Friends of the Earth

Mad Cow Disease: Are Americans at Risk?

Mad Cow Disease belongs to a family of neurological disorders that eat away at the brain, turning it into a sponge-like mass. Known to scientists as bovine spongiform encephalopathy (BSE), the popular name Mad Cow Disease refers to the symptoms of infected cattle: "staggering, drooling, signs of fear, grinding of teeth, aggression toward other animals."[1] People have contracted Mad Cow Disease through eating the meat of infected animals. In humans, the affliction is known as Creutzfeldt-Jakob Disease (CJD). Symptoms of the Mad Cow-induced form of CJD include hallucinations, loss of memory, dementia, uncontrollable crying or screaming, and inability to speak or walk.[2] These two diseases are always fatal, to humans as to cattle. There is no cure, treatment or vaccine.

Mad Cow on the Rampage: Mad Cow Disease was first detected in the mid-1980s in England, where it has killed over 180,000 cattle, devastated the British cattle industry, and ruined countless farmers. From Britain the epidemic spread to the rest of Europe, infecting over 4,200 cattle in 19 countries by mid-2003. Though apparently under control in Europe, the disease still kills 2-3 cattle each day.[3] Because Mad Cow has jumped the species barrier, killing humans, European authorities have taken a precautionary approach to stop the epidemic, destroying over 5 million potentially infected cattle.[4] Mad Cow is not confined to Europe; infected cattle have also appeared in Canada, Japan, Israel, Oman and the Falkland Islands.

Mad Cow Found in North America: The first North American case not attributable to import of a diseased cow from England was reported in Alberta, Canada in May 2003. Such native-born cases of Mad Cow Disease are alarming because they indicate that feeding practices in the country are to blame, and that other cattle likely have the disease. Given the huge trade in cattle and beef between Canada and the U.S., coupled with inadequate testing and controls in both countries (see below), it is very likely that the U.S. also harbors mad cows that just haven't been detected.[5]

How is the Disease Spread? Mad Cow might have remained a rare disease were it not for cattle cannibalism. Over the past few decades, it has become a common industrial agricultural practice to process the remains of dead cattle (as well as diseased animals, road kill, dead pets, zoo animals, etc.) into animal feeds that are fed to cattle. Since cattle can become infected by consuming less than 1 gram of diseased tissue[6], one diseased carcass can contaminate a large batch of animal feed, sickening hundreds of animals. These hundreds, rendered into animal feed in turn, can infect thousands. This is how experts explain the Mad Cow epidemic in Britain.

What is Rendering? Rendering processes the remaining body parts of cattle once all of the edible parts have been removed. Essentially, the brains, spinal cords, and other sections unfit for human consumption are broken down to create two final products: fat and meat-and-bone meal (MBM). The fat is used in a variety of goods such as soap, lipstick and glue, while MBM, with

its powdery consistency and high concentration of protein, is often added to animal feed.[7] Both fat and MBM contain varying amounts of the brain and spinal cord tissue that carries the highest risk of transmitting the disease. In the U.S., these products were legally fed to cattle until 1997; they are still fed to horses, pigs and poultry.

Mad Cow Disease in Humans: Over 150 people have contracted **variant CJD (vCJD)**, the human disease most closely associated with Mad Cow, by consuming the meat of infected animals: 143 in the UK[8], 6 in France, 2 in Canada, and one each in Ireland, Italy and the U.S. vCJD tends to strike young people, is always fatal, and takes about 14 months to kill its victim.[9] Classic or **sporadic CJD** is of unknown cause and strikes mainly the elderly. Recent evidence that BSE can cause sporadic CJD as well as vCJD[10] may explain the rising numbers of CJD cases in Europe[11], and the disturbing trend to younger CJD cases in the U.S.[12] Several autopsy studies suggest that 3 to 13 percent of patients diagnosed with **Alzheimer's** or **dementia** actually suffered from CJD. These findings imply that at least 120,000 CJD cases may be going undetected and excluded from official statistics.[13] If even a small percentage of these misdiagnosed CJD cases are caused by eating BSE-infected meat, the incidence of human Mad Cow is much worse than anyone has imagined up to now. Yet the U.S. Centers for Disease Control still refuse to make CJD a reportable disease.

