Congressional Research Service

Report RS22345

BSE ("Mad Cow Disease"): A Brief Overview

Geoffrey S. Becker, Resources, Science, and Industry Division

December 19, 2006

Abstract. The appearance of BSE (bovine spongiform encephalopathy or "mad cow disease") in North America in 2003 raised meat safety concerns and disrupted trade for cattle and beef producers. A major issue for Congress has been how to rebuild foreign markets for U.S. beef. Other issues include whether additional measures are needed to further protect the public and cattle herd, and concerns over the relative costs and benefits of such measures for consumers, taxpayers and industry.

Order Code RS22345
Updated December 19, 2006

CRS Report for Congress

BSE ("Mad Cow Disease"): A Brief Overview

Geoffrey S. Becker
Specialist in Agricultural Policy
Resources, Science, and Industry Division

Summary

The appearance of BSE (bovine spongiform encephalopathy or "mad cow disease") in North America in 2003 raised meat safety concerns and disrupted trade for cattle and beef producers. A major issue for Congress has been how to rebuild foreign markets for U.S. beef. Other issues include whether additional measures are needed to further protect the public and cattle herd, and concerns over the relative costs and benefits of such measures for consumers, taxpayers and industry. This report will not be updated.[1]

What Is BSE?

BSE (bovine spongiform encephalopathy or "mad cow disease") is a fatal neurological disease of cattle, believed to be transmitted mainly by feeding infected cattle parts back to cattle. More than 187,000 cases have been reported worldwide, 183,000 of them in the United Kingdom (UK) where BSE was first identified in 1986. The annual number of new cases has declined steeply since 1992. Humans who eat contaminated beef are believed susceptible to a rare but fatal brain wasting disease, variant Creutzfeldt-Jakob disease (vCJD). About 160 people have been diagnosed with vCJD since 1986, most in the UK and none linked to any Canadian or U.S. meat consumption.

BSE in North America

BSE has been reported in 11 North American-born cattle. (A 12th case was a U.K. import into Canada.) The first native case was an Alberta, Canada, beef cow reported in May 2003. Seven more cases have been found on Canadian soil, five of them in 2006, most recently in August 2006. The first U.S. case was in a Canadian-born dairy cow found in Washington state in December 2003. The other two U.S. cases were a 12-year-old Texas-born and -raised beef cow, found in November 2004 but not confirmed until June 2005, and a 10-year-old Alabama beef cow found in late February 2006.

---

[1] This report summarizes and updates information in other CRS reports, listed on page 6. Sources for facts and citation to reports and studies can be found in these CRS reports.

In epidemiological investigations of the three U.S. cases, the U.S. Department of Agriculture (USDA) was unable to track down all related animals of interest, but those that were located tested negative for the disease. Despite a beef recall, some meat from the first U.S. BSE cow may have been consumed, USDA said, adding, however, that the highest-risk tissues never entered the food supply. No materials from the other two U.S. cows entered the food supply, USDA also said. In the recent Alabama case, authorities were unable to determine the cow's herd of origin. Animal health officials initially indicated that all of the North American cases were caused by the consumption of BSE-contaminated feed. However, USDA reportedly now believes that the two native-born U.S. cattle had "atypical" BSE, which differs from other cases. If these cases are determined to be "spontaneous," that may affect future control strategies.

USDA had asked an expert international review team (IRT) to assess its response to the first (December 2003) U.S. case, and to comment on the adequacy of existing BSE protections. The IRT generally concluded (in February 2003) that the investigation had conformed to internationally accepted scientific standards, but urged additional actions, including an intensive surveillance program to measure the magnitude of the BSE problem in North America. The IRT had concluded that other infected animals probably were imported here, some of their parts rendered into ingredients fed to cattle, and amplified within the cattle herd, indigenously infecting some of them.

While agreeing with some of the conclusions, USDA also responded that the IRT's recommendations were based on the premise of a higher incidence of BSE in the United States than was indicated by current studies. USDA officials have continued to rely heavily on the findings in a detailed quantitative analysis (using computer simulation) conducted for them by the Harvard Center for Risk Analysis and Tuskegee Center for Computational Epidemiology. This work concluded that BSE was very unlikely to become established or spread in the United States.

