What You Need to Know about *E. Coli*

Generic *E. coli* (short for *Escherichia coli*) is the name for certain members of the bacterial family *Enterobacteriaceae*. The *E. coli* group has hundreds of strains. Some strains live in animals' intestines, helping digestion and keeping harmful bacteria under control as well as producing and processing important vitamins. Humans need *E. coli* and other kinds of bacteria within the intestinal tract to remain healthy. In fact, *E. coli* represents approximately 0.1 percent of the total bacteria within an adult's intestines.

Some virulent strains of *E. coli*, however, especially *E. coli* O157:H7, produce toxins that can damage the lining of the human intestine and cause serious illness. First recognized as a disease-causing organism in 1982, knowledge surrounding *E. coli* O157 has significantly increased over the years, resulting in a decrease in the number of people affected by this pathogen.

Unfortunately, however, approximately 70,000 cases of human illness due to *E. coli* O157:H7 still occur in the United States annually, according to the Centers for Disease Control and Prevention (CDC). People with weak immune systems, such as young children or the elderly are more susceptible to bacterial infection from *E. coli* O157:H7.

E. coli O157 can be found almost anywhere. Animals, including sheep, cattle, horses, goats, elk, pigs, deer, rabbits, opossums, raccoons, dogs, poultry, wild birds and houseflies, can all be hosts to *E. coli* O157. When an animal has *E. coli* O157 within its intestine, it typically "sheds" the organism through its feces. As a result, the bacteria can be found throughout the environment.

Once consumed by humans, the bacteria move through the digestive tract and settle in the intestine and can lead to illness. Examples of ways humans might introduce *E. coli* O157 into their bodies include eating contaminated, undercooked meat; drinking unpasteurized milk or fruit juice; or consuming produce that has been cross-contaminated. Other sources of exposure might be less obvious, such as swimming in feces-contaminated water, or touching your mouth after playing on grass containing feces from infected geese.

E. coli O157 can be linked to beef as cattle are one of the primary hosts. Cross-contamination can occur when cattle are harvested and a hide with cattle feces comes in contact with a carcass or meat products. The beef processing sector implements several layers of safety interventions and works cooperatively with government inspectors to prevent this from occurring, but limited instances of contamination still occur.

E. coli O157 continues to be a challenge to the beef industry as it continually adapts to different conditions and environments. The organism can remain viable for months at a time in both feces and soil. It can survive and replicate in both standing and free- flowing water. Unlike many other bacteria, *E. coli* O157 can survive and replicate in aerobic and anaerobic environments. It can respond and adapt to differences in environmental chemicals, pH, and temperature in remarkable ways. Worldwide, other virulent strains of *E. coli* also are emerging, and while they are not as prevalent as O157, they have the potential to cause foodborne illness. Researchers in the United States are working to better understand these other strains and their potential impact on beef safety.

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Key Points:

- Virulent strains of *E. coli* produce toxins that can damage the lining of the human intestine and cause serious illness.

- Approximately 70,000 cases of human illness due to *E. coli* O157:H7 still occur in the United States annually

- *E. coli* continues to be a challenge in the beef industry as it continually adapts to different conditions and environments.

References:

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