

# ANSWERS ABOUT *E. Coli* 0157:H7



In August, a nationwide food scare — resulting in the largest food recall in history — raised many questions about the safety of beef products. With the discovery of *Escherichia coli* 0157:H7 bacteria in ground beef patties distributed by the Hudson Foods Co. meat processing plant in Columbus, Neb., the company shut down its state-of-the-art facility that produced an average of 500,000 pounds of frozen hamburger patties a day.

As beef producers, it's important to understand *E. coli*, where it comes from and how the infection can be prevented.

by Angie Stump Denton

**Q** What is *Escherichia coli* 0157:H7?

**A** *E. coli* 0157:H7 is one of hundreds of strains of the bacteria *Escherichia coli*. Although most strains are harmless and live in the intestines of healthy humans and animals, this strain produces a powerful toxin and can cause severe illness.

*E. coli* 0157:H7 was first recognized as a cause of illness in 1982 during an outbreak of severe bloody diarrhea; the outbreak was traced to contaminated hamburgers. Since then, most infections have come from eating undercooked ground beef.

**Q** What is the meaning of the numbers and letter that appear after the name *E. coli*?

**A** The 0157 and H7 refer to the laboratory designation that differentiates this harmful strain of *E. coli* from harmless strains. The combination also refers to the specific markers found on its surface.

**Q** Who gets the *E. coli* 0157:H7 infection?

**A** Anyone of any age can become infected with the dangerous strain, but it appears children and the elderly are more likely to develop serious complications.

**Q** How does one get infected with *E. coli* 0157:H7?

**A** The infection is acquired by eating food containing the bacteria. The bacteria live in the intestines of some healthy cattle, and contamination of the meat may occur in the slaughtering process.

Eating meat that is rare or inadequately cooked is the most common way of getting the infection. Person-to-person transmission can occur if infected persons do not wash their hands after using the toilet. Person-to-person contact in families and child care centers is also an important mode of transmission. Infection can also occur after drinking raw milk and after swimming in or drinking sewage-contaminated water.

**Q** What are the symptoms of *E. coli* 0157:H7 infection?

**A** People infected by *E. coli* 0157:H7 can develop a range of symptoms. Some infected people may have mild diarrhea; some may show no

symptoms at all. Most identified cases have developed severe diarrhea and abdominal cramps. Blood is often seen in the stool. Usually little or no fever is present.

## Q How soon after the exposure do symptoms appear?

A The symptoms usually appear about three days after exposure, with a range of one to nine days.

## Q How is infection with *E. coli* 0157:H7 diagnosed?

A Infection with *E. coli* 0157:H7 can only be diagnosed by a special stool culture that is not performed in many laboratories. Physicians can specifically request a culture for this bacterium, and the specimen will be sent to a laboratory that can perform this test.

## Q What complications can result from infection with *E. coli* 0157:H7?

A In some persons, particularly children under five years of age, the infection can cause a complication called hemolytic uremic syndrome (HUS). This is a serious disease in which red blood cells are destroyed and the kidneys fail. Transfusions of blood or blood clotting factors, as well as kidney dialysis, may be necessary. A prolonged hospital stay is often required. Fortunately, most people with HUS recover completely; but, it can be fatal. A similar problem, Thrombotic Thrombocytopenic Purpura (TTP), can cause strokes, a side effect often seen in the elderly. About 2 to 7 percent of infections lead to this complication.

About one-third of persons with HUS have abnormal kidney functions many years later, and a few require long-term dialysis. Another 8 percent of persons with HUS have other lifelong complications, such as high blood pressure, seizures, blindness, paralysis and the effects of having part of their bowel removed.

## Q What is the treatment for infection with *E. coli* 0157:H7?

A Most persons recover without antibiotics or other specific treatment in five to 10 days. The usefulness of antibiotic treatment is unproven, and anti-diarrheal medication should be avoided. As with all types of diarrhea, it's important to avoid

dehydration. Drink plenty of fluids, and keep your doctor informed of your symptoms.

HUS is a life-threatening condition, usually treated in an intensive care unit. Blood transfusions and kidney dialysis are often required. With intensive care, the death rate for HUS is 3 to 5 percent.

## Q How can infection be prevented?

A Do not eat undercooked hamburger or other ground beef products. Cook all ground beef and hamburger thoroughly. Make sure cooked ground beef is brown throughout (not pink) and juices run clear. Drink only pasteurized milk and milk products. Make sure infected persons, especially children, wash their hands carefully with soap after using the toilet to reduce the risk of spreading the disease.

Young children typically shed the organism in their feces for a week or two after their illness resolves. Older children rarely carry the organism without symptoms.

NOTE: 0157 can survive refrigeration and freezer storage. If present, it can multiply slowly even at 44 degrees. Thorough cooking to 160 degrees is the best safeguard against infection.

