

US Cows: Sacred or Mad?

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The perfect pathogen has arrived, millions are at risk and Planet Earth will never be the same. The advent of widespread Mad Cow disease--and the corresponding human epidemic of Creutzfeldt-Jakob disease--has nations on high alert. The US continues to deny Mad Cows exist in America, but the government's own data prove they do.

It's a Mad, Mad, Mad, Mad World

Every so often, a plague comes along with the power to shape nations. Such a plague is mad-cow disease, or bovine spongiform encephalopathy (BSE), recognized as an expanding worldwide epidemic. Tests in Europe, where most countries routinely fed millions of recycled cattle corpses to live cattle until the crisis broke, have revealed numerous cases in addition to the 177,000 confirmed in Britain, which has incinerated nearly five million cows as a result of the crisis. The disease vector--tainted cattle feed containing the ground-up remains of cows harboring infectious protein prions--has been shipped all over the Third World, a million tons to Asia alone.

Nobody knows how many people have contracted new-variant Creutzfeldt-Jakob disease (nvCJD) through contaminated beef and bovine byproducts. Not only meat, but many processed foods, drugs, vaccines, surgical instruments, dietary supplements and even cosmetics are at risk of carrying this plague, spread through the forced cannibalism of millions of bovines. In Britain and beyond, maternal transmission of nvCJD presages generations of victims.

The US Department of Agriculture, which annually allowed a billion pounds of "rendered" protein to be fed to cattle before instituting a weak ban in 1997, adamantly denies mad cows exist in America, but leading government and private researchers, several key studies and even statistical probability contradict these assertions. The agency itself has admitted that "the potential risk of amplification of the BSE agent is much greater in the United States" than in Britain. With 100 million head of cattle--and the highest per-capita consumption of beef outside of Argentina--America could soon be revealed as the planet's biggest mad-cow sanctuary.

Meanwhile, chronic wasting disease (CWD), a similar condition which affects deer and elk, is epidemic in parts of the Southwest, and scrapie, the mad-sheep analogue suspected of infecting British cattle with BSE, has spread unchecked to 45 states. In addition to maternal transmission, CWD, scrapie and BSE are also known to be transmitted horizontally from one live animal to the next, perpetuating infection even in the absence of external agents.

Infectious prions represent truth stranger than science fiction. Virtually indestructible, they represent an entirely new class of pathogen--and medicine's worst nightmare. With unique abilities to survive temperatures upward of 1,100°F, jump species barriers, evade the immune system and replicate themselves in victims whose very bodies remain infectious, these rogue proteins are sowing widespread devastation among animals and humans. Even the AIDS virus is neutralized by boiling water; prions aren't even alive.

The long-term implications for the planet and its human and animal inhabitants are staggering. The list of vehicles which may harbor this hidden killer runs like a shopping list of common products. Not even vegetarians are immune: white sugar is bleached with cow bones, and McDonalds French fries, advertised as prepared in "pure vegetable oil," are seasoned--like many products with "natural flavors"--with beef fat.

The spread of BSE has given birth to the emerging industry of prion diagnostics, which is rapidly growing to fill a demand for tests. Although post-mortem tests for BSE are now widely used in Europe, tests for BSE and CJD on live subjects are not yet available.

CJD and nvCJD

[nv]CJD--the human form of mad-cow disease--and BSE are both transmissible spongiform encephalopathies, or TSEs, which literally cause spongy holes in the brain. Such "prion diseases" sporadically afflict humans, bovines and many other animals at the rate of one in a million victims. CJD, which primarily affects the elderly, can incubate for decades before leading to loss of coordination, mental breakdown and certain death. There is currently no treatment or cure.

The 100 British victims of nvCJD--which [perhaps] has a shorter incubation period--have been mostly younger people between 13-40 years of age. "Health officials say they've got mad cow under control, but millions of unaware people may be infected," warned a Newsweek cover story on March 12. "[O]nce a few cattle contracted it, 20th-century farming practices guaranteed that millions more would follow. For 11 years... British exporters shipped the remains of BSE-infected cows all over the world [to] more than 80 countries."

