

Bovine Spongiform Encephalopathy (BSE)

What is BSE?

BSE is a fatal disease of the central nervous system of beef and dairy cattle. The more common name, "Mad Cow Disease," stems from the symptoms seen in afflicted cattle; including difficulty in walking, and behaviour changes such as nervousness and aggression.

What causes BSE?

BSE is one of a number of diseases known as Transmissible Spongiform Encephalopathies, or TSEs. TSEs are rare brain diseases that are caused by the accumulation of abnormal protein in the brain. In addition to BSE, other forms of TSEs include chronic wasting disease in elk, scrapie in sheep, and Creutzfeldt-Jakob Disease (CJD) in humans.

While the cause of the disease is not yet known, the term prion — for proteinaceous infectious particle — was coined to describe the infectious agent thought to be responsible. A BSE inquiry concluded that the most likely source of the outbreak in the United Kingdom (UK) was gene mutation resulting in a novel TSE agent, which was then recycled throughout the cattle population through rendered protein meal used as a protein additive in feeds in that country.

BSE and humans — What's the link?

In humans, the most common TSE is Creutzfeldt-Jakob Disease or CJD. CJD is a rare disease that leads to degeneration of the central nervous system and is always fatal. The most common form of CJD is classical CJD (cCJD). There are three different forms of cCJD which have been known for many years and are not related to the consumption of beef or meat.

Between 25 and 35 people die from classical CJD in Canada each year, about 1 case per million people, the same level of incidence that is found in the rest of the world. There is no evidence that the number of cCJD cases is increasing in Canada.

A fourth form of CJD, called variant CJD (vCJD), was first documented in the UK in 1996. Classical CJD (cCJD) and variant CJD (vCJD) are different TSEs. Only the new variant CJD has been linked to infected beef and beef products. For more info on CJD, see the CJD factsheet at www.bseinfo.ca.

What is the risk of contracting vCJD from eating Canadian Beef?

Canada's food safety system is designed to protect the safety of Canadian beef. Tissues that may contain the BSE agent and may transmit the disease are removed from all cattle at slaughter as a precautionary measure. The removal of this specified risk material (SRM) prevents those tissues capable of having BSE infectivity from entering the food chain. This policy is recognized by Health Canada as having the most direct impact in protecting human health.

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What safeguards are in place in Canada?

Experts agree that there is no risk of a BSE epidemic in Canada or the U.S. like that which occurred in the U.K. The Government of Canada has continued to increase its safeguards to stop the potential spread of this disease to other animals and to the human food chain. The safeguards are:

- Removal of specified risk material
 - Import controls to restrict exposure to BSE
 - Surveillance of cattle for BSE to determine the prevalence of the disease
 - Feed ban to stop the spread of BSE
 - Cattle identification program
- **Protection of public health — removal of Specified Risk Material**
The removal of specified risk material (SRM) from all cattle at slaughter prevents those tissues capable of having BSE infectivity, from entering the human food supply.
 - **Import controls on cattle and beef to restrict exposure to BSE**
In 1990, Canada restricted the importation of cattle from the United Kingdom and Republic of Ireland. Over the following years, the Canadian Food Inspection Agency (CFIA) continued to bolster Canada's BSE safeguards, expanding the regions from which animals, certain feeds and ruminant products were restricted. Although a low level of BSE had already entered North America prior to 1990, the measures taken since that time effectively restricted the subsequent entry of further BSE into Canada.
 - **Surveillance of cattle**
BSE was made a reportable disease in 1990 and in 1992 a National BSE Surveillance Program was implemented. Canada's surveillance program (i.e. testing) is a tool to determine the prevalence of BSE in Canadian cattle and the effectiveness of the measures in place to lessen the spread of the disease through the cattle population. Surveillance testing is sometimes confused as a food safety measure. The single most important measure to protect the safety of beef is the removal of SRM.
Surveillance testing seeks out - on farm, at rendering plants and abattoirs - cattle most at risk for BSE. Since 2003, Canada has tested over 200,000 higher risk animals as part of their surveillance program. These testing levels exceed the guidelines set by the OIE (Office International des Epizooties), the world scientific reference body for animal health.
 - **Feed ban to stop the spread of BSE**
The mode of transmission believed to cause the spread of the disease – feeding ruminant-based meat and bone meal feed ingredients to other ruminants (cattle, sheep etc.) – was banned in Canada in 1997. On June 26, 2006, the CFIA amended the existing feed controls by banning specified risk materials (SRM) from all animal feeds, including pet food, and from fertilizer.
 - **Cattle Identification Program**
The Canadian Cattle Identification Program, a program for individually identifying all cattle in Canada, was introduced in 2001 by the cattle industry to speed up the tracing, containment and elimination of any serious disease of cattle should it arise.

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What is the history of BSE in Canada?

There have been a number of BSE cases in domestic cattle in Canada. The first case was in May 2003 in a beef cow in Alberta. In January 2005, the Canadian Food Inspection Agency (CFIA) confirmed two cases – one in an older dairy cow from Alberta; the other in a beef animal in central Alberta. In 2006, there were five cases of BSE. Three cases involved mature cross-bred animals and two were dairy cows. In 2007, three animals were confirmed as having BSE; one in a mature beef cow in Alberta, one in a mature bull from Alberta, and the other a mature dairy cow from British Columbia. In 2008 there were four cases: in February a dairy cow in Alberta; in June a dairy cow in British Columbia; in August a beef cow in Alberta; and in November a dairy cow from British Columbia. In May of 2009 there was a case in a 80 month old dairy cow from Alberta. In each and every case, no part of the animal entered the human or animal feed systems.

The Canadian Government says these cases do not mean there is an increased risk to food safety, due to the extensive public health safeguards in place. A few additional cases of BSE may be found as the CFIA continues to test those animals at greater risk for the disease. As well, all necessary precautions continue to be taken to prevent BSE from impacting Canadian food safety. For additional information please visit www.bseinfo.ca.