## Q What steps are being taken to test for 0157?

A U.S. Department of Agriculture's (USDA) Food Safety and Inspection Service (FSIS) and Agricultural Research Service (ARS) are working with a number of private research and university groups to develop faster, more accurate testing for this bacteria in meat plants and on food products. Several commercial lab screening tests are currently in evaluation. If approved, these new tests will cut days off the lab tests now available. However, screening tests do not tell for certain whether the bacterium is present, and a true on-site quick test is still very much in the future.

For more information, contact: Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention, 1600 Clifton Rd., Mailstop C09, Atlanta, GA 30333.

### Sources:

*Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases*  
*San Luis Obispo County Health Department*

## CHECKLIST TO SAFE FOOD Ways to Protect Your Family From 0157:H7

### Beware of rare —



“Cook ground beef enough to get rid of all pinkness; cook unground cuts enough to thoroughly brown all but the center,” says Susan

Conley, U.S. Department of Agriculture (USDA) acting director of information and legislative affairs.

### Keep everything clean -

Avoid touching any food that has come in contact with raw meat. Wash hands,

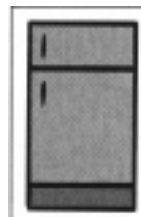


utensils and cutting boards used to prepare raw meat with

soap and hot water. Periodically use bleach (2 teaspoons to 1 quart of water) to clean this kitchenware. Keep refrigerated meat on a plate to avoid dripping juice onto other foods, and don't serve cooked meat on the same platter that held it when raw.

### Freeze and thaw intelligently —

To keep bacteria from multiplying, freeze



meats immediately after purchasing or cook ground beef and poultry within two days and other meats within three to four days. Always thaw in

the refrigerator or in a microwave, then cook it immediately.

**Plating It Safe** is a highly recommended, fact-filled brochure on safe meat handling and cooking. For a free copy of “*Plating It Safe: A Market to Mealtime Checklist*,” write to the National Cattlemen's Beef Association, 444 N. Michigan, Chicago, IL 60611, or call (312) 467-5520.

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## NCBA reinforces food safety message

The U.S. beef industry is reinforcing its proactive consumer food safety messages in light of nationwide media coverage related to a recent large beef recall.

“We want to make sure consumers know that no one cares more about the quality and safety of U.S. beef than America’s one million beef producers,” says Max Deets, Beloit, Kan., president of the National Cattlemen’s Beef Association (NCBA). “We’re committed to the research, the scientific inspection procedures and the information efforts that give consumers confidence in the beef they buy.”

Deets notes a number of actions the industry has taken in recent weeks to respond to consumer questions about beef quality, safety and appropriate handling and preparation methods:

| NCBA issued a public statement supporting aggressive action by the U.S. Department of Agriculture (USDA) to resolve the Hudson Foods recall. The statement, distributed to media nationwide, also highlighted the industry’s multi-million dollar beef safety research program.

| A consumer-oriented food safety video release was distributed via satellite to television stations nationwide. The video, called *Avoiding Barbecue Blunders*, emphasizes appropriate preparation and handling practices for consumers.

| News releases focusing on safe handling and cooking have been distributed to national media across the country.

| *Confident Cooking with Beef, Fast Family Favorites and Grilled Beef* recipe and information brochures have been distributed to more than 750,000 consumers through state beef councils and supermarkets.

According to Deets, the beef industry has invested more than \$1.5 million in *E. coli* 0157:H7 food safety research each year for the past five years. The industry formed a

Blue Ribbon Task Force in 1993 to aggressively address the *E. coli* 0157:H7 issue. The Task Force, made up of top scientists from government, academia and the industry, developed a blueprint action plan, including research priorities. This research has already resulted in USDA approval and packing plant use of technologies like steam vacuuming and organic acid rinsing of carcasses, which are tools proven to reduce pathogens during processing.

“We’ve also long supported the development of a science-based meat inspection system,” says Deets.

Many plants have already voluntarily adopted a Hazard Analysis and Critical Control Points

(HACCP) inspection system. He notes that a new USDA rule now requires all slaughter facilities to test raw carcasses for generic *E. coli* bacteria.

The beef industry has also sponsored the SERVSAFE Food Program developed by The Education Foundation of the National Restaurant Association. More than 50,000 food professionals are trained by the Foundation each year. They then train their staffs in proper food safety procedures.

For 10 years, the industry has sponsored a Beef Quality Assurance program to ensure that cattle producers have the latest information on new technologies on proper production methods. Currently scientists at several universities are pursuing new treatments to reduce and eliminate *E. coli* 0157:H7 in livestock.

The beef industry also launched a Public Health Initiative to help public health organizations, such as the National Association of City and County Health Officials, develop new food handling education materials for consumers. The brochure, *Plating It Safe: A Market to Mealtime Checklist*, is available for consumers by writing to NCBA (see “Checklist To Safe Food”).

According to USDA, *E. coli* 0157:H7 in beef is quite rare, Deets says. Of more than 14,000 random samples of ground beef tested by USDA over the past three years, only seven have tested positive for the pathogen. “We’re proud of our product,” says Deets. “We’re committed to producing the highest-quality, safest beef in the world.”