A Different US Strain?

Over the last decade the USDA has tested 12,000 cow brains, primarily looking for the pathology seen in infected British cattle, and continues to claim that not a single BSE-infected cow has been found. The US Centers for Disease Control (CDC), which has refused to mandate CJD as a reportable disease in the face of many petitions, similarly asserts that only about 280-300 people a year die from it (about one for each million Americans), with no nvCJD detected in the US.

But what if America has been harboring a different and stealthy strain of BSE all along, with a corresponding variant of CJD, and neither were being detected by current methodology? "I don't expect the British strain of mad-cow disease to be much of a

problem here," says Dr. Tom Pringle, a molecular biologist who administers the astonishingly extensive "Official Mad Cow Website" (mad-cow.org). "The main fear is that our own cattle may carry a different strain of the disease that is distinct from the British strain." TSEs are known to exist in numerous strains within a single species; sheep scrapie has at least 20 variants.

The evidence for epidemics of both BSE and CJD is persuasive:

1) In 1985 Dr. Richard Marsh, a TSE researcher at the University of Wisconsin investigating a mysterious outbreak of transmissible mink encephalopathy (TME) in that state, found that the minks' diet consisted almost exclusively of "downer" cows--animals too sick to stand. 100,000 downer cows die each year in the US. In 1994 Marsh showed that when the brains of infected cattle were fed to healthy mink, they developed TME; healthy cattle inoculated with tissues obtained from TME-infected mink duly developed BSE. These experiments showed "the presence of a previously unrecognized scrapie-like infection in cattle in the United States."

The disease was different from that seen in Britain. Significantly, rather than exhibiting overt mad-cow symptoms, the animals simply collapsed; European cattle with BSE usually act skittish and "crazy" before death. In 1990 cows in Texas experimentally inoculated with American scrapie developed BSE and became lethargic and staggered to their death, just like downer cows. Some states, such as New York, don't send downer cows for USDA testing, leaving open the possibility that BSE in thousands of suspect animals is going undetected. According to Prionics, which manufactures Europe's leading BSE test, "A study performed with Prionics-Check reveals that fallen stock... represent BSE high-risk categories."

2) The USDA describes their BSE testing program as "aggressive." However, leading scientists concur that mad cows surely exist in the US. Dr. Clarence Gibbs, a pre-eminent TSE researcher who ran the laboratory of the National Institute of Neurological Disorders and Stroke until his death on Feb. 16, and chaired a World Health Organization investigation into BSE, had no doubts about domestic infection: "Do I believe BSE is here? Of course I do." And Dr. Stanley Prusiner, who won the 1997 Nobel Prize in Medicine for his discovery of prions, echoed that contention to a congressional caucus in May 1996. A June 1996 article in Food Chemical News stated, "After more than two decades of research on prions, Stanley Prusiner of the University of California at San Francisco suggested that mad-cow disease must be present in US cows at low levels.... He said he agreed with [Marsh] who believes mad-cow disease was linked to US cows in the mid-1980s."

"Thirty-seven million animals are slaughtered a year for consumption and less than 1,000 are tested a year--it's too low," says Pierluigi Gambetti, the director of the CDC's National Prion Disease Pathology Surveillance Center. "If you don't look, you don't find it. Our testing is not on the cutting edge."

3) In spite of the USDA's categorical denials, one in a million cows naturally develop BSE. With 100 million cattle in the US, that would mean about 100 mad cows exist on American soil at any given time. Many likely collapse before scheduled slaughter and are rendered into feed, with the potential to infect thousands of other animals.

