For Information

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LegCo Panel on Food Safety and Environmental Hygiene

BOVINE SPONGIFORM ENCEPHALOPATHY AND VARIANT CREUTZFELDT-JAKOB DISEASE – PRESENT SITUATION AND CONTROL MEASURES

Purpose

This paper briefs Members on the present situation of Bovine Spongiform Encephalopathy (BSE) and variant Creutzfeldt-Jakob Disease (vCJD) in Hong Kong and overseas and the actions taken by the Administration in dealing with the diseases.

BSE and the causative agent

2. BSE, also known as mad cow disease, is a fatal, neuro-degenerative, transmissible brain disease of cattle. The disease is classified as a Transmissible Spongiform Encephalopathy (TSE). The main clinical signs include fear, depression, hyper-reflexia, tremor, ataxia, hypermetria and reduced rumination. The average incubation period for the disease in cattle is 4-5 years. The TSE family of disease is also found in sheep and goats and is known as scrapie.

3. Epidemiological studies have suggested that the most important cause of the spread of BSE among ruminants (animals that chew the cud such as cattle, sheep and goats) is related to the consumption of animal feed containing ruminant-derived meat and bone meal[1].

[1] Meat and bone meal had long been used as a source of protein in feed prepared for livestock and poultry throughout the world. However, since the occurrence of BSE, there have been grave concerns over the use of meat and bone meal to feed cattle, sheep and goats. The European Commission has imposed a ban on the feeding of mammalian meat and bone meal to cattle, sheep and goats since July 1994.

4. It is believed that the causative agent of BSE is composed largely of a self-replicating protein, known as prion. This prion is resistant to freezing, drying and heating at normal cooking temperatures. It is also unlikely to be inactivated by normal pasteurization and sterilization. Prion affects brain and spinal cord of cattle.

5. The first BSE case was reported in the UK in 1986, but scrapie was first found more than 250 years ago. As of December 2000, approximately 180 000 cases of BSE had been reported in the UK. The incidence reached its peak in 1992 with more than 36 000 cases reported in the year. With a series of active control measures, the incidence has fallen sharply to about 1 100 cases reported in 2000, representing a 50% decrease compared to that in 1999.

6. BSE has also been found in a number of other countries in Europe. According to the statistics released by Office International Des Epizooties[2] (OIE) in mid February 2001, BSE has been reported in the following European countries: 587 cases in Ireland, 509 in Portugal, 367 in Switzerland, 245 in France, 35 in Germany, 22 in Belgium, 17 in Spain, nine in the Netherlands, three in Denmark, two in Italy, two in Liechtenstein, and one in Luxembourg.

7. There has not been any BSE case reported in Hong Kong. Up to now, all the confirmed BSE cases occurred in Europe.

Human Variant Creutzfeldt-Jakob Disease (vCJD)

8. Variant Creutzfeldt-Jakob Disease (vCJD) is a disease characterized by progressive neurological and psychiatric symptoms and is so called because of its similarities in clinical symptoms as compared to

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[2] The International Office of Epizootic Diseases, established in 1924, is an intergovernmental organization for animal health. Its missions are to (a) inform Governments of the occurrence and course of animal diseases throughout the world, and of ways to control these diseases; (b) coordinate, at the international level, studies devoted to the surveillance and control of animal diseases; and (c) harmonise regulations for trade in animals and animal products among Member Countries. In December 2000, it comprised 155 member countries including China.

the traditional form of CJD. However, in contrast to the traditional form, vCJD affects younger patients (average age 29 years as opposed to 65 years) and has a relatively longer duration of illness (median of 14 months as opposed to 4.5 months). Little is known about the incubation period between exposure to the infective agent and the emergence of symptoms.

9. Epidemiological evidence has suggested that vCJD is strongly associated with exposure to the BSE agent. The most likely mode is ingestion of food contaminated by affected bovine central nervous system tissue. On the other hand, the traditional form of CJD is not associated with beef consumption[3].

10. The first vCJD case was reported in March 1996. As of the end of January 2001, a total of 92 vCJD cases have been diagnosed worldwide, including 88 cases in the UK, three cases in France and one in the Republic of Ireland. No cases have been reported in other places.

