



Cattle Producer's Handbook

Quality Assurance Section

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Beef Safety and Quality Assurance from the Farm to the Table

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Beef producers ensure the quality of their products by following strict adherence to beef quality assurance guidelines. Consumers consistently purchase safe, healthy products including beef. The occurrence of one beef-related foodborne illness outbreak or other safety violation is quickly disseminated throughout the news media and Internet. Consumer reaction, both domestic and international, is to stop immediately the purchase of beef.

The correlation is significant between foodborne illness outbreaks linked to ground beef and the decrease in demand for beef. Research shows over a 0.5 percent reduction per capita of beef during recall events (Schroeder et al. 2000). In these dire situations, beef demand declines rapidly and recovery takes months and even years. Quality assurance practices by beef producers do reduce food safety concerns and help to ensure that consumers will confidently purchase beef in the future.

To help ensure the safety of beef products, the USDA's Federal Meat Inspection Service initiates such programs as Hazard Analysis Critical Control Point (HACCP), Sanitation Standard Operating Procedures (SSOP), and Zero Tolerance in all slaughter and processing plants. Additional recent governmental regulation requires slaughter plants to source verify their meat products. This new regulation requires traceability to the farm, ranch, and/or producer level, which adds greater responsibility for each producer to ensure a safe and wholesome product.

A beef producer's quality assurance program should address the following four food safety concerns: (1) foodborne illness, (2) physical hazards, (3) specified risk material, and (4) drug residues.

Foodborne Illness

Consumers in the United States have the safest food, including meat, in the world. Many activities such as driving a car or swimming are much greater risks to human

life than eating a meat product. Modern consumers want zero risk of becoming sick from their food.

Beef producers must be aware of the major food pathogens that cause illness or death. Many pathogenic bacteria live in the intestinal tract of healthy livestock. The most common pathogenic bacteria include *Erscherichia coli*, *Salmonella*, and *Campylobacter*.

Erscherichia coli 0157:H7

The *E. coli* family occurs commonly in the gastrointestinal system of man and animals. In the early 1980s, *E. coli* 0157:H7 emerged as a source of serious illness in humans who ate undercooked ground beef. *E. coli* 0157:H7 causes acute bloody diarrhea, abdominal cramps, and hemolytic uremic syndrome (HUS) which may develop into chronic kidney failure or neurological impairment. Death occurs in approximately 3 to 5 percent of the persons with HUS (USDA Food Safety and Applied Nutrition 2001). Product contamination occurs during the hide removal and evisceration steps of the slaughter process.

Scientists do not know how livestock become carriers of *E. coli* 0157:H7. The bacteria can be spread from one animal to a whole herd, from wildlife (deer) to cattle, or from cattle to deer (Sargeant et al. 1999). Sporadic in livestock, 0157:H7 ranges from 0 to 28 percent infection rates in individual herds and has the highest rates in the summer months. Animals carrying *E. coli* do not show any signs of illness (Hancock et al. 1997a). Manure application to forage crops has had little effect on the incidence of *E. coli*, yet 0157:H7 can survive for almost 2 years in manure, which provides reason enough to manage manure properly (Hancock et al. 1997b and Kudva et al. 1996).

Salmonella

Salmonella has been recognized as a leading cause of gastroenteritis in humans for over 100 years. *Salmonella*