What Causes Mad Cow and CJD? Most scientists agree that Mad Cow, CJD and related diseases – including chronic wasting disease, which is spreading among the U.S. deer and elk population – are due to deformed proteins called prions. Prions somehow induce normal brain proteins to become deformed in the same way, causing brain degeneration. Prions are incredibly resistant to heat, chemicals, and even radiation. They cannot be inactivated with disinfection measures used to kill other disease-causing agents like bacteria and viruses.

Is Our Meat Supply Safe? Prions tend to accumulate in the brain, the spinal cord and other nervous system tissues, the eyes and intestine. Hence, a person who consumes meat that contains these tissues, if derived from an infected animal, could contract the human form of Mad Cow. Brain and spinal cord tissue contaminate meat in three major ways. First, powerful stun guns that shoot 4-inch bolts into a cow's skull prior to slaughter can also drive brain tissue into the animal's lungs and throughout its body[14], thus contaminating meat that ends up in the supermarket with potentially infective brain tissue. Secondly, T-bone steaks and other cuts that include vertebral bone may contain spinal cord tissue. Finally, meat salvaged from the carcass and vertebral column after the better cuts have been removed by knife often contains spinal and other nervous system tissue. A recent USDA study shows that a shocking 35% of meat samples obtained with the mechanical "advanced meat recovery" (AMR) system used by many slaughter houses are contaminated with unacceptable nervous tissue.[15] AMR meat is commonly found in lower quality meats such as ground beef, sausages and hot dogs, and is served to children nationwide in the school lunch program. It is also found in meat used by fast food chains. About 45 million pounds of AMR meat are produced every year in the U.S.[16]

Response of USDA & FDA to the Mad Cow Threat: Since 1989, the USDA and FDA have taken a number of measures in three areas to counter the Mad Cow threat:
1) Restrictions on the import of cattle and cattle products from the U.K. and other countries with BSE or at risk of BSE; 2) Testing cattle brains for BSE; and 3) A rule intended to prevent the feeding of cattle parts to cattle.

IMPORT RESTRICTIONS:[17] The USDA and FDA have identified countries with BSE and those at risk of BSE and issued import restrictions on live ruminants, and on products containing ruminant-derived material, from those countries. Despite these efforts, the Government Accounting Office (GAO) concludes that "BSE-risk material may have entered the country before BSE emerged in exporting countries or through gaps in import controls." For instance, over 50 cattle imported in the 1990s from Japan, which first discovered BSE in a native cow in 2001, have either entered the food/feed chain or remain unaccounted. Even more troubling, nearly 150 million pounds of beef, beef products and by-products (e.g. animal feed) were imported from countries with or at risk of BSE from 1980-2001. Import restrictions cannot be enforced without accurate information, yet U.S. Customs found in 1999 that the information provided for imports of live cattle, fresh and frozen beef and animal feed was inaccurate in 21-24% of cases. In 2000, FDA inspected only 1% of the 4 million food imports under its jurisdiction, and both it and the USDA are seriously understaffed.

ANIMAL TESTING: Government and the cattle industry assure us that U.S. cattle are BSE-free, based mainly on post-mortem tests conducted on cattle brains, the only sure means of detecting BSE. But the USDA has tested relatively few cattle brains since 1990[18]. Though numbers have increased in the past few years, even the 19,990 cattle tested in 2002[19] represent just 0.02% of the U.S. cattle population of 96 million (or 1 test for every 5,000 cattle). Still more troubling, USDA has tested less than 2% of high-risk "downer" cattle over the past decade.[20] Downer cattle are animals that collapse, unable to rise, due to neurological disease, broken limbs or undetermined reasons. They number an estimated 195,000 to 1 million in the U.S. each year. The few downers that are tested by the USDA are all cattle brought to slaughter. Hardly any on-farm downers are tested, despite the USDA's acknowledgement that this is the highest-risk population for BSE infection.[21] Downers with undetected BSE could enter the food supply or be rendered for animal feed, transmitting the disease to humans and cattle. The 2001 discovery of BSE in an Austrian cow soon after more stringent testing was instituted suggests that the U.S. may well remain BSE-free only until it begins testing ***all*** high-risk downer cattle, as is done in Europe and Japan. [22]