Diagnostic Tests For BSE

11. Reliable diagnostic methods are essential for monitoring diseases. At present, the most reliable diagnostic test for BSE is postmortem examination of involved tissues, i.e., the brain of animals. In live animals, the only means is by clinical examination. However, there could be significant discrepancies when compared with the postmortem examination. There is still no reliable diagnostic test for BSE in live animals using specimens such as blood or urine.

BSE Risk in Consumption of Food

12. According to international authorities including OIE and the World Health Organization (WHO), the BSE agent should be prevented from entering the human food chain. Hence, high-risk parts which are

[3] 85-90% of the traditional form of CJD occurs sporadically, with 5-10% cases being familial and less than 5% are iatrogenic. A surveillance programme of CJD was set up by the Department of Health together with the Hospital Authority in 1996. Up to now, there have been 19 reported cases of the traditional form of CJD in Hong Kong. All cases of CJD reported as far were sporadic cases with no risk factors identified.

defined as Specified Risk Materials[4] should be prevented from human consumption.

13. According to the WHO, infectivity has not yet been detected in beef meat. Reassurance can be provided by removal of visible nervous and lymphatic tissues from meat. Furthermore, milk and milk products are considered safe. Tallow and gelatin, which can be used in the manufacture of margarine and sweets respectively, are also considered safe if prepared by a manufacturing process that has been shown experimentally to inactivate the transmissible agent.

Measures To Control BSE

Internationally adopted principles to control BSE

14. Since the mid 90s, scientists have gained considerable advances in BSE and vCJD research and a series of BSE control measures have been introduced in EU countries, especially in the UK. The UK has banned the feeding of ruminant-derived animal feed components to ruminants since 1988, and cattle suspected of having the disease were subsequently destroyed and incinerated. Details of the control measures adopted in the UK are at Annex A. WHO has recommended that all countries must prohibit the use of ruminant tissues in ruminant feed and must exclude tissues that are likely to contain BSE agent from any animal or human food chain.

Control Measures in Hong Kong

(a) Control measures over imported beef products

15. In Hong Kong, the import of beef is governed by the Imported Game, Meat and Poultry Regulations under the Public Health and Municipal Services Ordinance (Cap. 132). An official health

[4] Under the regulatory framework of the European Union, Specified Risk Materials refer to those tissues of cattle, sheep and goats that are potentially harbouring detectable BSE agent in experimentally infected animals, or tissues which might theoretically contain BSE infectivity in an infected animal. Examples of Specified Risk Materials are brain, eyes, tonsils, spinal cord and entire intestine.

certificate stating that the meat is fit for human consumption must accompany each consignment of imported beef.

16. The Food and Environmental Hygiene Department (FEHD), in line with recommendations of the relevant international authorities, including OIE and WHO, has imposed additional sanitary requirements on beef and beef products[5] imported from European Union (EU) countries which have reported cases of mad cow disease to prevent and control the spread of the disease in Hong Kong. Such BSE-specific safety assurance attestation should be incorporated in the health certificate accompanying each consignment of beef or beef product.

17. Under the present requirements, importers have to obtain prior approval from FEHD before importing beef or beef products into Hong Kong from countries with history of BSE. Importers are required to submit health certificates issued by recognized authorities stating that meat and bone meal is not used to feed cows in the exporting country, that all cows have passed antemortem inspection by veterinary officers and that specific high risk parts like brain and spinal cord have not been included in the consignment for export. The consignment in question can only be imported into Hong Kong after FEHD has assessed and approved the application. On arrival to Hong Kong, the consignment will first be held. FEHD will check the health certificates and inspect the consignment to ascertain that no specific high-risk parts like brain and spinal cord are contained therein before releasing it for sale. Details of the BSE-specific health assurance required in the health certificates accompanying the consignments of beef or beef products are at Annex B.