4) Dr. Michael Hanson, a research associate at the Consumer Policy Institute of Consumer's Union and one of the country's leading food-safety experts, has repeatedly pointed to a pair of revelatory CJD studies: "A study at the University of Pittsburgh, in which autopsies were done on 54 demented patients diagnosed as having probable or possible Alzheimer's or some other dementia (but not CJD), found three cases (or 5.5%) of CJD among the 54 studied. A Yale study found that of 46 patients diagnosed with Alzheimer's, six (or 13%) were CJD at autopsy. Since there are over two million cases of Alzheimer's disease currently in the United States, if even a small percentage of them turned out to be CJD, there could be a hidden CJD epidemic." These shocking figures [may] indicate several [...] thousand Americans are currently dying of a preventable variant of CJD. [...]

Big Beef and USDA

Critics contend the \$150 billion-a-year cattle industry is itself infected with agribusiness greed, preventing any possibility of truthful or timely disclosure of mad cows. Although American beef consumption has been cut nearly in half since 1980 (while chicken and pork have risen), the beef industry has rarely been as lucrative, with 85% of cattle farmers reporting profitability, up from only 15% in 1996. Ironically, Europe's crisis has been a huge boon to "BSE-free" American beef exports, which shot up 34% last year, with shipments to the Russian Federation increasing a whopping twenty-fivefold. Mad cow has clearly been great for business, although McDonalds has suffered large European losses in the wake of widespread beef avoidance.

With America's sacred cow at stake, many doubt the USDA will reveal that any BSE-infected cows have been discovered--leading to certain market collapse and public panic. Dr. Michael Gregor, one of the earliest critics of the US's handling of the BSE threat and a popular lecturer, points out the "USDA has a conflict of interest, as the agency is responsible both for consumer safety and the promotion of American agriculture, of which meat is the primary industry." He notes that industry groups have successfully lobbied against changes in the USDA's research program to accommodate the possibility that BSE is already present in the US.

In the absence of sufficient inspectors and vigorous monitoring, the agency puts its trust in the beef industry to implement its rules. Allegations that the relationship between the two entities is overly cozy were fortified with the appointment of President Bush's new USDA staff. On Feb. 11 the New York Times reported, "Although they have had a record year, cattle ranchers in the United States now face growing anxiety over mad-cow disease... which could drive down beef prices. But last week, they triumphed when Ann M. Veneman, the new agriculture secretary, named Dale Moore, a lobbyist for the National Cattlemen's Beef Association, as her chief of staff. Charles P. Schroeder, the

association's chief executive, said the cattle industry was investing heavily in food safety and looking forward to working with its former advocate."

Failed Regulations

The US has failed to close gaping loopholes in the firewall against mad cow, and the feeding of potentially infectious cow parts back to cattle continues largely unmonitored. On Jan. 10, the FDA charged livestock-feed producers and rendering plants--which powder slaughterhouse waste for use as a cheap feed supplement--with widespread noncompliance with feed-labeling and mixing regulations.

The next day, the New York Times followed with a front-page article describing the lapses: "Large numbers of companies involved in manufacturing animal feed are not complying with regulations meant to prevent the emergence and spread of mad-cow disease in the United States.... All products that contain rendered cattle or sheep must have a label that says, 'Do not feed to ruminants.' Manufacturers must also have a system to prevent ruminant products from being commingled with other rendered material."

The simple labeling regulation was only instituted eight years after Britain authoritatively banned feeding cows back to cows. The issue of monitoring America's thousands of cattle farmers, the end-users of rendered feed, has not been addressed by the Food and Drug Administration, which only monitors interstate commerce.

According to Consumer's Union's Hanson, the feed industry is likely feeding cows "huge amount of bovine blood products. Legally, you can take any blood product from cattle and feed it to cows. I've been told that cows won't eat feed with more than ten percent blood, because they can taste it, and that chickens will eat feed with up to thirty-five percent blood." Blood has been shown capable of containing infectious prions.

