



Consumer Focus

► by **Ronald Eustice**, executive director, Minnesota Beef Council

Food safety challenges, opportunities

Most of us consider the U.S. food supply to be the world's safest. Despite frequent efforts by media and special interest groups to challenge our right to make this claim, there is strong evidence that consumers strongly agree with our claim that we have the world's safest food supply.

The safe food supplier

Recent surveys show that 93% of U.S. consumers consider the beef supply to be safe from bovine spongiform encephalopathy (BSE). This is remarkable considering that more people in the United States recognize the words "mad cow disease" than know who Dick Cheney is.

The safety and wholesomeness of our food supply is where it all begins. Indeed, if a food product is not considered safe, the "game" is over.

The United States is a leader in the research, development and implementation of practices that protect animal health, reduce contamination and help consumers obtain maximum nutritional benefit from the food we produce. Our reputation as a producer of high-quality food must not be taken for granted.

That's why the beef industry has invested millions of dollars in food safety research, equipment and intervention techniques. Steve Kay, editor and publisher of *Cattle Buyers Weekly*, reports that between 1993 and 2003, the 10 largest beef processing companies spent more than \$400 million on new equipment and added \$250 million to their operating costs to fight *E. coli* O157:H7. Kay recently estimated that BSE has become the No. 1 expense to the industry, at \$8 billion and counting.

The collaboration that exists in the United States between government agencies, food processors, food producers, and farmers and ranchers is unique and has helped us earn and maintain that enviable reputation. The combined efforts of the U.S. Department of Agriculture (USDA), beef industry organizations and others following the Dec. 23, 2003, announcement of a positive BSE case is an excellent example of how public and private cooperation can safeguard our food supply and reassure consumers of its

safety. One of the best examples of public-private partnerships exists in Minnesota, where there is a long history of cooperation.

Making the food supply safer

In 1983, an outbreak of food-associated gastrointestinal disease simultaneously occurred in Oregon and Michigan. The disease caused victims to suffer abdominal cramps and bloody diarrhea. A public health case-control study implicated hamburgers that had been purchased at a restaurant chain. On laboratory examination, a deadly pathogen, *E. coli* O157:H7, was isolated from

the stools of several patients and from a frozen, raw hamburger patty taken from the lot used in the restaurant. The O157:H7 serotype was previously unknown, which points out another challenge for the food industry — the emergence of new bacterial strains and reemergence of others.

The discovery of *E. coli* O157:H7 began another chapter in the beef industry's battle to enhance the safety of its products and defend its image.

The challenge took on greater momentum in 1993 when an outbreak of the *E. coli* strain gained worldwide publicity. The outbreak consisted of more than 600 cases of acute gastroenteritis and 501 cases of culture-confirmed *E. coli* O157:H7, mainly in the Pacific Northwest.

Three hundred and seventy-one of the cases were in children, 11% of whom developed Hemolytic Uremic Syndrome, which often causes kidney failure and long-term health consequences. Fourteen of those patients had significant gastrointestinal complications, and several died. Most of the cases (89%) were associated with eating in a fast-food

restaurant chain, where *E. coli* was isolated from hamburger patties.

Within five days, the Washington State Department of Health had identified the origin of the outbreak and removed the unsold contaminated meat. Eleven lots of ground beef produced in a single meat-processing plant in California were implicated as the source of the infection.

A previous outbreak of *E. coli* O157:H7-associated colitis in a group of junior high school children in Minnesota in 1988 implicated the consumption of heat-processed (precooked) beef patties from the school cafeteria. This was an important outbreak because it was the first documented foodborne outbreak associated with the consumption of heat-processed meat patties, which are usually thought to be pathogen-free. Heat-processed meat patties are consumed by an increasing number of people in the United States, and no regulatory standards currently exist to ensure that these patties are safe.

All of these outbreaks and resulting negative publicity put the beef industry in a tailspin and resulted in the industry declaring war on *E. coli*. Pathogens such as *E. coli* O157:H7, salmonella and listeria remain a primary focus for the industry and its consumers. These efforts are paying off, and significant progress has been accomplished.

The Centers for Disease Control and Prevention (CDC) recently announced that the overall incidence of *E. coli* O157:H7 infections declined 9.5% in 2004 alone. The number of infections has declined by 42% since the baseline was established between 1996 and 1998. In addition, USDA recently reported that the percentage of ground beef samples testing positive for *E. coli* O157:H7 declined by more than 80% since 2000, including a 43.3% year-over-year reduction between 2003 and 2004. While these results are encouraging, the lack of a "kill step" in raw ground beef means that foodborne illness, long-term disability and even death will continue to be a problem until the beef industry looks to a highly effective, but still underutilized technology to prevent the scourge of *E. coli* O157:H7 — irradiation.

