to vertically integrated operations making their own animal feeds, as well as to commercial feed mills. The standard empowers SAGARPA to test finished feeds. The Standard specifies the requirements against which feed mills are audited by SAGARPA, and these include the requirement that MBM of ruminant origin are not used in feeds for ruminants.
Legislation and documents relevant to exposure control through slaughterhouse and rendering procedures	
Sanitary Industrialization of Meat ~~Act~~ Law and Regulations, Federal Inspection (1953)	Establishes the creation of 'Federal Inspection Type' slaughterhouses, packing plants, canning plants, and cold storage plants. Specifies how TIF plants are to operate, the facilities they must have, the essential conditions of operation, ante-mortem and post-mortem inspection procedures, disposal of diseased carcasses and waste material, sanitary requirements, marking and labelling, transportation of products, inspection and monitoring measures, and sanctions for noncompliance. If products are produced in TIF facilities, they require no further inspection or authorization for sale. Only products of TIF establishments may be exported. Article 6th specifies that slaughterhouses and persons with legal authorization to slaughter must comply with provisions of the Federal Sanitary Code even if they do not operate as Federal Inspection Type slaughterhouses.
NOM-008-ZOO-1994 Zoosanitary specifications for building and	Title is self-explanatory. Includes the requirement for dedicated facilities for separation and handling of

equipping establishments for slaughtering animals and those dedicated to industrializing meat products.	suspect or condemned animals.
NOM-009-ZOO-1994 Sanitary meat processing	Standardises ante-mortem and post-mortem inspection systems in all slaughterhouses and meat processing or storage plants in Mexico, extending the systems first established in TIF plants. Includes conditions for ante-mortem inspection by a veterinarian, rest-time pre-slaughter, disposal of animals unsuitable for slaughter, humane slaughter, post-mortem inspection, disposal of carcasses or parts of carcasses unfit for human consumption, marking of inspected carcasses, transportation of products, labelling of meat and meat products, and sanctions. Includes the provision that TIF processing plants may not receive or process products that do not come from TIF establishments.
NOM-033-ZOO-1995 Humane sacrifice of domestic and wild animals	Title is self-explanatory. For cattle at slaughter, preslaughter stunning with a captive bolt pistol is followed by exsanguination. Includes illustrations of the correct site to stun European breeds (*Bos p. taurus*) and Zebu breeds (*Bos.p. indicus*).
NOM-194-SSA1-2004 Products and Services. Sanitary specification in establishments dedicated to slaughtering and rendering of animals for wholesale food market, storage, transport and retailing. Sanitary specifications of products.	Applies to all commercial slaughter and meat processing establishments. Specifies sanitary facilities for slaughter floors, standards for unloading facilities and holding corrals, standards for stunning and killing areas, and the areas for each step of the slaughter process. Mandates such sanitary requirements such as cleanliness of equipment, hygiene procedures of employees etc. Areas for rejected products and by-products must be physically separated from other areas, and must be secure. Records must be retained for at least one year. Animals must arrive with a zoosanitary certificate and/or livestock transport guide, and records must be kept of all arrivals. Records must be kept of all sick and downer animals in the corrals, and those found dead, and records must include disposal of the animal. Reiterates the requirements for ante-mortem and post-mortem inspections, and describes how these are to be performed. Describes acceptable procedures for disposing of rejected materials, including denaturation pending destruction, or immediate incineration. Records must be kept of all rejected material. Specifies acceptable methods for identifying products that have passed inspection. Describes sanitary requirements for transportation. Specifies requirements with relation to absence of parasites and microbial (coliform and *Salmonella*) contamination. Describes how products are to be labelled.
Federal Animal Health Law (current version signed 2007)	Identifies SAGARPA as the Competent Authority and specifies the powers of SAGARPA.
NOM-060-ZOO-1999 Zoosanitary specifications for the transformation of animal offal and their use in animal feeds	Rendering plants must be registered, and are classified according to whether they process ruminant tissues or only those of non-ruminant species. Those that process ruminant skins but no other ruminant tissues are classified with those that process non-ruminant tissues. Slaughterhouses and cutting plants that do not have their own rendering facilities must send the offal and waste to a registered rendering plant. Minimum rendering conditions are temperature of 80ºC for at least 30 minutes and maximum humidity of the finished product not > 10% when exiting the cooker. Should BSE or scrapie be recognized in Mexico the minimum conditions would change to 133 ºC for 20