What Goes Around, Comes Around

In spite of an initiative by the European Union to ban all animal products in livestock feed, American animal agribusiness continues to make widespread use of rendered protein. Under current feed regulations, livestock often eat one another's remains: pig parts are routinely fed to chickens; cow parts are fed to chickens and pigs; and thousands of tons of fermented chicken manure are fed to cows each year. Infectious prions are not broken down when ingested, and could conceivably make the round trip back to cattle on this perverse journey.

Hanson and Pringle believe that "cow to chicken manure to cow" could turn out to be a BSE vector path. As for the question of whether fowl can actually contract TSEs from livestock, the issue has "not really ever been investigated," says Pringle. "No one wanted to know, because so much cattle bone meal is fed to chickens. However, the chicken prion has a strong similarity to the mammalian amyloidogenic region, so it is theoretically possible."

Dr. Paul Brown, a Senior Investigator for the National Institutes of Health, has indicated that poultry and especially pigs could harbor TSEs and pass them on to humans. "It's speculation," Brown has acknowledged, "but I am perfectly serious." Pigs experimentally inoculated have developed BSE, and a suspected outbreak of porcine spongiform encephalopathy occurred near Albany, NY in 1997. A 1973 study published in the American Journal of Epidemiology discovered that 10 of 38 CJD patients ate hog brains.

Got Mad Milk?

Although it is rarely mentioned, infectious prions can be contained in milk, although it remains a remote vector. A 1992 Japanese study published in the New England Journal of Medicine showed that human breast-milk colostrum (the first milk a baby receives) is capable of transmitting prions, and the infection of lambs with scrapie through milk has also been demonstrated. It is not clear whether post-colostrum milk possesses this capacity. Many have chosen to avoid cheese from the UK as a precautionary measure; many hard cheeses contain rennet, an enzyme extracted from the stomach of calves.

Vaccines and Blood

Other routes of infection remain of grave concern. Direct inoculation presents the highest risk. Despite warnings from Pringle and others, US vaccines, which are often grown on bovine calf serum, are still being made from suspect materials. On Feb. 8, the New York Times finally picked up the story (curiously placed in the business section) under the headline "5 Drug Makers Use Material With Possible Mad-Cow Link." "For the last eight years the FDA has repeatedly asked pharmaceutical companies not to use materials from cattle raised in countries where there is a risk of mad-cow disease.... But regulators discovered last year that... some of the world's largest drug concerns were still using ingredients from those countries to make nine widely used vaccines... [which] include some regularly given to millions of American children, including common vaccines to prevent polio, diphtheria and tetanus." The list also includes flu shots and hepatitis vaccine.

Numerous dietary supplements containing glandular material, brains and other bovine ingredients are also at high risk. General Nutrition Centers' new Velvet Antler capsules "come from the growing antlers of elk and can contain infectious agents," says Hanson. "They're filled with nerve tissue and blood. I wouldn't want to be the one to be experimented on."

"It's just insane not to have greater safeguards" for supplements, Dr. Paul Brown, chairman of the FDA's advisory committee on mad-cow disease, told the Times. "The FDA is toothless."

The American Red Cross, without a blood test for CJD, is expanding its current ban on letting visitors to the UK donate blood. On Feb. 15 the Associated Press reported, "Officials of the Red Cross, which collects half of the United States' blood supply, told the [FDA] this week that they were leaning toward refusing donors who had spent three

months in Britain or one year elsewhere in Europe. The FDA's blood chief, Dr. Jay Epstein, said today that a stricter ban could worsen already tight blood supplies, particularly in New York City, where 25% of the red cell supply is imported from FDA-approved European blood banks. The Red Cross estimated that its ban would cut nationwide blood donations by 6%."

In the absence of a CJD test, the world can only guess the extent of the problem. Quoted by the CBS Evening News on Jan. 31, Prusiner, "when asked if, in his darkest moment he thought that this is the plague of the 21st Century, said, 'I don't need a dark moment to wonder if that's the case, because everybody's wondering that, not just me.' "

This article is the third in a series on mad-cow disease. To view "Mad Cows and Englishmen," published in July 2000, see hightimes.com

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