ANIMAL FEED LABEL AND RESTRICTION: In 1997, the FDA established a policy to prohibit the feeding of most ruminant proteins (from cattle, sheep, deer, etc.) to ruminants.[23] Yet this rule has not stopped the risky practice of cattle cannibalism. For instance, calves are still being weaned on cattle blood as a substitute for milk, despite the finding that blood can transmit prion disease,[24] and the implication of cattle blood in several European cases of Mad Cow[25]. The remains of slaughtered cattle, including high-risk brain and spinal cord tissue, are still legally fed to horses, pigs and poultry in the form of meat and bone meal (MBM); the remains of these cattle-fed animals, which could be silent carriers of BSE, can then be rendered and fed back to cattle, an indirect pathway for infective cattle tissue to be recycled back to cattle. About one million tons of poultry litter – which contains not only excrement but also uneaten poultry feed that may be of ruminant origin – are fed to cattle each year, another indirect route for cattle to continue feeding on cattle. Pet food that contains ruminant MBM may also end up as cattle feed. Finally, the only barrier to illegally feeding ruminant meat-and-bone meal to cattle is a label: "Do not feed to cattle and other ruminants." British authorities eventually banned the use of ruminant MBM altogether – even as fertilizer – because they found that British farmers continued to illegally feed it to cattle despite a warning label like that employed in the U.S.

FDA enforcement of its "feed ban" has been extremely poor. Significant flaws discovered in a 2001 GAO audit of the agency's performance[26] include: failure to even identify 1,200 or more

feed-related firms that should be subject to the ban; failure to issue warning letters, let alone penalize, hundreds of firms found out of compliance (most commonly for not labeling feed properly as containing ruminant protein); and a seriously deficient database that cast doubt on the veracity of inspection records for those few inspections that have been conducted. Even the FDA's methods for testing animal feeds are flawed, because they are based on the analysis of genetic material, bone, and protein, all of which are degraded or destroyed in the rendering process.[27]

How does the U.S. compare to the E.U.?

	United States	European Union
Cattle testing	2% of high-risk downers tested; no required testing of other cattle brought to slaughter	100% of downers tested; 100% of all cattle over 24 months of age that are brought to slaughter[28]
High-risk tissue in meat for human consumption	Brain & spinal cord tissue in 35% of low-quality meats; spinal cord may not be removed from better cuts; stunning methods drive brain tissue into lungs and body	Brain, spinal cord, eyes and tonsils from all cattle > 12 months of age prohibited from human food supply[29]; high-risk stunning methods banned[30]
Animal feed restrictions	Partial prohibition allows cattle tissue to be fed to chickens, pigs, horses and vice versa; and cattle blood to be fed to calves	More restrictive feed bans generally prohibit the feeding of animal tissues, whether ruminant or not, to all animals raised for food[31]
Use of cattle blood as feed for calves	No prohibition; accepted industry practice[32]	Authorities strongly discourage the practice[33]

How can we reduce the risk posed to our health and to farmers?

We propose that the FDA not only strengthen enforcement of the animal feed restrictions, but raise the safety standards to the levels adopted by the E.U. We propose that the USDA test all cattle that are slaughtered for consumption or that die on a farm. Until the safety regulations are strengthened and better enforced, we suggest that meat-eating consumers avoid high-risk beef products and only consume beef from organic, grass-fed cattle or beef alternatives.

Endnotes

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