

Removing risk

By Drs. Kerri Harris and Jeff Savell
meat&poultry@sosland.com

Developing best practices for the removal of S.R.M.'s

The cow that tested positive for bovine spongiform encephalopathy this past December triggered new regulatory requirements and many other changes in the U.S. beef industry. It appears most of the new regulatory requirements are designed as precautionary measures and many of the other changes are based on customer requirements. Regardless of the reasons, companies have reacted to the issue by implementing safeguards.

At press time, the proposed regulation was still open for public comment, most of the international markets were closed and beef packers were rapidly searching for innovative and effective methods for removing specified risk materials to meet both regulatory and customer demands. Although requirements may change as the regulations are finalized and the markets are re-opened, there are some “best practices” that can be applied based on current knowledge.

Best practices are designed as general concepts that can be fine-tuned into plant-specific operational procedures or policies. They are not regulatory requirements and are not intended to replace other plant procedures. The following best practices can be used for minimizing the risk of spreading B.S.E. and controlling S.R.M.s.

Live animal condition

It is important that cattle buyers and transporters recognize the symptoms of B.S.E., and that suspect cattle are identified for possible screening by Animal and Plant Health Inspection Service inspectors. Some of the common symptoms may include:

- Head held low
- High stepping gait, particularly the hind legs
- Tremors, especially of the head
- Nervousness and apprehension
- Difficulty in rising

The U.S. Dept. of Agriculture’s Food Safety and Inspection Service has mandated that non-ambulatory, disabled livestock, commonly known as “downers,” are unfit for consumption. Downers can not be harvested at inspected establishments or at custom slaughter plants. Non-ambulatory livestock include those that cannot rise from a recumbent position or cannot walk, including, but not limited to, those with broken appendages, severed tendons or ligaments, nerve paralysis, fractured vertebral column or metabolic conditions.

If an animal passes ante-mortem inspection and becomes non-ambulatory prior to slaughter due to an acute injury, then the Veterinary Medical Officer may verify the acute injury and allow the animal to be slaughtered using humane handling procedures.

Test and hold

If an ambulatory animal is selected for B.S.E. surveillance testing by the APHIS, the carcass and all of its parts must be identified and held until the results of the test are received and are negative. It will not be “inspected and passed” until the negative test result is obtained.

Stunning

Stunning cannot be performed using a stunner that intentionally injects air into the cranial cavity. At this point, it appears concussion stunning may be the most appropriate procedure. Penetrating

stunners are used widely and establishments should have procedures for removing visible brain tissue from the edible product or for plugging the opening to prevent contamination with brain tissue for animals that are 30 months of age or older.

Some companies are exploring other stunning techniques such as poll stunning to minimize the opportunity for brain tissue leakage. Regardless of the stunning mechanism used, the best practices should be employed to prevent edible product contamination with brain tissue from cattle that are 30 months of age or older.

Head processing

Dehorning, if required, should be conducted in a manner that will not open the brain cavity to prevent leakage of brain tissue. If cattle are 30 months of age or older, cheek meat and tongues may be used as edible product providing there is no visible contamination with brain tissue or fluid from the eyes. Also, when removing the tongue, it is important that the tonsils remain with the head because tonsils have been identified as an S.R.M. The trigeminal ganglia are S.R.M.s located inside the skull, so managers should avoid opening the skull to prevent exposure of the T.G.G. If a facility harvests cattle from both age groups (less than 30 months or 30 months and older), it should have procedures for sanitizing between the two groups to prevent cross-contamination during head removal and processing.

These procedures may include separating head lines, employing hot water sanitation between heads, processing heads while hanging on hooks rather than using tables, or other activities that will reduce the potential for cross-contamination between these two age groups.

Age I.D. and carcass separation

At this time, most of the requirements for removing S.R.M.s are focused on the relationship between the age of cattle and onset of the disease, which has been around 30 months of age for other countries. It is still debatable if 30 months is the appropriate age in the U.S. based on the practices that were previously implemented to reduce the risk of B.S.E., but at this moment 30 months is a regulatory requirement.

The best practice for determining age of cattle would be the use of written documentation such as a birth certificate, animal passport or animal identification systems that include the age of the animal. Because many of the cattle processed in the U.S. do not have this information, dentition was included in the interim rule as an alternative for age determination.