(b) Control measures over imported live cattle slaughtered in Hong Kong

18. All live cattle slaughtered in Hong Kong for fresh beef are imported from the Mainland. The Mainland is a BSE-free place. Since 1990, it has banned the import of live ruminants (including cattle and sheep) and their products including meat and animal feeds containing meat and bone meal from BSE infected EU countries. Since that year, it has also

[5] Beef products include the edible parts and offal of cattle.

prohibited the use of meat and bone meal for feeding ruminants. According to a report titled "Risk Analysis and Evaluation on BSE in China" (中國瘋牛病風險分析與評估) released by the Ministry of Agriculture, PRC, all Mainland cattle are fed on fodder of plant origin. The husbandry practice is that meat and bone meal is not used in the feeding of ruminants which include cattle.

19. In the Mainland, cattle for export must come from registered farms and be inspected and certified by the State Administration for Entry Exit Inspection and Quarantine of the People's Republic of China (CIQ SA) to be free from any clinical signs of diseases including BSE before leaving the farm. Cattle arriving at the border have to be inspected again by Shenzhen CIQ. When the live cattle are imported into Hong Kong, FEHD checks the imported live cattle to make sure that they are clinically healthy and accompanied by Animal Health Certificates issued by the CIQ SA certifying that the animals are free from clinical signs of diseases. Before slaughtering, FEHD also conducts antemortem inspection. Since April 2000, FEHD and CIQ SA have put in place a new ear tag system for cattle which enables the Department to trace individual imported cattle to the farm of origin.

(c) Control on the use of Meat and Bone Meal

20. There is no beef cattle or sheep industry in Hong Kong. Meat and bone meal has been used as a protein supplement for poultry and pigs in Hong Kong. However, according to the information provided by local farmers, most feed suppliers now use fish meal rather than meat and bone meal as the source of animal protein in livestock feed. Pigs and poultry are not naturally susceptible to TSE and therefore are not regarded as a cause of vCJD in man.

21. The majority of the imported animal feed in Hong Kong is from the Mainland. On 1 January 2001, the EC introduced a temporary ban on the sale and export of meat and bone meal from member countries. This provides a safeguard against the import into Hong Kong of potentially contaminated meat and bone meal from the EU. The Agriculture, Fisheries and Conservation Department has informed local feed manufacturers and suppliers of EU's ban on the export of meat and bone

meal. It has also advised traders not to import meat and bone meal from areas where BSE is known to occur. Livestock farm associations have also been reminded not to use such meal for feeding their livestock.

Implications on the Beef Supply in Hong Kong

22. The introduction of the above control measures should have little impact on the beef supply in Hong Kong since the majority of our beef comes from Brazil, the Mainland, USA, New Zealand and Australia. In 2000, Hong Kong only imported beef from three EU countries, namely, the Netherlands, Denmark and Belgium, which accounted for about 0.7% of the total quantity of imported beef. There has been no beef imported from UK since March 1996.

Recent concern over BSE

23. Since late 2000, there has been an upsurge in BSE cases in many countries, except the UK, across Europe. For example, the number of BSE cases in France increased from 31 in 1999 to 161 in 2000. Denmark, Germany, Spain and Italy also reported their first native BSE case in 2000. Although the increase in the number of reported BSE cases is partly due to the improved BSE surveillance and testing programme launched in the year, it has aroused concern among the public regarding the adequacy of BSE control. The EC has been stepping up measures to control BSE. These measures include the requirement to remove Specified Risk Materials from cattle, sheep and goat from human and animal food chain from 1 October 2000. Details of the EC measures are at Annex C.

24. The Administration considers that the BSE-specific control measures on beef and beef products as recommended by the OIE and WHO are effective at the moment. The Administration will continue to closely monitor the situation in the EU and the international authorities' recommendations and findings, and maintain liaison with the concerned consulates. Additional control measures, including a ban on import of beef and beef products from BSE infected countries, would be taken if necessary.

25. As a precautionary measure, we intend to amend the Public Health (Animals and Birds) Ordinance (Cap 139) to strengthen controls over potentially hazardous components in animal feed.

Environment and Food Bureau
Agriculture, Fisheries and Conservation Department
Food and Environmental Hygiene Department

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Annex A

BSE control in the UK

As the first country where BSE was notified, the UK banned the use of ruminant proteins in feeds for ruminants in 1988 and the incorporation of certain "high risk" bovine offal and materials into any animal feed in 1990 and 1996 respectively. In 1997, Mammalian Meat and Bone Meal were excluded in feeds for all farmed livestock to prevent cross-contamination and propagation of BSE.