U.S. Safeguards

Import Restrictions. USDA's Animal and Plant Health Inspection Service (APHIS) is charged with protecting U.S. agriculture from foreign pests and diseases. In 1989, APHIS began to implement increasingly restrictive import controls on ruminants and associated meat products from countries where BSE has been found. In 2003, the agency refocused its policy to allow imports of lower risk products from BSE countries, as long as they could show they had effective BSE controls (Canada was first to qualify). This approach parallels new BSE guidance supported by the United States and adopted in May 2005 by the World Animal Health Organization (OIE for its French acronym).

Testing and Surveillance. APHIS has tested cattle deemed of highest risk for BSE — for example, those that display suspicious neurological symptoms, that are nonambulatory, or that die on farms. This program tested about 20,000 cattle in each of FY2002 and FY2003, out of about 35 million slaughtered annually. Following the first U.S. case, USDA in June 2004 launched an enhanced surveillance program to determine the extent of BSE in as many higher-risk cattle as possible. After more than two years, through August 2006, nearly 788,000 of these cattle had been tested (about 5,000 weekly on average). All but those cited above were negative for BSE. Also as part of its enhanced surveillance, APHIS tested more than 21,000 clinically normal adult animals

in late 2005. By late 2006, USDA had ended enhanced testing and transitioned to an ongoing program to test approximately 40,000 cattle yearly.

Meat Safety. On January 12, 2004, USDA's Food Safety and Inspection Service (FSIS), responsible for inspecting all live cattle and beef products destined for human food, published several meat plant regulatory changes. These included declaring, as "specified risk material" (SRM, which are tissues where the BSE agent can accumulate): brains, spinal cords, and other nerve tissues from cattle 30 months of age and older and the tonsils and distal ileum (part of the small intestine) of all cattle — effectively banning such tissues from the meat supply. FSIS also prohibited the slaughter of "downer" (nonambulatory) cattle; and restricted certain meat plant mechanical procedures that could spread BSE infective material into meat products.

Feed Restrictions. BSE is thought to have first spread and magnified by feeding rendered by-products of infected cattle to other cattle as a protein supplement. Since August 7, 1997, the Food and Drug Administration (FDA) has banned most mammalian (including cattle) proteins from cattle feed. FDA also registers and monitors renderers, feed mills, pet food manufacturers, and others. In January 2004, FDA promised to tighten this rule by also banning poultry litter, plate waste, and bovine blood from cattle feed.

Instead, on October 6, 2005, FDA published a proposed rule banning some SRM (mainly brains and spinal cords from cattle 30 months of age and older, and from all cattle not passed for human food) from all animal feeds, including pet food. The agency said its rule would remove those cattle parts responsible for 90% of potential BSE infectivity. The public comment period ended on December 20, 2005; a final rule was pending in late 2006.

Views on Safeguards. Both the adequacy and enforcement of these government safeguards have been criticized. For example, the Government Accountability Office (GAO) has reported weaknesses in enforcement of the current FDA feed rule. A number of consumer groups and others have asserted that FDA should have been moving much more quickly to implement stricter animal feed rules than now proposed. Separately, USDA's Inspector General (IG) has questioned both the sampling and reporting aspects of the Department's BSE surveillance program. USDA's efforts to reopen the U.S. border to Canadian beef also have been sharply criticized; see below.

Others, including many cattle and meat industry leaders, generally have been supportive of the USDA and FDA safeguards, which the Administration has argued meet and often exceed OIE guidelines. At the same time, some of these same cattle and meat industry leaders have expressed concern regarding the need for, and costs of, some of the newer safeguards, such as the USDA ban on all "downer" cattle regardless of the reason for their inability to stand or walk, and the FDA proposal to expand animal feed controls.

Industry and Trade Impacts

Exports. Cattle production is the largest single segment of U.S. agriculture, accounting for 20% of the value of U.S. farm sales. Exports of U.S. beef and other cattle products are viewed as critical to long-term market growth. The value of beef and beef variety meat exports was estimated by USDA to exceed $3 billion in 2003 (or about 10%

of the farm value of cattle/calves). Four countries bought approximately 90% of these exports: Japan (37%), South Korea (24%), Mexico (20%), and Canada (10%).