If dentition is used, each plant must identify the best location in the process for determining age and the procedures for identifying carcasses and heads from cattle 30 months of age or older. Although it is not practical in some operations, the



New regulations require the removal of the spinal cord from all animals that are 30 months or older. Photo courtesy of: *Bettcher Industries*

best practice would be to determine the age before head removal to ensure proper identification and separation during processing to prevent cross-contamination. Regardless of location, each plant should properly train individuals in determining age and provide appropriate space and lighting to evaluate the teeth.

If a facility is processing cattle older or younger than 30 months of age, it should have procedures in place for identifying the carcasses and heads from cattle over 30 months of age to allow for segregation. The most commonly used procedure is to stamp the rounds, chucks and head, as well as to apply grading/inspection ink to the entire vertebral column following splitting. The ink is a visible mark that can be used to ensure the vertebral column is completely removed during fabrication or by a customer before entering commerce. It is important that operators remember sanitation procedures should be in-place to prevent cross-contamination between carcasses from cattle younger than 30 months of age and those over 30 months of age.

Removal of distal ileum

Because the distal ileum has been identified as containing the infective agent before onset of the disease, it has been identified as an S.R.M. and is being removed from the food supply. F.S.I.S.'s interim final rule requires that the entire small intestine be removed and disposed of as inedible. There is still some debate on the possibility of saving some portion of the small intestine; however, at this point the entire small intestine must be rendered as inedible.

Spinal cord removal

For years, it has been a best practice across the industry to remove the spinal cord. Today, the regulation requires the removal of the spinal cord from all animals that are 30 months of age and older. In most operations, the spinal cord is removed following the splitting of the vertebral column; however, a few operations are experimenting with technologies that allow the removal of the spinal cord before splitting.

The process should remove both the spinal cord and the sheath. If the carcass is split before removal, then any mis-splits must be identified so the spinal canal can be opened with a saw to ensure removal of the spinal cord.

Vertebral column and D.R.G.

The vertebral column and dorsal root ganglia of cattle 30 months of age and older are identified as S.R.M.s by F.S.I.S. Therefore, companies processing both age groups of cattle should have a procedure for clearly marking and identifying all carcasses that are 30 months of age or older. Most plants are applying grading or inspection ink to

the entire vertebral column following the split. These sides are segregated in the coolers and fabricated separately from the sides below 30 months of age to prevent cross-contamination. During the fabrication of sides 30 months of age or older, the vertebral column, including D.R.G., must be removed and rendered inedible.

Unfortunately, D.R.G. are difficult to visually identify during processing. Therefore, it has been determined that the best practice is to remove the meat between the ribs using a U-shaped cut rather than the traditional V-shaped cut to prevent cutting the D.R.G. In addition, the neck bones are difficult to clean, and it may be best to peel them rather than boning them in the traditional manner. Each plant will need to develop specific procedures to ensure the removal of the vertebral column and D.R.G. from cattle 30 months of age or older and render them as inedible.

Handling of S.R.M.s

By regulatory definition, S.R.M.s are unfit for human consumption, rendering them adulterated and inedible. This means each plant must have strict procedures for identifying and handling all S.R.M.s. If companies are processing cattle below 30 months of age, as well as cattle 30 months of age and older, it will need sanitation procedures for equipment to prevent cross-contamination.

S.R.M.s should be placed in clearly identified "INEDIBLE" or color-coded containers, and moved throughout the facility accordingly to prevent cross-contamination. At the time this article was written, S.R.M.s could be denatured and placed into inedible rendering. However, as more information becomes available this may change.

As more information is made available from U.S. and international entities involved with the B.S.E. issue, additional safeguards may be implemented defining further S.R.M. requirements. Best practices for handling S.R.M.s in the beef slaughter industry will continue to evolve as operators find the most appropriate ways to address age identification, stunning procedures and removal of S.R.M.s in beef plants.

M&P

Harris is executive director of the International HACCP Alliance. Savell is a professor at Texas A&M Univ., and holder of the E.M. Rosenthal chair in the department of animal sciences.

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your comments and questions about this article are welcome.
E-mail the author at: meat&poultry@sosland.com