The need for irradiation

The USDA Food Safety and Inspection

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While irradiation is not a "silver bullet," and only a small percentage of ground beef is currently irradiated, the process has the potential to accomplish for ground beef what pasteurization did for milk almost a century ago.

Service (FSIS) determined that the contamination level for *E. coli* O157:H7 in ground beef was 0.17% in 2004, compared to 0.30% in 2003. Because the United States produces about 8 billion pounds of ground beef annually, even this exceedingly low percentage of contamination means production of an estimated 12 to 15 million pounds of contaminated ground beef each year. Based on these numbers, nearly two out of every 1,000 hamburger patties produced in the United States contain bacterial pathogens when they leave the manufacturing plant. If that contaminated ground beef is not properly cooked to 160° F (71° C), it can cause serious injury or death. Furthermore, pathogens, which may be on the meat, could potentially contaminate other foods in the kitchen. If the product were irradiated, the pathogens would be destroyed before entering the home or foodservice kitchen.

While irradiation is not a “silver bullet,” and only a small percentage of ground beef is currently irradiated, the process has the potential to accomplish for ground beef what pasteurization did for milk almost a century ago. Today, very few dairy cows are infected with brucellosis (Bang’s disease) or tuberculosis (TB), yet it would be unthinkable to sell unpasteurized, raw milk in a supermarket or serve it to customers in a restaurant or school cafeteria.

Understanding irradiation

Irradiation is a word that is often

misunderstood. Processes such as pasteurization, immunization, fluoridation and chlorination each experienced similar difficulties when first introduced. In fact, the arguments against pasteurization, many of which came from the dairy industry itself, were almost identical to issues raised by critics and opponents of irradiation. Today, these technologies are standard practice and are considered pillars of public health.

Irradiation is one of the most thoroughly studied food processing technologies. The process is endorsed or supported by virtually all health and scientific organizations, including the World Health Organization (OIE), the American Medical Association (AMA), the American Dietetic Association (ADA) and hundreds of others.

It was in August 1997, during the largest recall of ground beef in history, that Michael Osterholm, then a Minnesota state epidemiologist, encouraged the Minnesota Beef Council to study food irradiation as an intervention to significantly reduce the risk of foodborne illness from *E. coli* O157:H7. The Minnesota Department of Health and the Minnesota Beef Council began a unique partnership focusing on consumer education about the benefits of food irradiation. Like pasteurization of milk, irradiation uses energy, electron beams, x-rays or gamma rays to eliminate bacteria and make food safer. Today, irradiated ground beef is marketed nationally through Schwan’s home delivery network; by mail order from Omaha Steaks; and at retail from Colorado Boxed Beef, Simek’s of Minnesota, Iowa-based Cornerstore Foods and others. Today in Minnesota, 85% of consumers consider irradiation of ground

beef to be “a good thing.” The educational effort that began in the state in 1997 is credited with significantly increasing consumer awareness and acceptance of irradiated ground beef and other foods.

While significant progress has been made by the beef industry to reduce bacterial contamination of raw ground beef, irradiation remains the most effective technology available to protect the consumer from illness caused by *E. coli* O157:H7 and salmonella in raw ground beef and listeria in luncheon meats and ready-to-eat foods. At doses commonly used to irradiate ground beef, 99.99 to 99.9999% of *E. coli* O157:H7 is eliminated. No other intervention strategy is anywhere near as effective. Furthermore, taste, texture and nutritional attributes are not compromised.

Future challenges

In the future, the beef industry will have to develop strategies to deal with challenges such as multi-drug-resistant salmonella, *Listeria monocytogenes*, dioxins, Johne’s disease, foot-and-mouth disease (FMD) preparedness, and bioterrorism preparedness. Our efforts to prevent BSE will require close cooperation, instead of confrontation, with our friends and neighbors in Canada and Mexico.

Many of the research programs that have helped reduce the incidence of *E. coli* were funded with the \$1-per-head beef checkoff. Public relations and consumer information activities to reassure consumers about the safety of beef following the BSE announcements were also funded by the checkoff. Soon the U.S. Supreme Court will rule on the constitutionality of this self-help program. A favorable ruling will allow the beef industry to continue food safety research and public relations efforts. An unfavorable ruling will put the skids on further research, public relations and beef quality assurance (BQA) programs and eliminate all beef promotion activities in several large states. When your neighbor complains about the beef checkoff, remind him or her that if we lose the checkoff, there will be no one to call the next time we face a crisis, except anti-meat and anti-animal agriculture organizations.



Editor’s Note: *Eustice has served as executive director of the Minnesota Beef Council since 1990. He was raised on a southern Minnesota farm and has a bachelor’s degree in ag journalism and a master’s degree in international business. The “Consumer Focus” column features insights into consumer demand by addressing retail and restaurant trends; food science issues; and what consumers want, need and expect from the beef products they purchase. Beef nutrition, new products, food safety issues and more will be addressed in this monthly column written by alternating guest authors.*