Most countries halted imports of U.S. beef and cattle soon after the December 23, 2003, U.S. BSE announcement. Many but not all of these countries are again accepting at least some U.S. beef and other products. USDA reports that U.S. beef and veal exports globally reached 461 million pounds in 2004 and 689 million pounds in 2005, compared with a 2003 level of 2.523 billion pounds. The U.S. share of the world beef/veal export market declined from 18% in 2003 to about 3% in 2005. The 2006 export estimate was approximately 1.1-1.2 billion pounds and 7% of world market share.

Cattle Prices. Domestic cattle and beef prices had reached record highs in 2003 due to a tight supply-demand situation. Immediately after the first U.S. BSE case in December 2003, these prices dropped sharply, but then recovered substantially. A decline in U.S. cattle supplies, due in part to widespread drought conditions in cattle country along with strong domestic demand for beef, kept farm prices relatively high during much of 2004 and into 2005. USDA has reported that annual average U.S. prices for fed steers (i.e., slaughter-ready cattle) were $84.75 in 2004, near the lower end of a USDA forecast of $84-$91 per cwt. (100 pounds) that had been made just before the BSE case. The 2005 price was $87.28, and the 2006 estimate was $85.

In a 2005 study of the impact of the BSE situation, Kansas State University estimated that total U.S. beef industry losses due to the loss of beef and offal exports in 2004 ranged from $3.2 billion to $4.7 billion. The National Cattlemen's Beef Association earlier in 2005 had placed cattle producers' export-related losses at $175 per head.

Japan Situation. In October 2004 the United States and Japan had announced a framework for restarting beef trade. Among other things, Japan (where more than two dozen BSE cases have been found) promised to ease its domestic policy of universal BSE testing, and to admit lower risk U.S. beef if the United States could verify that it had come from cattle under 21 months old and that all SRM from the cattle, regardless of age, had been removed at slaughter. However, the market did not reopen until December 2005, when the Japanese finalized their decision to permit such U.S. imports.

On January 20, 2006, the Japanese again halted all U.S. beef imports after finding vertebral column bones (a prohibited material) in several boxes of veal shipped by a New York processor. Despite U.S. apologies and promises of stronger oversight measures, Japan did not reopen its market until July 27, 2006. Japanese safety inspections of U.S.-certified beef plants were among a number of new concessions made by the United States. Meanwhile, Japanese consumers have been substituting other proteins and other beef sources (notably, Australia and New Zealand) for U.S. beef, which once accounted for 25%-30% of Japanese beef consumption.

Korea Situation. Korea's prohibition on U.S. beef, which had been in place since December 2003, was lifted on September 11, 2006. Resumption of U.S. beef exports to Korea, the United States' second largest export destination for beef in 2003, was expected to proceed slowly for the same reasons that will slow Japan's resumption of beef imports. Strict quarantine inspection requirements in Korean ports have already resulted in the rejection of three shipments of U.S. beef because of the presence of bone fragments.

Canada Situation. USDA banned all imports of Canadian cattle, beef, and other ruminants and products in May 2003. In August 2003, USDA announced (without publishing a formal rule) that it would issue permits to import some lower-risk Canadian products, notably boneless beef. USDA soon began expanding the types of permitted beef imports in late 2003 and early 2004. In response to a Montana cattle group's lawsuit, a federal judge temporarily blocked this effort, largely on the grounds that USDA was expanding product eligibility outside of the prescribed rulemaking process.

On January 4, 2005, USDA published a formal final rule to reopen the border to additional Canadian products, including cattle 30 months and younger. The judge again blocked implementation, but a federal appeals court overruled this decision in July 2005. Since then, Canadian cattle have been entering the country. In 2006 USDA was preparing a proposed rule that also would permit imports of Canadian cattle over 30 months of age.

