

TSE Freedom Assurance Project

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Animal Biosecurity, NSW DPI

What are TSEs?

TSEs (transmissible spongiform encephalopathies) or prion diseases are a group of rare brain diseases caused by infectious protein particles known as prions that lead to the formation of tiny holes in the brain that can be seen under a microscope. These diseases are progressive and lead to neurological signs and death.

Prion diseases have been described in humans, cattle, sheep, goats, deer and other mammals and there is no vaccination or treatment.

TSEs are prohibited matter in NSW under the *Biosecurity Act (2015)*. There are mandatory measures in the Biosecurity Regulation (2019) to prevent TSEs occurring in Australia. Everyone involved in the ruminant value chain has a general biosecurity duty to ensure that, so far as is reasonably practicable, the risk of TSEs occurring in NSW is prevented.

Why we need surveillance in Australia

Australia is currently free from TSEs, including BSE in cattle (Bovine spongiform

encephalopathy or 'Mad cow disease') and scrapie in sheep and goats. The presence of these diseases overseas, particularly in the United Kingdom, led to extensive damage to their domestic and export markets and the slaughtering of affected animals. Similar losses would be expected to occur in Australia if TSEs were to infect our sheep and cattle. The existence of BSE also has major public health risks as the infectious agent responsible for the disease in cattle is implicated as the cause of a human TSE known as variant Creutzfeldt-Jakob disease (vCJD). Variant Creutzfeldt-Jakob disease is a rapidly progressive TSE that affects some people after they consume meat products from BSE affected cattle.

Appropriate surveillance measures for TSEs in Australia allow us to demonstrate to export markets that our animals and animal products are free from TSEs. This increases the number of export markets available to Australia and therefore benefits producers and the economy. Adequate surveillance is also important for early detection and intervention should a TSE be found in Australia.

The important public health issues surrounding BSE are other reasons why surveillance for TSEs is vital in Australia.

National TSE Freedom Assurance Project (NTSEFAP)

The NTSEFAP has been developed with the following aims:

- prevent TSE entry to Australia
- increase our levels of surveillance for TSEs
- reduce/eliminate the risk of spread among animals, and between animals and people, should a TSE occur in Australia
- increase public awareness and understanding of TSEs and the importance of surveillance and prevention measures.

The preventative and surveillance strategies included in the NTSEFAP help to prove that Australia is TSE free and boosts our export opportunities.

National TSE Surveillance Project (NTSESP)

Australia has operated surveillance programs for BSE and scrapie for many years. The NTSESP is an active surveillance program managed by Animal Health Australia and developed to demonstrate Australia's ongoing freedom from BSE and scrapie. The NTSESP also serves as a means for early detection of BSE and scrapie should these diseases occur in Australia.

The program involves field investigations by government and private veterinarians of animals wherever there is suspicion of TSE based on clinical signs.

BSE in cattle

The main clinical signs associated with BSE in cattle are:

- increased nervousness
- staggering gait
- increased sensitivity to touch and sound
- muscle tremors.

Cattle can be infected with BSE long before displaying clinical signs; signs usually appear in animals older than 2.5 years of age.

Although the above signs are the main clinical features associated with BSE, testing can be carried out on any cattle that fit the following criteria:

- 30 months of age or more
- refractory to treatment, and
- display one or more of the following clinical signs.

Behavioural	Neurological
Apprehension	Abnormal ear position
Changes in herd hierarchal status	Abnormal head carriage
Excessive nose or flank licking	Altered consciousness
Excitability	Staggery gait
Frenzy	Blindness
Head rubbing or pressing	Circling
Head shyness	Falling
Hesitation at doors, gates, barriers	Fetlock knuckling
Persistent kicking when milked	Increased sensitivity to sound and touch
Teeth grinding	Decreased sensitivity to sound and touch
	Moribund without evidence of infection or trauma
	Paralysis/paresis
	Recumbency
	Tremor

Scrapie in sheep

The main clinical signs associated with scrapie in sheep are:

- persistent itching
- staggering gait
- wasting.

There is usually a gradual onset of clinical signs in sheep over 1.5 years of age. Just like cattle with BSE, sheep can be infected with scrapie long before clinical signs appear.

Sheep that fit the following criteria are eligible for TSE testing:

- 18 months of age or more, and
- display one or more of the following clinical signs.

