

## **REPORT ON THE INVESTIGATION OF THE TENTH CASE OF BOVINE SPONGIFORM ENCEPHALOPATHY (BSE) IN CANADA**

### **BACKGROUND**

On April 24, 2007, a cow on a dairy operation in the Fraser Valley area of British Columbia was destroyed following a brief illness. On April 25, 2007, the Canadian Food Inspection Agency (CFIA) sampled the animal under Canada's National BSE Surveillance Program. On April 25, 2007, brain samples were received by the British Columbia Ministry of Agriculture and Lands (BCMAL) Laboratory, where they were screened for BSE using a Prionics rapid test. The result of this preliminary test did not rule out BSE. In accordance with the prescribed testing protocol, the test was repeated and produced a second reaction that day. Samples were then forwarded to the National BSE Reference Laboratory in Lethbridge, Alberta, where rapid screening tests (Prionics-Check PrioStrip and Prionics-Check Western) to validate these results were positive on April 26, 2007. On May 2, 2007, BSE was confirmed by the immunohistochemistry procedure and the Scrapie Associated Fibril Immunoblot. The carcass was secured at the sampling site, and was subsequently transferred to the CFIA Laboratory in Lethbridge for incineration. No part of the carcass entered the human food supply or animal feed chain.

The CFIA immediately initiated an epidemiological investigation based on the most recent recommended BSE guidelines of the World Organisation for Animal Health, referred to as OIE. Specifically, the CFIA investigated:

- the birth cohort (all cattle born in the same herd as, and within 12 months of the birth of the BSE-positive animal);
- the feed cohort (all cattle that, during their first year of life, were reared with the BSE-positive animal during its first year of life, and that investigation showed consumed the same potentially contaminated feed during the period); and
- feed to which the animal may have been exposed early in its life.

### **ANIMAL INVESTIGATION**

The positive animal was a registered Holstein cow born on November 10, 2001, and it was 66 months of age at the time of death. The animal was born, raised and had spent its entire life on the same farm. The cow had appeared to be lame for a few weeks prior to calving. After calving, she became unsteady and then non-ambulatory (downer). The producer determined that the animal should be destroyed, and because it met the inclusion criteria of Canada's National BSE Surveillance Program, arrangements were made to forward appropriate samples for laboratory evaluation.

The birth farm was a dedicated dairy operation. The feed cohort was determined to comprise 156 animals, which, along with the case animal, were raised on the birth farm. This cohort consisted of Holstein females. Males sold at a few weeks of age for fattening and subsequent slaughter without having access to any commercially prepared feeds were excluded from the investigation, because they were not exposed to the same potentially contaminated feed as the case animal. No males were retained or raised on the farm. The trace-out investigation of the feed cohort located 41 live animals on the premises and in one other herd. Five of the animals have been humanely destroyed, for reasons unrelated to this investigation, and their carcasses and will be disposed of along with the case animal. The remaining feed cohorts are currently quarantined and agreement has been reached with the Producer to allow animals to calve out before humane destruction and disposal. This is due mainly to the operation being a purebred Holstein one and the need to retain genetics and farm production cycle. The following is the disposition of the remaining 115 animals in the feed cohort:

- a total of 92 animals were traced and confirmed to have died or been slaughtered (five animals had previously been tested under Canada's National BSE Surveillance Program, with negative results); and
- a total of 23 animals were determined to be untraceable because of records limitations.

### **FEED INVESTIGATION**

The feed investigation focused on feeds to which the case animal may have had access during its first year of life and on the manufacturing practices used to produce each of these feeds.

Investigation at the farm revealed that the only non-bovine species present were one or more barn cats and a dog. Only the dog, which was fed at the house, received a commercially prepared, bagged pet food. There was no pasture use on the farm, and all forages (hay and silages) were grown on land fertilized with commercial fertilizer and harvested using farm-owned equipment. Non-forage feed products included three different commercially prepared complete feeds and mineralized salt blocks—all provided by one commercial feed manufacturer.

Two of the complete feeds (one for the lactating cows and one for young heifers) were always delivered in bulk and transferred directly into their respective bulk storage bins. The third ration, a pre-lactation ration, was delivered in 20 kg bags, or in bulk, and then transferred directly into bulk bags on the farm.