In a February 2005 report, USDA's IG had earlier concluded that the Department's actions on Canada were sometimes arbitrary and undocumented, policy decisions were poorly communicated to the public and between APHIS and FSIS, and controls over the regulatory process were inadequate. USDA's defenders countered that Canada's safeguards are at least equivalent to those of the United States, and that restoring all cross-border trade is critical for the United States to convince other countries that U.S. beef is safe, they asserted.

In Congress

A major issue for Congress has been how best to regain lost markets like Japan and Korea. Among other issues have been whether expanded federal actions are needed to further protect the public and the cattle herd; the validity of the evolving science behind such actions; and the costs and benefits of such actions for consumers, taxpayers, and industry. Besides the safeguards discussed above, Congress has also examined such BSE-related issues as the need for improved labeling and/or traceability of livestock and livestock products, and funding for the government's BSE activities.

Japan and Korea. The sluggish progress on Japan and Korea has frustrated the beef industry and many lawmakers, several of whom have proposed retaliatory action. For example, several bills introduced in 2006 would have required trade sanctions against Japan if the market did not soon reopen. In 2005, a Senate floor amendment to the FY2006 USDA appropriation (H.R. 2744), which would have blocked a new U.S. rule to permit some Japanese beef imports unless Japan lifted its own ban, was deleted from the final conference agreement (H.Rept. 109-255, P.L. 109-97). A number of lawmakers in late 2006 urged a suspension of negotiations with Korea for a bilateral trade agreement until the beef situation was corrected.

COOL. Under the 2002 farm bill, mandatory country of origin labeling (COOL) for fresh beef (among other commodities) in supermarkets was initially slated to take effect on September 30, 2004, but Congress has twice delayed implementation, most recently (under P.L. 109-97) until September 30, 2008. In the 109th Congress, bills were offered to replace the mandatory program for meats with a voluntary program, or conversely, to reinstate an earlier implementation date for mandatory COOL.

Animal Identification (ID). Some Members have complained that lack of a nationwide animal ID system has hindered investigations into the U.S. BSE cases. USDA, state animal health authorities, and industry groups have been working to create such a program for several years, but progress has been slowed by differences over such issues as whether it should be publicly or privately run; if, and how, to protect the privacy of producer records; and who should pay. In the 109th Congress, bills were offered to require USDA to establish a nationwide electronic animal identification system; to protect the information provided by producers from unauthorized scrutiny and use; and to create a "Livestock Identification Board" with voting members from industry to oversee a national program.

BSE Funding. Total USDA spending for BSE in FY2005 was estimated at $123 million, of which $69 million was for BSE testing (and most of that for the special surveillance program noted above), $49 million to launch the animal ID effort, and $3 million for research. For FY2006, the Administration requested $66 million for USDA's BSE-related activities, including $33 million to continue work on an animal ID program, $21 million for BSE testing/surveillance, and $12 million for research. FDA's BSE request for FY2006 was for nearly $30 million. The FY2006 USDA appropriation (P.L. 109-97) generally covered these requests.

For More Information

CRS Reports.

- CRS Report RL32199, *Bovine Spongiform Encephalopathy (BSE, or 'Mad Cow Disease'): Current and Proposed Safeguards*
- CRS Report RL32932, *Bovine Spongiform Encephalopathy (BSE, or 'Mad Cow Disease') in North America: A Chronology of Selected Events*
- CRS Report RS21709, *Mad Cow Disease and U.S. Beef Trade*
- CRS Report RL32012, *Animal Identification and Meat Traceability*
- CRS Report 97-508, *Country-of-Origin Labeling for Foods*

Selected BSE Websites.

- **APHIS**: [http://www.aphis.usda.gov/newsroom/hot_issues/bse.shtml]
- **FSIS**:[http://www.fsis.usda.gov/Fact_Sheets/Bovine_Spongiform_Encephalopathy_BSE/index.asp]
- **FDA**: [http://www.fda.gov/oc/opacom/hottopics/bse.html]
- **Canada:** [http://www.inspection.gc.ca/english/anima/heasan/disemala/bseesb/bseesbindexe.shtml]
- **OIE**: [http://www.oie.int/eng/info/en_esb.htm]