	minutes, at 3 bar pressure. Records specified in the standard must be kept for 5 years. Records that slaughterhouses, cutting facilities, rendering plants, feed mills and UPPs are required to retain are specified, and allow trace-forward and trace-back. Labelling of products to prevent the use of ruminant proteins for feeding ruminants is specified. Meals of ruminant origin must be stored separately to those of non-ruminant origin.
Legislation and documents relevant to food safety controls	
Sanitary Industrialization of Meat Act and Regulations, Federal Inspection (1953)	Establishes the creation of 'Federal Inspection Type' slaughterhouses, packing plants, canning plants, and cold storage plants. Specifies how TIF plants are to operate, the facilities they must have, the essential conditions of operation, ante-mortem and post-mortem inspection procedures, disposal of diseased carcasses and waste material, sanitary requirements, marking and labelling, transportation of products, inspection and monitoring measures, and sanctions for noncompliance. If products are produced in TIF facilities, they require no further inspection or authorization for sale. Only products of TIF establishments may be exported. Article 6th specifies that slaughterhouses and persons with legal authorization to slaughter must comply with provisions of the Federal Sanitary Code even if they do not operate as Federal Inspection Type slaughterhouses.
NOM-050-SCFI-2004 Commercial Information – General Labelling of Products	Requirements pertaining to meat and meat products are specified in Annex 11.1. Products must include a generic description, lot number, name and address of the slaughter establishment, and country of origin. Pre-packaged products must also include packaging and expiration dates, storage instructions and ingredients. Carcases, half-carcasses and quarter-carcasses must be labelled with the slaughter date.
NOM-194-SSA1-2004 Products and Services. Sanitary specification in establishments dedicated to slaughtering and rendering of animals for wholesale food market, storage, transport and retailing. Sanitary specifications of products.	Includes labelling requirements for meat from slaughterhouses.
Legislation and documents relevant to control programs and technical infrastructure	
Federal Animal Health Law (current version signed 2007)	Identifies SAGARPA as the Competent Authority and specifies the powers of SAGARPA.
NOM-046-ZOO-1995 National Epizootiological Surveillance System	Establishes the characteristics, criteria, procedures and operation of the National Epizootiological Surveillance System (SIVE). SIVE comprises official, approved and private veterinarians; diagnostic laboratories; Rural Development Districts; agencies and departments within SAGARPA; ports, airports, borders and other control points; state governments; veterinary professional organisations; slaughterhouses; certification agencies and members of the general public. SIVE covers notification, investigation and follow-up, and closure. Notifiable diseases are classified as Group 1, exotic diseases with mandatory immediate notification; Group 2, endemic or epidemic diseases with mandatory immediate notification; and Group 3, endemic diseases of mandatory monthly notification. The procedures of notification, follow-up

	and closure are described. Sanctions may be imposed for failure to comply with the provisions of this Standard
Technical and Operative Guidelines for the Inspection of Phytosanitary Quarantine Cordons	Describes the actions to be taken, and who is responsible. Includes verification and inspection of shipments of animals and animal products at federal verification and inspection posts on the quarantine cordons. The purpose of the cordons and inspection posts is to prevent transport of regulated animals, plants and merchandise that are not compliant with the requirements of the federal laws on animal and plant health, Mexican Official Norms, and national emergency provisions. Both commercial vehicles and private passenger vehicles are subject to inspection.