AMERICAN MEAT INSTITUTE **FACT SHEET**

E. coli O157:H7

What is *E. coli* O157:H7?

Generic *Escherichia coli* (*E. coli*) bacteria are an essential, but normally harmless component of the digestive tract of healthy animals and people. *E. coli* O157:H7 is a virulent strain of the family of generic bacteria that is found in cattle, deer and other warm-blooded animals.

According to data from the Agricultural Research Service, as many as 100 percent of lots of cattle may test positive for *E. coli* O157:H7 when they arrive at packing plants. These incidence rates in cattle vary widely by season and region. Thanks to many food safety technologies used by the meat packing industry, *E. coli* O157:H7 is removed during processing and is found in ground beef less than 1 percent of the time.

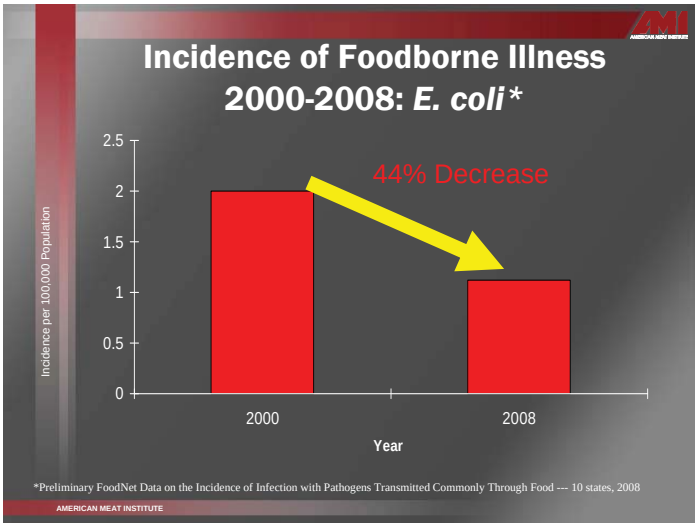
While some recent media reports have claimed that grass-fed cattle have lower incidence rates of *E. coli* O157:H7, research shows that the prevalence of *E. coli* O157:H7 is not affected by the production system (Fegan, *et. al.*, *Journal of Applied Microbiology*, 2004)

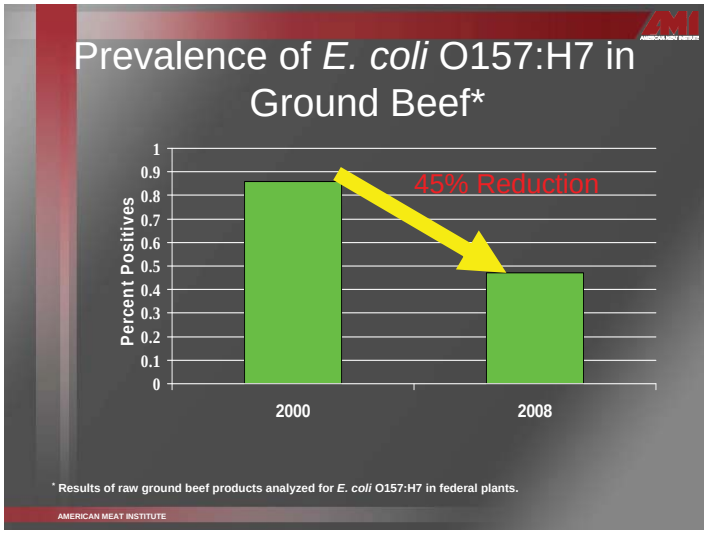
How common is *E. coli* O157:H7 on meat?

A 2000 AMI Foundation study done in five packing plants showed that while 18 percent of incoming cattle tested positive for *E. coli* O157:H7 on their hides, no carcasses tested positive for the pathogen following careful hide removal and a series of anti-microbial treatments.

The findings support a 1999 AMIF survey of 12 beef packing plants that also showed *E. coli* O157:H7 was eliminated during processing despite its presence in hides.

USDA's meat inspection arm, the Food Safety and Inspection Service (FSIS), routinely samples ground beef for *E. coli* O157:H7. According to FSIS data, *E. coli* O157:H7 occurs at a rate of less than 1 percent. Additionally, this rate is declining. (See chart.) While it is rare for *E. coli* O157:H7 to find its way into products, it can occur, making careful handling and thorough cooking critical.