2. The Over Thirty Month Rule (OTM) was introduced in 1996. It prohibits the sale of meat for human consumption from cattle aged over 30 months. This rule is derived from the knowledge that the incubation period of BSE is 4-5 years and the time of BSE onset rarely occurs in cows younger than 30 months.

3. The Specified Risk Material Regulations (SRM) prohibit the use of SRM, which includes those tissue of cattle, sheep and goats that are potentially harbouring detectable BSE agent, or sale of SRM for use in the preparation of food for sale for human consumption. SRM of cattle is defined as the entire head excluding tongue, tonsils, thymus, spleen, entire intestine and spinal cord of animals aged over 6 months, and vertebral column including dorsal root ganglia of animals aged over 30 months.

4. Other BSE control measures include destruction of affected animals, and culling of their offspring and the animals of the same herd.

Annex B

BSE specific Health Assurance for Imported Beef and Beef Products

For beef and beef products imported from high BSE incidence countries (i.e. UK), the additional health assurance include -

(a) The beef is deboned, or the beef products are derived from deboned meat.

(b) Cattle from which the beef or beef products are derived are not the progeny of BSE suspect or confirmed females.

(c) A beef/beef product tracing system back to the establishments is in operation in the source country.

(d) Cattle/beef products can be identified or traced back to the original herd in the source country.

(e) Ante-mortem inspection is carried out on all bovines in the source country.

(f) Feedings of cattle with meat and bone meal and grease derived from ruminants has been banned and effectively enforced in the source country.

(g) All BSE affected cattle and their progeny have been slaughtered and completely destroyed in the source country.

2. For beef and beef products imported from low BSE incidence countries (i.e. all EU countries except Finland, Sweden, Greece and Austria where there are yet any reported BSE cases), the additional health assurance include -

(a) No mammalian meat and bone meals have ever been used for feeding the cattle from which the beef or beef products are derived.

(b) The beef and beef products do not contain any Specified Risk Materials.

(c) The cattle from which beef or beef products are derived have been subject to ante-mortem and post-mortem inspections in the source country.

Annex C

European Commission's control over BSE

The European Commission has been stepping up measures to control BSE, which are summarized below -

(a) Following a ban on the feeding of mammalian meat and bone meal to cattle, sheep and goats since July 1994, the ban has been extended to cover all farm animals for the period 1 January 2001 to 30 June 2001;

(b) Specified high-risk materials, i.e., SRM including spinal cord, brain, eyes, tonsils, and intestines, from cattle, sheep and goats should be removed from human and animal food chains throughout EU starting from 1 October 2000.

(c) A targeted post-mortem testing for BSE, with a focus on high-risk animal categories, has been put into place from 1 January 2001 (this measure will be reviewed and extended to all cattle aged over 30 months entering the food chain from 1 July 2001);

(d) Dead animals not fit for human consumption are prohibited to be used for feed production starting from 1 March 2001;

(e) Authorizing that under certain conditions animal proteins other than ruminants hydrolysed protein can be used in animal feed as from 1 March 2001, thus providing for exception to the suspension on the use of certain animal proteins in animal feed imposed on 1 January 2001;

(f) Heat treatment of tallow for animal feeds (133 degrees, 3 bars of pressure, 20 minutes) will be imposed with effect from 1 March 2001;

(g) Vertebral column of bovines aged over 12 months has to be removed at the latest at the butchers with effect from 31 March 2001; and

(h) A ban on the use of mechanically recovered meat[1] from all bones of ruminants in food and feeds will be imposed with effect from 31 March 2001.

2. Apart from the above measures, the Commission is considering a "purchase for destruction" scheme to remove from the food chain all cattle aged over 30 months unless they have been tested for BSE to ensure additional guarantees and to rebalance the beef market.

[1] Mechanically recovered meat (MRM) is obtained by recovering residually adhering raw meat from bones under high pressure after boning processes and usually found in low cost meat production. If tissue of the nervous system is included, there may be a theoretical risk associated with consumption of MRM.