

# BSE

## Frequently Asked Questions

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Discussion and commentary raise important questions about the occurrence and spread of BSE. Here are answers to commonly asked questions.

### **What is BSE?**

BSE, or bovine spongiform encephalopathy is a transmissible spongiform encephalopathy (TSE). There are at least five recognized TSEs in humans and at least five recognized TSEs in animals. BSE is an infectious disease of the central nervous system of cattle. The disease is sometimes referred to as “mad cow disease,” but this name is scientifically inaccurate. Bovine refers to cattle, spongiform refers to a sponge-like appearance, and encephalopathy is disease of the brain. The disease is thought to be caused by a prion, which is very different from a virus, bacteria or protozoa, the common causes of infectious diseases.

### **What is a prion?**

Scientists believe prions are naturally occurring, self-replicating proteins that fold upon themselves. Under this theory, how the proteins fold determines whether the prions are infectious and how infectious they are. Prions cause BSE by causing metabolic changes in cattle, most importantly metabolism in the brain. Prions prevent the brain from functioning as it should. These metabolic changes result in “vacuoles” or voids in the brain, leading to the name spongiform encephalopathy. BSE has a relatively long incubation period (4-6 years). Typically, only adult cattle show clinical symptoms of BSE.

### **What tissues are the prions present in?**

Scientists believe prions are primarily in the brain and spinal cord of adult cattle.

### **How is BSE spread?**

Research in Britain suggests that BSE is spread when affected tissue, primarily central nervous system tissue from infected animals, is consumed by other ruminants early in life. Animal-to-animal spread through close contact has not been documented.

### **What safeguards are in place to protect the U.S. beef supply?**

The U.S. system for detecting and controlling BSE is based on what’s been learned about the disease in Britain and other countries. The U.S. implemented multiple hurdles to prevent the entry and spread of BSE. These include import restrictions on cattle, import restrictions on ruminant meat and bone meal, and other materials from countries with BSE; a ban on feeding most rendered ruminant protein back to ruminants; and a surveillance program. These measures are designed to prevent the entry and multiplication of BSE in the United States.

On Dec. 30, 2003, the USDA announced additional safeguards to bolster the U.S. protection systems against BSE, including a ban on “downer” animals in the food supply, changes in how animals that are tested for BSE are handled, and new regulations for meat processors to provide additional safeguards to prevent central nervous system tissue from entering the food supply. See [www.usda.gov](http://www.usda.gov).

### **What were the regulations concerning the slaughter of non-ambulatory (downer) cows?**

Non-ambulatory or “downer” cows are cattle presented for slaughter that are unable to stand. As of Dec. 30, 2003, the USDA has ruled that non-ambulatory cattle will no longer be allowed in the food supply. Previously, non-ambulatory cattle could enter the food supply after they passed USDA Food Safety and Inspection Service inspection.

### **How many cattle are tested annually for BSE?**

To date, USDA reports testing 20,526 animals for BSE in 2003. Most testing focuses on older animals because of the relatively long incubation period associated with BSE.

### **What is the mammalian protein feeding ban?**

Because the primary theory on the spread of BSE focuses on the feeding of infected meat and bone meals, the Food and Drug Administration implemented a ban on the feeding of most mammalian protein to ruminants in 1997. This effort was to stop the potential spread of BSE by banning the feeding of meat and bone meal that may contain central nervous system tissues, such as brain and spinal cord. The law states that meat and bone meal produced from ruminant animals (cattle, sheep, bison, deer, elk) cannot be fed to ruminants.

On Jan. 26, 2004, the FDA announced new feeding regulations which banned inspected meat products cooked and



offered for human consumption (including plate waste and food casings) and further heat-processed for livestock feed. In addition, FDA also banned the use of blood and blood byproducts in ruminant feeds. FDA has also banned the practice of feeding poultry litter to ruminant animals because it may include spilled feed containing banned protein products. For the latest information regarding these new safeguards see: [www.hhs.gov/news/press/2004pres/20040126.html](http://www.hhs.gov/news/press/2004pres/20040126.html) .

### What materials are cleared for feeding?

- Non-mammalian tissues, including marine (fish), poultry and vegetable proteins
- Non-protein or non-tissue feedstuffs, such as grease, tallow, amino acids, dicalcium phosphate, fats and oils
- Protein from pigs and horses
- Milk and milk products

### What materials are prohibited for feeding?

- Meat
- Glandular meal
- Meat and bone meal
- Meat by-products
- Meat and bone meal tankage
- Hydrolyzed hair
- Cooked or steamed bone meal
- Bone marrow
- Leather meal
- Plate waste and food casings
- Blood and blood byproducts

### What records on purchased feed supplements should producers keep?

Producers are required to keep records of purchased feedstuffs as part of the federal regulation. Sales invoices and feed labels should be kept for at least one year after purchase. These will be valuable in the event of an audit or traceback situation involving BSE.