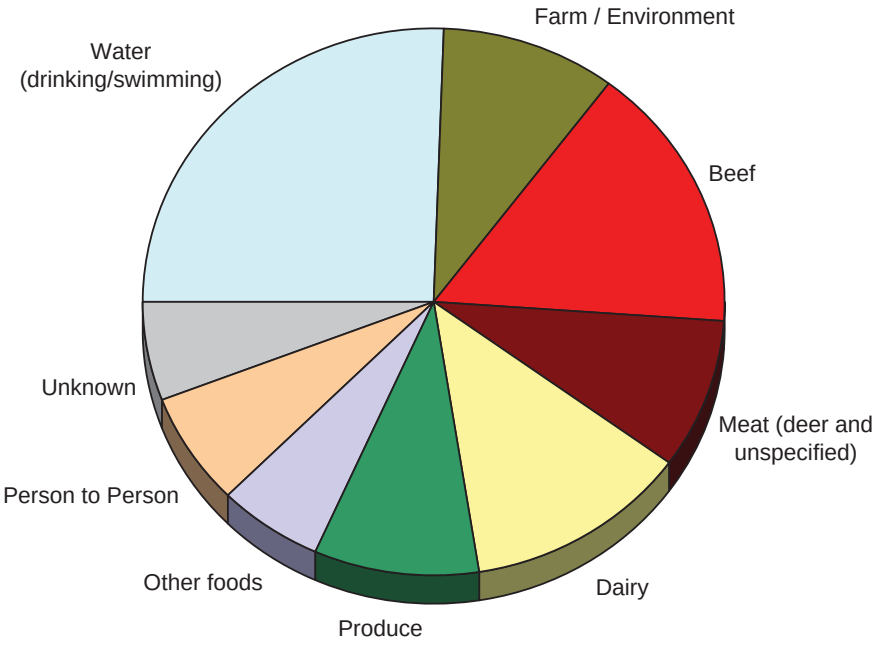
Incidence of Illnesses

When a highly publicized *E. coli* O157:H7 outbreak occurred in the Pacific Northwest in 1993, very few states tracked and reported cases of *E. coli* O157:H7 infection. Today almost every state requires that these infections be reported to the Centers for Disease Control and Prevention (CDC).

A recent review by the Food Research Institute at the University of Wisconsin demonstrated that beef is

American Meat Institute
1150 Connecticut Avenue, NW • 12th Floor • Washington, D.C. 20036
(202) 587-4200 • fax (202) 587-4300 • http://www.MeatAMI.com

E. coli O157:H7 Outbreaks Worldwide, 1982-present



Source: 207 total outbreaks reported in published scientific and government literature.

not the only source of *E. coli* O157:H7 related illnesses. In fact, beef represented only about 25 percent of the outbreaks and cases worldwide of O157 related illnesses since 1982. Other common sources of O157 illnesses include water, produce, other meat products, the environment, dairy and person-to-person spread.

New data released by the CDC show that *E. coli* O157:H7 infections declined 42 percent compared with the 1996-1998 baseline. According to Foodborne Diseases Active Surveillance Network (Food Net) data, the incidence of cases of *E. coli* O157:H7 infections per 100,000 persons is 0.9 for 2004, exceeding the National Health Objective for *E. coli* O157:H7, while data from 2005 was slightly higher at 1.06.

Those most susceptible to severe illness from *E. coli* O157:H7 are the elderly, the young and those who are immunocompromised, like people with AIDS or those who are undergoing chemotherapy.

Typically, *E. coli* O157:H7 related illnesses occur because the O157:H7 serotype emits a toxin that can cause hemorraghic colitis, a disease with symptoms like bloody diarrhea and severe abdominal pain. Approximately 10 percent of these cases in children lead to hemolytic uremic syndrome (HUS), which is the leading cause of acute pediatric renal failure.

Illness Prevention

The beef industry is committed to reducing and ultimately eliminating *E. coli* O157:H7 on beef products. The AMI Foundation has developed a comprehensive research agenda to achieve this goal.

Until *E. coli* O157:H7 is eliminated in the live animal, the beef processing industry is working to create hurdles in the production system that prevent the pathogen from entering the beef supply to the highest degree that is technically possible.

These "intervention" strategies include thermal pasteurization using hot water or steam, the use of organic acid rinses and aggressive and statistically sound testing programs. Steam vacuum also serves as an effective tool for spot decontamination.

In 1994, AMI also successfully petitioned USDA to reform the meat and poultry inspection system by implementing a science-based HACCP (Hazard Analysis Critical Control Point) system. The new system seeks to prevent microbial contamination before it occurs. The system was fully implemented throughout the meat industry in 2000.

Advice for Consumers

Consumers should follow the safe handling practices detailed on every package of raw meat and poultry and should take special care to cook ground beef products, such as hamburger and meat loaf, to

an internal temperature of 160 degrees F. This is best verified using an instant-read thermometer.

Whole muscle cuts like steaks and roasts are sterile on the inside. Cooking the products destroys any bacteria present on the outside of these cuts. However, when meat is ground, any external bacteria that may be present are distributed throughout the ground product. That is why it is so important to ensure that ground products are thoroughly cooked.

Consumers with food safety questions should visit www.meatsafety.org to learn more about safe food handling, or call USDA's Meat and Poultry Hotline at 1-888-674-6854.

Helpful Links

American Meat Institute
http://www.meatami.com
http://www.meatsafety.org

American Meat Institute Foundation
http://www.amif.org

American Meat Science Association
http://www.meatscience.org

American Society for Microbiology
http://www.asmusa.org

Centers for Disease Control and Prevention
http://www.cdc.gov

Institute of Food Technologists
http://www.ift.org

Third-Party Experts

Michael Doyle, Ph.D.
Director
Center for Food Safety
University of Georgia
(770) 228-7284
mdoyle@uga.edu

John Sofos, Ph.D.
Professor
Department of Animal Sciences
Coloardo State University
(970) 491-7703
john.sofos@colostate.edu