What BSE Means for Beef Processors

Testing, traceback, and a transformed industry: Hard lessons from the European experience. By Chris Harris.

If the experience in Europe is any guide, the discovery of bovine spongiform encephalopathy in North America could bring a raft of new measures designed to control the disease, to prevent infected meat from entering the food chain, and to reassure consumers that the meat they are eating is safe. The measures, based largely on the known science, will reflect many of the controls that were instituted in Europe and the United Kingdom over the last decade; these measures are now considered tried and tested.

Comments Peter Scott, the joint director of the British Meat Processors’ Association: “For the U.S. industry, this one case must have hit them like a thunderbolt. Where we were given a chance to build control measures over a period of time, the U.S. is going to be trying to do it in one move. For one thing, our slaughter figures are nothing like those in the United States. We had slaughter figures of about 2 million, while theirs is about 40 million.”

He adds that although a lot of cattle in the United States may be on feedlots, trying to organize a traceability and tagging program for cattle on the range would appear almost impossible. “If they have got to put in a trace-back and SRM (Specific Risk Material) systems, then that is going to be very expensive indeed,” he notes. Michael Walsh from the Irish Agriculture Department observes: “The changes we had to bring in were introduced in the 1980s and ’90s. It will be quite a change if you have to bring them all in at once.”

When the U.K. and Ireland and then the rest of Europe first experienced BSE, knowledge of the disease was scant and the industry’s reaction was understandably mixed.

Although the crisis over BSE came to a head in 1996

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Chris Harris is the editor of Meat Processing’s sister publication, Meat Processing Global. He has written extensively about BSE since the early 1990s.
in the U.K., when the British government finally admitted that science revealed a link between the disease in cattle and new variant Creutzfeldt Jakob Disease (vCJD), the British meat industry had already been responding to the growth threat of the disease for more than a decade. BSE was first discovered in the British herds at a dairy farm in Kent, Plurenden Manor, in 1985, and a range of precautionary measures had already been instituted in the industry by the mid-1990s, such as specifying risk material and removing it from the food chain. As the science changed and the knowledge of the disease grew, the precautionary measures changed as well. (The U.S. government banned the importation of live British cattle in 1989 on the recommendation of USDA’s Animal and Plant Health Inspection Service, which had closely monitored the BSE situation in the U.K. almost since the first mad cow was discovered.) By the middle of 1990, the first basic European-wide legislation on BSE was in place, as far as live cattle and meat were concerned, and has been amended and refined since, strictly following scientific recommendations.

On July 28, 1989, the European Commission introduced the first E.C.-wide law on BSE. Although at the time BSE was generally assumed to be “scrapie in cattle,” and scrapie, a type of transmissible spongiform encephalopathy in sheep, was known to pose no risk to human health, measures were taken to protect the health of European consumers against any hypothetical possibility of transmission of the disease from cattle. Since that time 77 more laws, regulations, and directives have been passed or instituted to control mad cow disease and ensure food safety. These regulations range from the initial requirement to officially notify authorities of a diagnosis of the disease to restrictions on the sale of meat and bone meal feed (leading eventually to a ban on the sale of meat and bone meal). Eventually, the regulations encompassed requirements to remove and destroy organs such as the entire head (excluding the tongue), thymus, spleen, intestines, and spinal cord of bovine animals older than six months.

Rick McCarty, executive director of issues management at the National Cattlemen’s Beef Association in Centennial, Colo., points out that the British experience with BSE provided important education for the United States and has contributed significantly to the risk-mitigation measures the United States has put in place to deal with the disease. Representatives from the U.S. beef industry and USDA have gone to England on a number of occasions, the first being in 1988, to meet with British officials and scientists to discuss BSE and measures to manage the disease and reduce risk to animals and humans.