Feed mixing and handling practices described for the farm preclude feeding of the lactation or pre-lactation feeds to heifers less than 12 months of age. The lactation feed was mixed with forages in a mobile mixer wagon and fed to the milking cows. The pre-lactation ration was pail-fed directly to dry cows and bred heifers for the last two to three weeks before calving.

Consistent with management practices for all heifer calves on the farm, the case animal was housed in a single enclosed pen for approximately the first three months of life, and then moved through a series of group pens with other heifers of similar age and size. Calves were fed colostrum, followed by milk, until weaning at approximately 12 weeks of age. Heifer calves were introduced to the commercial ration beginning at approximately six weeks of age, and they were pail-fed increasing amounts until approximately six to eight months of age. From six to eight months of age through to two or three weeks pre-calving, the animals were fed forage (hay and silage) only. Therefore, the case animal's only direct exposure to a mixed ration was the heifer ration; however, incidental exposure to the lactation ration, the dry-cow ration and the mineralized salt block cannot be completely ruled out.

Investigation at the commercial feed manufacturer identified that the mineralized salt blocks were manufactured in a separate, specialized facility free of prohibited material and other rendered products. The mineralized salt block was therefore ruled out as a possible source of contamination. The three complete feeds were manufactured on-site using equipment cross-utilized between feeds for ruminants and those containing prohibited material. Procedures to prevent cross-contamination of ruminant feeds with prohibited material existed at the facility, but, for some procedures, did not include a requirement to document that the procedure was followed.

For procedures accompanied by documentation to indicate that they had been followed, no deviations were noted for the specific feed products of interest. Procedures not accompanied by documentation to indicate that they had been followed (flush of common receiving system after receipt of prohibited material and cleaning of compartments of cross-utilized trucks) cannot be assessed for specific failures. As a result, cross-contamination during the receipt of feed ingredients and/or during the transportation of prepared bulk rations cannot be ruled out. The investigation supports that the most likely source was cross-contamination of the heifer ration through ingredient receiving or transportation, but it cannot rule out other products or other steps in the manufacturing process.

Prohibited material was regularly supplied to the manufacturing facility from four different rendering facilities, one of which supplied prohibited material to each feed supplier identified in previous BSE cases.

### **INVESTIGATION OVERVIEW**

The detection of this case does not change any of Canada's BSE risk parameters. The location and age of the animal are consistent with previous cases, and the BSE surveillance results to date, including this new case, reflect an extremely low level of BSE in Canada. In essence, the case confirms what was already known about an extremely low level of BSE infectivity having existed in Canada's feed system during the late 1990s and early 2000s.

Since the confirmation of BSE in a native-born animal in May 2003, Canada has significantly increased its targeted testing of cattle in high-risk categories advocated by the OIE (including non-ambulatory animals). This effort is directed at determining the level of BSE in Canada, while monitoring the effectiveness of the suite of risk-mitigating measures in place. Canada's National BSE Surveillance Program continues to demonstrate an extremely low level of BSE in Canada, with 10 positive animals detected among the over 169,000 targeted tests conducted since 2003.

With respect to BSE, the safety of beef produced in Canada is assured by public health measures enacted in 2003, following the first detection of BSE in a native-born animal in Canada. The removal of specified risk material (SRM)—those tissues that have been demonstrated to have the potential to harbour BSE infectivity—from all animals slaughtered for human consumption is the most effective single measure to protect consumers in Canada and importing countries from exposure to BSE infectivity in meat products.

As demonstrated by the surveillance system, the feed ban implemented in 1997 is effectively preventing the amplification of BSE in Canada's feed system. The detection of BSE in a few animals born after the 1997 feed ban is not unexpected and does not indicate a failure of those measures. Additional regulations to enhance Canada's feed ban were enacted on July 12, 2007. The most important change is the removal of SRM from all animal feeds, pet food and fertilizer. The enhancement will significantly accelerate progress toward eradicating BSE from the national cattle herd by preventing more than 99 per cent of potential BSE infectivity from entering the Canadian feed system.

On May 22, 2007, Canada was officially categorized under the OIE's science-based system as a controlled BSE risk country. This status clearly recognizes the effectiveness of Canada's surveillance, mitigation and eradication measures, and acknowledges the work done by all levels of government, the cattle industry, veterinarians and ranchers to effectively manage and eventually eradicate BSE in Canada.