Mental status	Sensation	movement
Altered consciousness	Blindness	Abnormal head carriage
Apprehension	Increased sensitivity to sound and touch	Staggery gait
Behaviour change	Decreased sensitivity to sound and touch	Circling
Frenzy	Rubbing	Falling
Moribund without evidence of infection or trauma	Itching	Recumbency (lying down and will not get up)
Temperament change	Wool loss (flank and hindquarter)	Tremor
		Fetlock knuckling
		Paralysis/weakness

The role of veterinarians

The Australian NTSESP currently requires a total of approximately 400 brains from eligible cattle and 450 brains from eligible sheep to be submitted for TSE testing to assure the international community that Australia is TSE-free.

Government and private veterinarians are required to submit brains and a section of

spinal cord from animals that fit the above criteria. In New South Wales the appropriate samples along with a clinical history and post mortem report should be sent to a Department of Primary Industries State Veterinary Diagnostic Laboratory for examination. As many other specimens as necessary to obtain a diagnosis should also be submitted. ([See NTSESP Field Guidelines for sampling techniques and essential sites for TSE testing](#))

Incentives for producers and veterinarians

The NTSESP offers incentives for:

- Producers who provide eligible animals for sample collection
- Veterinarians who submit appropriate samples for TSE testing.

Producers receive \$300 for eligible cattle and \$100 for eligible sheep. As well as providing a TSE negative status for the producer’s herd/flock, the NTSESP gives producers the added benefit of obtaining a diagnosis for the disease affecting their sheep and/or cattle at no extra cost.

Veterinarians receive \$100 for documenting post mortems, \$200 for cattle and \$100 for sheep for each brain removal performed, and \$25 for freight

Restricted animal material (RAM)

Restricted animal material is any material taken from a vertebrate animal other than tallow, gelatine, milk products or oils extracted from poultry and fish. It includes rendered products such as blood meal, meat meal, meat and bone meal, fish meal, poultry meal, feather meal, and

compounded feeds made from these products.

Australia currently has a ban on feeding restricted animal materials to **all** ruminants. The definition of feeding has been broadened so that you must not allow ruminants to have access to restricted animal material unless it is not reasonable and practical to prevent that access. For example, ruminants must be prevented from accessing dog food, effluent containing vertebrate material such as blood or feathers and other similar examples. However it is not reasonable and practical to prevent a cow licking a calf, sheep ingesting faeces or urine deposited naturally on the pasture by another sheep, cow eating its placenta, finding old bones of wildlife or herd mates and other similar examples. The ban is in place to prevent the transmission of BSE in the unlikely event it might occur in Australia. BSE was spread in the UK and elsewhere in Europe through feeding cattle meat and bone meal derived from BSE infected cattle. Dietary exposure to feedstuffs containing infected blood and bone meal is the only significant method shown to spread BSE.

To assess the level of compliance with the feed ban legislation, audits are regularly conducted on samples from each sector of the livestock industry including farms, rendering establishments, stockfeed manufacturers, and stockfeed resellers. Results from audits performed so far show that the level of compliance with the feed ban is currently very high. Australia also has a ban on the importation of meat and bone meal, meat meal, greaves, and stock

feeds of animal derived materials (except materials such as milk and milk products) from all countries except New Zealand. This is a precautionary measure for reducing the likelihood of introducing TSEs.

Monitoring imported animals for BSE

Cattle which were imported from countries which subsequently were found to have BSE were ordered into permanent lifetime quarantine under the Commonwealth *Biosecurity Act 2015*. The owners were given specific instructions that these cattle were not to enter the human or animal food chains. Australia has since banned the importation of cattle from all countries where BSE has been found to occur. These imported cattle have been placed under lifetime quarantine surveillance. There are no restrictions on progeny, semen, embryos, or milk collected from the cattle and no limitations on cattle movement between properties.

These cattle are identified on the National Livestock Identification System (NLIS) database as being from a BSE affected country. This identification ensures they do not enter the human or animal food chains.

Owners of such cattle are contacted at least every six months by an authorised officer to determine the health and wellbeing of the cattle.

The owner must contact a district veterinarian or Government stock inspector if the animal is to be destroyed or dies. Disposal of the carcass must be witnessed by an authorised officer.

More information

- Animal Biosecurity, Department of Primary Industries, phone 1800 680 244 or email at animal.biosecurity@dpi.nsw.gov.au
- Local Land Services, see <http://www.lls.nsw.gov.au/>

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