To date, the United States has built risk-mitigation measures related to BSE in four major areas. The first is prevention, which began, as noted above, with the 1989 ban on importation into the United States of live ruminants and at-risk ruminant products from countries with BSE. This ban was expanded in 1997 to include all European countries when the United States did not see those countries implementing the risk-mitigation measures that had already been put in place in the U.K. and the United States. The second area is surveillance, because there was no assurance the introduction of the disease could be prevented. In 1990, the United States began testing cattle showing signs of possible neurological disorders, and it was the first country without BSE to do so. Based on the U.K. experience, USDA expanded the program in 1993 to include examination of brain tissue from downer cattle. McCarty says the U.K.’s BSE testing has shown which cattle are highest risk populations, “and the U.S. testing program focuses on those populations using a statistical model that will detect BSE if it is present in only one animal per million” — hence the testing frequency of USDA’s program, which has been criticized by some experts as much too low.

The third BSE firewall is a Food and Drug Administration ban on the use of ruminant-derived feed supplements in ruminant feed. The U.K. banned feeding of mammalian protein to ruminants in 1994 but, absent the disease and absent the public health link, the United States did not institute a formal FDA regulatory ban until 1997. Following the 1996 announcement that BSE was linked to vCJD, the U.S. beef industry called for a voluntary ban on ruminant meat and bone meal (MBM) in ruminant feed. Unfortunately, a number of European countries continued to include ruminant MBM in cattle feeds for a number of years, resulting in an outbreak of BSE cases beginning in 2000.

And finally, says McCarty, the fourth area is protecting public health. Because Europe’s experience with mad cow disease (though not Japan’s) demonstrated that cattle more than 30 months old are the risk population for BSE, USDA has specified removal of SRM from these animals. SRM are the potentially infective tissues (where prions, thought by many scientists to be the causative agent of transmissible spongiform encephalopathies, of which BSE is one, are harbored) of a carcass, and include the brain, skull, eyes, trigeminal ganglia, spinal cord, vertebral column, and dorsal root ganglia. SRMs also include the tonsils and distal ileum of all cattle. However, in order to ensure that the distal ileum is removed, the entire small intestine will be removed.

By the time continental Europe began to enforce strict regulations over the rearing, feeding, slaughter, and processing of cattle, the U.K. and Ireland had already established and had been following their own strict rules, which put both countries ahead of the game. It was only when BSE began showing up regularly in cattle herds in Germany, France, Spain, and Portugal in 2000 that the E.U. put into place strict rules on the lines of the British model. These regulations are quite likely to guide the development of new U.S. beef processing rules now.

The initial regulations that came into force in Europe in 2000 include:

- A ban on the feeding of MBM to all farm animals;
- A requirement that all animals older than 30 months are tested for BSE to enhance consumer confidence;
- A requirement that the current list of SRMs, which must be removed and destroyed, should now also include the entire intestine of bovines of all ages;
- A “purchase for destruction” scheme to remove from the food chain all cattle aged older than 30 months unless they have been tested for BSE to ensure additional guarantees and to rebalance the beef market;
- A flexible handling of public intervention to address the current drop in producer prices;
- An increase in the advances paid for the beef premium from currently 60 percent to 80 percent in order to take the financial pressure from beef producers.

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For beef processors, the introduction of the new regulations produced extra work on the kill floor and in the cutting room. Slaughterhouses now have a higher level of veterinary inspection, as checks are made to ensure that SRM does not pass into the food chain, and in some abattoirs new methods of slaughter had to be introduced to prevent a risk of contamination of animal blood by the release of BSE-infected brain tissue into the bloodstream. Comments Peter Scott of the British Meat Processors Association: “Our first case of BSE was in the 1980s and we had about eight years of building control measures before the crisis of 1996. We were adjusting the law as the science became more evident.”

He says the industry was arguing about the cost of the removal of SRM in the 1980s, including sharp debates long before the BSE situation blew up into a crisis over whether the whole spine should be removed from the animal and not just the spinal cord. But these arguments, he notes, helped prepare the industry for a greater implementation of new control measures.

