

BSE Information for Consumers

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*** What is BSE?**

Commonly called mad cow disease, bovine spongiform encephalopathy (BSE) is a disease of cattle which causes a degeneration of brain tissue, inability to move or function normally and eventual death.

*** What causes BSE?**

It is caused by a small piece of protein called a prion. Prion proteins are normally present in the brain, but with BSE, these proteins are changed in structure and become much more resistant to destruction, while at the same time interfering with brain function. They gradually spread within the brain and convert normal prions into abnormal prions.

*** Does BSE affect humans?**

Yes. Although, of course, there have been no cattle to human transmission studies, there is strong scientific evidence that BSE can affect man. The disease in man is called “new variant CJD” or variant Creutzfeldt Jakob disease. There have been approximately 150 people affected with vCJD, most from the U.K. where BSE originated and became very widespread in the beef production system before controls were implemented.

Interestingly, all persons afflicted with vCJD have had the same genetic structure at codon 129 (met/met). This would appear to indicate that persons who do not carry this specific genetic makeup may have increased resistance to vCJD.

BSE has been experimentally transmitted to mice, cats, mink, sheep, goats, marmosets, and monkeys. It has not occurred in poultry, swine, dogs, or horses.

*** How is it transmitted?**

The only known natural route of infection is orally, by ingestion. BSE was amplified in the U.K. cattle population by the feeding of rendered meat and bone meal from infected, slaughtered cattle to non-infected, live cattle. The only tissues identified as infective are brain, spinal cord, and the retina of the eye from infected cattle. These tissues may also contaminate other non-infected tissues through mishandling or mixing.

The BSE prion has never been found in muscle, blood, or milk.

There is no evidence that BSE spreads directly from one cow to another. But, if one animal is found positive, the entire herd is quarantined and an investigation initiated.

The best scientific evidence indicates that the route of transmission from cattle to humans is by eating infected tissues or prion-contaminated meat products.

*** What is the incubation period?**

The incubation period in cattle is usually 2 1/2 to 6 years, so the peak of disease occurs in cattle 4-5 years old.

In man the incubation period is thought to be 8 to 10 years, but could be twice that long or longer.

*** Why is age at slaughter an important consideration in regard to risk of BSE?**

Because of the long incubation period, infected cattle have rarely been found at less than 30 months of age. Approximately 80% of the cattle slaughtered in the U.S. are under 30 months old and would not be potential transmitters, even if the disease were present in this country. Most cattle are slaughtered at 12-18 months of age.

*** Why is the concern for BSE different than that of other pathogens in regard to food safety?**

The prion causing BSE is not destroyed by the usual cooking methods that would control bacterial or viral foodborne illness. Although the prion does not multiply and increase in numbers during storage, it must be kept completely out of the food supply, period. It cannot be destroyed in the kitchen.

*** Should I stop serving beef to my family?**

The risk level of buying beef containing BSE prions is extremely low to nonexistent. Most roasts and steaks found in grocery stores are from young animals that are not a potential problem. Controls are in place for the handling of meat from older animals. Beef remains an economical source of valuable nutrients.

*** Aren't there tests available to test cattle for BSE?**

There are several relatively rapid tests available and some have been used extensively in other countries where there have been multiple cases of BSE in cattle. All of these tests can only be used on brain tissue, after the slaughter of the animal. USDA is concerned that these tests may mis-classify some infected cattle as being clean and thus allow them to enter the food chain. Therefore, other protective measures are being used to keep potentially infected cattle out of the food system and to prevent any contamination from infected tissues to wholesome meat products.

The testing at slaughter of cattle over 30 months of age may help consumer assurance of food safety. Some consider that to be going beyond what is needed.

USDA is continuing to target tests for BSE on high risk cattle so the prion will be found if it is present in the cattle population. High risk animals would include adult cattle showing any signs of brain disease and non-ambulatory or disabled cattle.

One company has just announced they have a test that can be used on a blood sample from a live animal. If this should eventually prove to be true after further research, it would be a great aid in prevention of BSE.

*** What protective measures have been implemented to maximize food safety?**

** Importation of live cattle or ruminant animal products has long been prohibited from countries which have BSE.

** The feeding of meat and bone meal from cattle back to cattle has been prohibited since 1997. If no infected tissues are fed, there will be no amplification of BSE in cattle. Concerted efforts have educated those involved in cattle feeding and feed supply positions on what is prohibited and why. Most problems have long since been resolved. But other safeguards are also in place, in case there is a mix-up, mistake, or wanton disregard of feeding ruminant protein to cattle.

** Testing of brain tissue has been done for many years on cattle which are most likely to have BSE, especially those showing impaired brain function. Over 20,000 cattle were tested in 2003 and that is how the one case was found. More testing will now be required. However, it will be directed at finding positive cases rather than using testing as a guarantee for food safety.

** Non-ambulatory or disabled cattle are now prohibited from entering the human food supply. In the past, some of these cattle could go to slaughter but were then tested for BSE. They will now be kept completely out of the food supply.

** Mechanical recovery and high pressure separation of meat from the bone, after slaughter, is now greatly restricted, especially for cattle over 30 months of age. These methods of meat removal have a greater potential to remove small pieces of spinal cord tissue next to the vertebrae. This age of cattle would have a greater potential for BSE-infected tissue to be present.

** Some specific tissues are now prohibited for human food consumption. This includes tonsils and small intestine, which are prohibited from all animals. In addition, skull, brain, eyes, spinal cord and certain other tissues from all cattle that are over 30 months of age cannot be used. Butchering methods are being modified in older animals to not include the backbone so as to avoid contamination from the spinal cord.

** A system of animal identification will be implemented. This does not provide direct protection, but will provide information if an animal tests positive or even as a suspect BSE case. The animal can then be traced back to its farm or ranch of origin and to any other sites where it resided. Further information can then be gathered and any other infected animals prevented from entering the food market system.

*** Most of the information and regulations have come nationally, from the USDA and FDA. What about cattle slaughtered here in Utah?**

Utah has a “meat inspection” system that must be equal in requirements to the USDA national system. Cattle slaughtered in the state system are NOT eligible for the meat or meat products to be shipped out of Utah. This inspection and regulatory system is administered by the Utah Department of Agriculture and Food.

*** What can I do, as a consumer, to help protect myself and family?**

Become informed. Ask questions about procedures or issues you don't understand. Your local County Extension Service office will assist you in finding information to answer your questions.

If you become aware of actual or potential violations in the feeding or marketing system, contact the Utah Department of Agriculture and Food to report your concern.

Realize this is a complex issue and in media reports of specific events some details may be left out. Often those details would better explain why some of the actions were or were not taken.