

Verification Testing Program of Beef Trimmings for *E. coli* O157:H7 and other STEC

Escherichia coli, also known as *E. coli*, is a bacterium that is commonly found in the gastrointestinal tract of humans and warm-blooded animals. While most of the strains within the gut are considered as harmless and normal gut microbial population, others are harmful (pathogenic). Pathogenic *E. coli* are distinguished from other *E. coli* by their ability to cause serious illness from the production of a specific toxin referred to as “Shiga like toxin” which adhere to and invade host cells. These strains of pathogenic *E. coli* are therefore referred to as Shiga toxin-producing *E. coli* (STEC).

These STECs can be carried in cattle and find their way into the beef supply, they can survive ordinary cooking, and small doses (1-10 cfu) can cause human illness.

First implicated in an outbreak caused by undercooked ground beef in the US in 1993, the Shiga toxin-producing *E. coli* (STEC) known as O157:H7 has become a familiar term associated with foodborne illness. In 2002, the United States Department of Agriculture Food Safety and Inspection Service (FSIS) declared *E. coli* O157:H7 as an adulterant and instituted a Verification Testing Program of Beef Trimmings for *E. coli* O157:H7. In Canada this verification sampling was designed by the CFIA for abattoirs producing raw beef manufacturing trimmings for export to the USA. The participation was mandatory for abattoirs in order to maintain their eligibility for export to the USA.



Recently, the rising concern about illnesses linked to non-O157 STEC has been recognized, where estimates suggest that six serogroups are responsible for 70% to 83% of non-O157 STEC illnesses. On September 20, 2011, FSIS announced its determination that raw, non-intact beef products, or raw, intact beef products that are intended for use in raw non-intact product, that are contaminated with Shiga toxin-producing *Escherichia coli* (STEC) O26, O45, O103, O111, O121, and O145 are adulterated. This required that the verification sampling in place for *E. coli* O157:H7 be extended to include testing, for these other six specified STEC in raw beef manufacturing trimming derived from cattle. With an implementation date of June 4, 2012, this law was to come into force approximately 90 days after the implementation date. This 90-day period provided establishments, sufficient time to make any necessary changes to their food safety systems.

Given the high prevalence of STEC in cattle which, can find their way into the beef supply, and their potential to cause human illness with possible huge economic implications, it is prudent that all abattoirs, not just those which ship beef products to the US implement, verification sampling programs for all STEC in the interest of due diligence. Recently, the presence of *E. coli* O157:H7 in beef products from a major beef processing plant in Canada resulted in illness to consumers and the largest beef products recall in history. It can happen to any beef processing plant.

At BIO|FOOD|TECH, our microbiology laboratory provides testing services for STEC. We also provide a food safety and product handling course to the beef processing industry on ways to prevent contamination of products. For more information on sampling and testing for STEC and/or our food safety course, please call: 902 368-5769.