Brian Pack OBE, group chief executive officer of the ANM Group Ltd. based at Thainstone Centre, Inverurie, Aberdeenshire, adds: “Prior to 1996 we were Scotland’s largest exporter of beef, and we lost £22 million (US$40.2 million) of sales virtually overnight. The business had to adjust to cope with this and that involved us having to close an abattoir in Edinburgh. However, we have been able to grow the business in different ways, and it is sound and continuing to grow year on year. We are now killing about two-thirds of the cattle we were killing prior to BSE, but legislation has had a dramatic effect on costs. An example is the disposal costs for specified offal – what was income is now a bill.

“Beef prices have never recovered completely, but they are almost back to where they were,” he comments.

Alasdair Cox, the group corporate marketing manager for Grampian Country Food Group, which now runs the beef plants of Welsh Country Meats, McIntosh Donald, and St. Merryn Meats in the U.K. — all of which were hit by the BSE crisis of 1996 — also says that one of the major effects to the industry of the crisis and its ensuing regulations was the need to dispose of SRM. “We had the added costs of staining the SRM and then finding landfill sites to dispose of the waste,” he observes. “We and the industry in general incurred considerable costs. There was also the added loss of income from the sale of the fifth quarter. Previously, a lot of the parts that were taken out as specified risk material used to be sent for processing as petfood and other products. Not only did we have to pay for disposal but we lost that income.”

The crisis in the U.K. and in Europe initially produced one big economic-cost difference by 2000. Whereas on the continent all “OTM cattle” (older than 30 months) were tested for BSE before they were allowed into the food chain, in the U.K. all OTM cattle were destroyed.

The U.K.’s severe OTM rule was introduced in the heat of the crisis, after the Spongiform Encepalopathy Advisory Committee (SEAC) had considered 10 cases of what eventually came to be called vCJD and concluded, in March 1996, that a previously unrecognised and consistent disease pattern had been identified. Although there was no direct evidence of a link between BSE and vCJD, on the data available and in the absence of any credible alternative the most likely explanation was considered to be that those cases of vCJD were linked to exposure to BSE before the introduction of the specified bovine offal (SBO) ban in 1989. SEAC advised, in a statement published on March 20, 1996, that to prevent further exposure to this risk “carcasses from cattle aged over 30 months must be deboned in licensed plants supervised by the Meat Hygiene Service and the trimmings must be classified as SBOs.”

But it proved to be impractical to implement the de-boning recommendation, and British ministers decided that meat from both home-killed and imported animals aged over 30 months old at slaughter should be prevented from being sold for human consumption altogether. The severity of this decision on the British beef industry will be argued about perhaps for decades still to come, but it’s important for the U.S. beef industry, now in its own BSE crisis (albeit a much milder one than occurred in Europe), to realize that while it is the obligation of government to make sound decisions based on facts, it is also the obligation of government to help allay public fear. In Britain, consumers were genuinely worried that they might be exposed to meat from animals that might contain detectable levels of BSE infectivity. The OTM rule helped restore public confidence at the expense, to a degree, of the beef industry. It is also relevant that, due to consumer concerns, retailers and caterers were in any case refusing to sell meat from animals over 30 months of age.

Approximately 70 percent of the cost of buying the animals for destruction comes from the E.U. budget. The cost of slaughter and destruction of the carcasses by rendering and incineration is borne by the British government. Producers have received about £1.9 billion (US$3.466 billion) in payments under this scheme since it was introduced in May 1996.

Cox from Grampian comments: “Because all cattle had to be under 30 months, there were some initial problems. There was an immediate drop in availability of animals for slaughter. However, this was slightly offset by the initial drop in demand for beef. The first thing, though, that the announcement about BSE in 1996 did was to stop production altogether for about six weeks while the situation sorted itself out.”

One of the side effects of the scheme — and an unforeseen one at that, a true invocation of the “law of unintended consequences” — was the birth of a new type of slaughterhouse in the U.K., since OTM cattle had to be slaughtered in a separate facility from those plants still processing beef that was to enter the food chain. With an industry which was already suffering at the time from about 45 percent over-capacity and struggling for ways to downsize, this brought a new lease on life to some smaller and medium-size slaughtering operations. It also helped other operations that were struggling to meet the criteria for E.U. hygiene standards to continue business as plants dedicated to slaughter for destruction.

