

## SAFETY OF BEEF PRODUCTS CONTAINING BONE OR BONE FRAGMENTS (OR BONE IN BEEF PRODUCTS)

### Is beef on-the-bone safe?

Yes. Beef on the bone is consumed worldwide, even in countries like the United Kingdom where hundreds of thousands of BSE cases have occurred in the cattle herd. Supermarket chains in the U.S. sell beef on the bone routinely. The suggestion that bone and bone fragments pose a BSE risk is based upon a single report concerning infectivity of bone marrow in a single experimentally infected cow, which was later acknowledged to be a questionable finding by the research team. In fact, that finding has never been duplicated.

### What about the 2006 World Health Organization (WHO) report that has been cited in recent media reports?

This WHO report addressed the risk of blood and blood products -- not the risk of bone. However, the report contains links to related documents, including summary tables of all experimental data on the transmissibility and detection of mis-folded prions in experimental tissues. The tables classify the various tissues that have been tested into three categories: higher infectivity, lower infectivity and no detectable infectivity. WHO clearly points out that these groupings do not assign human health risk to these tissues, since a risk assessment must take into account the level of infectivity of any given tissue, the route of exposure, and amount of human exposure to the tissue.

Bone marrow, as well as skeletal muscle tissue, fall into the category of lower infectivity in these tables due to the variety and sensitivity of the various tests that are cited in these tables. This is not a new or necessarily surprising finding, but using this as justification that beef on the bone represents a human health risk is scientifically inappropriate and clearly out of step with the global science community regarding the risk of various tissues.

### Does World Organization for Animal Health (OIE) consider bone to be a problem?

No. The most recent chapter in the OIE animal health codes clearly states: "Bone marrow from experimentally exposed cattle in the clinical phase of disease has not been transmitted by assay in cattle". After citing detailed risk assessments and taking into account all the available data, the OIE concluded that bones derived from healthy cattle that have been subjected to ante- and post- mortem inspection were not a risk factor.

### How do you explain the original studies that implicated bone marrow?

The original pathogenesis study conducted by Wells and co-workers in the United Kingdom in 1999 reported one serial slaughter date (38 month post inoculation) indicating that bone marrow from the sternum was positive in a mouse bioassay at the lowest level of detection, yet the serial test periods both before and after this positive finding were negative. The original positive finding has never been duplicated in follow up-studies since 1999.

This inconsistent result has led the researchers who conducted the study to question the reliability of that information and, further the 2006 WHO-OIE chapter on BSE states:

"The inconsistent result of the absence of detectable infectivity in bone marrow in this study at the later time point of 40 months post inoculation has raised, amongst other alternative explanations, the possibility that the finding of infectivity at 38 months post inoculation may have been the result of an accidental procedural contamination."

Given that the researchers have been unable to duplicate this result, even after several attempts under highly controlled circumstances, the researchers have acknowledged that the isolated result was likely due to an analytical error.

### Do other factors support the safety of bone?

Yes. The original study that implicated bone marrow in the breast bone was taken from an experimentally infected animal that showed clinically observable signs of BSE. It is important to point out that this represents a hypothetical scenario, since in the U.S., cattle that show clinical signs of BSE are not permitted to be slaughtered for human consumption. In these experiments, the bone tissue from this animal was injected into a mouse to determine infectivity. In fact, when evaluating the infectivity of cattle to cattle transmission, where there is not a species barrier to overcome, bone or bone marrow have never shown infectivity in experimental trials.

Risk assessments worldwide have not implicated bone or bone marrow as a specified risk material, with the exception of the skull and vertebral column. This classification is due to the proximity of those bones to central nervous system tissue, not because of any inherent risk of the bone or bone marrow itself. Currently no country has a ban on the consumption of beef on the bone. These regulatory policy decisions were based upon science based risk assessments of all available data.

### What is the United States' BSE risk status according to the OIE?

In May, 2013, the OIE recognized the United States' proactive BSE prevention and control efforts and recommended a negligible risk classification for the United States. This classification means that BSE has been contained in the U.S. and beef safety is assured.