### What is the potential link between BSE and nv-CJD?

Some researchers theorize that BSE is linked to a human disease called new variant (nv) Creutzfeldt-Jakob disease. Pathological similarities exist between the two conditions. This leads scientists to speculate that the two conditions are related. However, a definitive link between BSE and nv-CJD has not been established. The risk of acquiring nv-CJD from eating beef in the United States is extremely low. There have been no cases of nv-CJD reported in the United States. Another transmissible spongiform encephalopathy afflicting humans is CJD. It is important to note that CJD and nv-CJD are two different conditions, and their only link is a similarity in name.

### For more information:

NDSU – [www.ext.nodak.edu/extpubs/ansci/beef/as1206w.htm](http://www.ext.nodak.edu/extpubs/ansci/beef/as1206w.htm)

USDA – [www.usda.gov](http://www.usda.gov)

FDA – [www.fda.gov](http://www.fda.gov)

Association of American Feed Control Officials, Inc. – [www.aafco.org](http://www.aafco.org) (click on Current News)

The Animal and Plant Health Inspection Service's site on BSE— [www.aphis.usda.gov/lpa/issues/bse/bse.html](http://www.aphis.usda.gov/lpa/issues/bse/bse.html)

Canadian Food Inspection Agency BSE Update site — [www.inspection.gc.ca/english/toce.shtml](http://www.inspection.gc.ca/english/toce.shtml)

Case of BSE in the United States

## Chronology of Events

**December 9, 2003** – A non-ambulatory dairy cow believed to be about 4½ years old arrives at Vern's Moses Lake Meats, a slaughter plant in Moses Lake, Washington. The animal's condition is attributed to complications from calving. Consistent with USDA's standard testing protocols for BSE, tissue samples are taken from the animal.

**December 11** – Samples from the animal arrive at USDA's National Veterinary Services Laboratories (NVSL) in Ames, Iowa. Because the animal had no neurological signs at slaughter, it was not considered to be a higher priority for BSE and the samples were placed in the normal queue for testing.

**December 22** – Preliminary test results are positive for BSE; NVSL conducts further testing.

**December 23** – Further test results are positive for BSE. USDA Secretary Ann Veneman announces a "presumptive positive" case of BSE. A sample from the animal is hand-carried to the United Kingdom for final confirmatory testing at the BSE world reference laboratory in Weybridge, England. APHIS' epidemiological investigation begins. A quarantine is placed on the herd in Mabton, Wash., in which the index animal had last resided.

**December 24** – USDA's Food Safety and Inspection Service initiates a Class II (voluntary) recall of meat (10,410 pounds) from the group of 20 animals slaughtered on December 9 at Vern's Moses Lake Meats. USDA determines disposition of three calves from index animal. One died shortly after birth in October 2001. One is a yearling heifer in the index herd in Mabton, Wash., which is under state quarantine. The third is the most recently born calf, a bull calf, and is in a herd in Sunnyside, Wash., which is placed under state quarantine.

**December 25** – United Kingdom world reference laboratory confirms USDA diagnosis of BSE.

Traceback of index animal continues. It is believed likely that the index animal was purchased into Mabton herd from a dairy cattle finishing farm in Mattawa, Wash. The other, less likely possibility is that it came from an area livestock market.

**December 27** – USDA's traceback investigation indicates that the affected cow was likely imported from Canada in 2001 and that she was likely 6½ years old rather than 4½ years old as the last owner's records had indicated. Investigative efforts continue and involve Canadian officials.

A USDA team departs Washington for Japan to pursue trade talks.

**December 30** – USDA announces additional safeguards to bolster the U.S. protection systems against BSE.

**January 29, 2004** – FDA announces additional safeguards to bolster the U.S. protection systems against BSE.

### Important Facts Regarding the Investigation

- USDA's primary line of investigation still leads to a farm in Alberta, Canada. Canadian officials are assisting with the investigation. Records now indicate that the index cow was one of 82 approved for import into the United States. They were imported into the United States in two groups. The first group of 74 contained the index cow; another group of 8 was imported at a later date. USDA is now tracing all 82 animals.
- If the index cow is the one associated with Canadian records, then its age is 6½.
- Eighty percent of the beef involved in the recall associated with the index cow was sold in Washington and Oregon. USDA has indicated that central nervous system tissue from this cow did not enter the human food chain. The risk to human health from this case is very, very low.

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