The U.K.’s Food Standards Agency has recently completed a review of the OTM rule and has advised ministers that it would be acceptable on health grounds to replace the rule with a new requirement to test all OTM cattle born after July 1996 for BSE. This move is currently being put into place and will bring the U.K. in line with the rest of Europe. However, by testing all OTM animals in the future, the industry expects to see a small rise in the number of cases of BSE recorded.
One of the unforeseen side effects of the U.K.’s severe BSE rules was the birth of a new type of British slaughterhouse.

In 2000 Ireland began a targeted active surveillance program for BSE with the testing of a proportion of fallen stock and a random survey of cattle eligible for human consumption, and the initial scheme was extended the following year. Since Jan. 1, 2001, all OTM cattle being slaughtered for human consumption and all casualty animals must be tested for BSE using a so-called rapid test approved by the Scientific Steering Committee of the European Commission. Since July 1, 2001, all cattle over 24 months of age that die on the farm (fallen stock or downers) must be tested for BSE. Last year Ireland tested 67,455 fallen cattle, casualty cattle, and OTM cattle, and this testing found a total 141 new BSE cases. In the previous year 688,374 cattle were tested and 221 BSE cases were found. In Spain, where similar testing programs are underway, 167 cattle with BSE have been found.

Across Europe, all OTM cattle that enter the food chain are tested for BSE before they are released from the abattoir. In France the test is carried out for cattle older than 24 months, although this is seen as more of a reassurance to consumers than a strong scientifically based measure. The increased testing initially produced some logistics concerns for slaughterhouses, as separation and isolation of carcasses until they had been cleared produced some congestion. However, with an industry generally suffering from over-capacity, this was regarded as a minor problem.

Three tests have been approved by the European Commission to identify BSE in a clinically infected animal post-mortem. All fallen stock and casualty cattle aged 24-30 months, plus cattle aged over 30 months, are tested for BSE. In addition, some 66,000 sheep in the E.U. will be tested for the presence of scrapie.

But the greatest impact the BSE crisis had in the U.K. in 1996 was the closure of world markets to British beef. While new outlets for beef were found on the domestic market, British producers found themselves inundated with dairy calves as a by-product of the dairy industry. Before BSE, these animals had been exported to France and the Netherlands as veal calves, but from 1996 this market was closed.

To circumvent this glut of calves that could not be sold on the U.K. market, the British government and E.U. introduced the Calf Processing Aid Scheme (CPAS). The aim of the CPAS was to provide an outlet for male dairy calves up to the age of 20 days, and from December 1996 the scheme was extended to cover male calves of all breeds as a short-term measure to address the imbalance between beef consumption and production across the E.U. Slaughter had to take place in an approved slaughterhouse, not on the farm. The scheme was 100-percent E.U.-financed. It was introduced in the U.K. in April 1996 and ran until the end of July 1999. Until November 30, 1998, member states had to operate either the CPAS or the Early Marketing Scheme for Veal. France, Ireland, and Portugal also operated the CPAS. In the U.K. the scheme was run by the Rural Payments Agency.

In May 1998 the E.U. began a consultation exercise to look into whether the CPAS should continue beyond November (when it ceased to be compulsory). Following this exercise, the E.U. decided to extend the CPAS to March 31, 1999, at a lower rate of aid. It was hoped that this lower rate would encourage producers to raise more of their calves and therefore only attract the poorer animals. This did not happen; numbers continued at pre-cut levels. The scheme was further extended to July 31, 1999, and then closed.

Meanwhile, as beef consumption plummeted with the first revelations about the connections between BSE and vCJD, urgent measures were taken to buoy the beef market. One method was the use of intervention stores, where governments across Europe would buy beef as a market support when the price for beef fell below an certain economic rate. Between mid-April and the end of 1996, more than 440,000 metric tons of beef was bought into intervention, including 72,000 tons in the U.K. The annual ceiling on intervention purchases was raised to 500,000 tons E.U.-wide in 1997. At the end of Dec. 1997, 526,000 tons of beef were in E.U. intervention stores, of which 99,613 tons were British beef. U.K. intervention stocks were cleared by early 2000.

With the fall in sales of beef after the BSE announcements — first in the U.K. and Ireland in 1996 and then in the rest of Europe in 2000 — measures had to be taken to restore the confidence of the consumer. There were particular concerns about the integrity of mince (ground) beef products. There were consumer concerns that the meat did not come from whole-muscle meat but included offal and in particular could have included products that were listed as SRM. To allay these concerns, processors and supermarkets developed an assurance scheme that guaranteed that the minced beef and the beef in hamburgers came only from whole muscle meat. The assurance mark also guaranteed that the meat came only from cattle younger than 30 months.

Compliance with the new assurance scheme required further audited inspection of the processing system so that all products could be guaranteed. Grampian’s Alasdair Cox comments: “As a business, we had to work very hard at building consumer confidence back into beef. We had to educate consumers and tell them about reducing the risk of BSE.”

Assurances over the integrity of products together with guarantees that the meat came from cattle under the age of 30 months in the U.K. as well as guarantees that beef was being fully tested for BSE in continental Europe meant that the history of each animal had also to be guaranteed. Led largely by supermarket chains calling for full traceability of products back to the farm, new tracing and tracking systems were introduced.

While producer-processor-supermarket partnerships guaranteed one form of tracking and tracing, for British beef ever to be restored to international markets a nation-
The experiences of the U.K. and Europe in first coping with and then defeating the spectre of BSE have involved a journey of nearly 20 years.

The World Trade Organisation now recognises the safety of British beef and allows its export, even though some markets around the world are still closed to the product.

One of the major victims of the BSE crisis in the U.K. and Europe was the rendering industry. It faced the loss of markets for its major products — meat and bone meal (MBM) and tallow — as a result of the ban on using MBM in any farmed animal feed and the E.U.’s export ban on British beef derivatives. The slaughtering sector was also suffering as the build-up of unsaleable stocks resulted in significant physical and financial blockages.

In the U.K. a package of temporary financial measures was put in place for the rendering and slaughtering sectors to ensure that these key elements of the meat chain continued to operate. Approximately £97 million (US$177.5 million) in support was provided to individual rendering companies for 1996/97, based broadly on loss of income by comparison with 1995/96. In March 1997, the British government introduced a scheme for providing up to a further £59 million (US$108 million) of support to the industry. In July 1997 the British Agriculture Minister confirmed that the rendering industry support, which was always intended to be temporary, should be phased out by the end of the 1997-98 financial year within the existing spending limit of £59 million. The rendering industry now has no support and the costs of handling the by-products that had to be destroyed are passed back along the chain. Now, other methods of using the products such as the meat and bone meal and the tallow are being found, such as a use in power stations to generate electricity.

The experiences of the U.K. and Europe in first coping with and then defeating the spectre of BSE have involved a journey of nearly 20 years. As new scientific evidence revealed new concerns, new practices were found to reduce the threat of the disease to consumers while at the same time reassuring them of the safety of the meat they were eating.

While some working practices had to be changed to accommodate the removal and destruction of SRM and the rendering of different products, much of the change was in auditing and bureaucratic paperwork to assure consumers and politicians alike that the practices were safe. When BSE hit Japan in 2001, panic followed the revelation. Initial government support was at first abused by some unscrupulous practitioners, but then a strict traceability code had started to be established to ensure the integrity of the domestic product. Indeed, the Japanese have gone down the DNA traceability route. Thorough BSE testing in Japan has also produced an unexpected result: cattle younger than 30 months infected with mad cow disease. Already, experts including Dr. Stanley Prusiner, the University of California-San Francisco scientist who won the Nobel Prize for Medicine in 1997 for his development of the prion theory, are lobbying USDA that the Japanese test results demonstrate the need for greatly increased BSE testing in the United States.

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