



# Extension FactSheet

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## Safeguarding Your Family Against Infections When Visiting Agricultural Fairs and Petting Zoos

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### Overview

Visits to petting zoos, open farms, zoological gardens, and agricultural fairs provide an enjoyable, entertaining, and educational experience for children and adults alike. However, healthy farm animals can be excreting microorganisms that cause serious human diseases. This fact sheet outlines several diseases that may be transmitted from animals and their environment to humans. Suggestions are provided on how to reduce the likelihood of such transmission events occurring as well as suggestions on how to make these visits as safe as possible.

### What Diseases Are of Concern?

Outbreaks of several different kinds of infections have been linked to visiting animal exhibits such as petting zoos and agricultural fairs. Among the most common are infections with the bacteria *Escherichia coli* O157:H7 (often simply called *E. coli*), *Campylobacter* spp., *Salmonella enterica*, and the parasite *Cryptosporidium parvum* (Crypto).

### Who Is at Risk of Becoming Ill?

Anyone can become infected with these organisms. The severity of illness, however, will vary depending on which organism the person is infected with and that individual's ability to fight off infections. Typically, individuals who

do not have a fully developed immune system (children under five years of age) and individuals whose immune systems are weakened or less functional because of advanced age, pregnancy, medication, or HIV infections, are more likely to develop serious disease.

### What Are the Consequences of Human Infections?

These microorganisms primarily infect the gastrointestinal tract and can cause a wide range of symptoms, ranging from infection without any outward signs of illness to widespread infection throughout the entire body, resulting in kidney failure and even death. Individuals who are unknowingly infected may pass the infection on to others.

Infection can only be diagnosed by laboratory testing. Anyone experiencing rapid onset of flu-like symptoms — upset stomach, diarrhea, vomiting, muscle aches, etc. — within one week of visiting an animal exhibit should seek medical attention. Antibiotics may be helpful for some infections while for others, such as *E. coli* O157, treatment with antibiotics may make the disease worse. Getting a timely diagnosis is important so that health-care providers can prescribe the correct treatment and the source of the infection can be traced and stopped to prevent other infections.

## How Does a Person Become Infected With These Bacteria and Parasites at Animal Exhibits?

Since these organisms are microscopic, it is not possible to know if surfaces, food, or water are contaminated just by looking at them. Most infections occur when the organisms are eaten. This can occur either directly when a food or water source becomes contaminated, or indirectly by touching a contaminated site and then picking something up and eating it with your hands. Many of these organisms can survive for extended periods in the environment attached to dust and debris. Simply carrying food through an animal-holding facility may allow dust and aerosolized droplets of bacteria to fall on and contaminate food, beverages, food wrappers, and drinking straws.

In addition, hands or shoes can be contaminated with these organisms when entering an environment where animals are housed. If food is eaten or other hand-to-mouth activities such as nail biting, smoking, or pacifier use occur before the hands are adequately washed, there is a risk of infection.

## Where Do These Infectious Agents Come From?

The infectious agents mentioned in this fact sheet are normal inhabitants of the gastrointestinal tract of many animals such as cattle, pigs, sheep, goats, and poultry. Animals contaminate their environment with feces and saliva. Young or sick animals may more likely be carriers of these organisms. However, it is important to note that frequently healthy animals may also harbor these pathogens. *It is not possible to determine by looking at an animal whether it is a carrier of a microorganism infectious to people.* Furthermore, since these organisms survive for such a long time in the environment, a person may become infected by touching a surface that was contaminated previously, even if no animals are currently present.

## Are Human Infections Common Following Visits to Animal Exhibits?

There is no information on the percentage of gastrointestinal infections acquired from animal exhibit settings. However, almost every year, at least one or more outbreaks of *E. coli* O157 are linked to an agricultural exhibit in the United States. Outbreaks involving a few people may go undetected or unreported. Other outbreaks have involved large numbers of visitors to agricultural fairs. In Ohio

alone, there have been three outbreaks in the past five years, some involving a large number of people. Research has demonstrated that most animal-holding environments at agricultural fairs are contaminated with either *E. coli* or *Salmonella*. Thus, it is prudent for visitors to assume that most of these environments may be contaminated and to take precautions.

## What Can Be Done to Prevent Infections in People?

Human infections associated with animal exhibits can be prevented in two primary ways — thorough hand washing and by not eating or drinking in the animal areas.

### Hand Washing

Investigations of several animal exhibits associated with disease outbreaks among people have clearly identified hand washing as an important, if not the single most important, factor, in preventing disease. In one study, people who washed their hands after visiting an animal contact area were five times less likely to become ill than those who did not wash their hands. Hand washing should be done with large amounts of water, preferably warm, and with soap. Hands should be washed for at least 20 seconds and dried with a single-use paper towel.

### Do Not Eat or Drink in Animal-Holding Areas

Eating, drinking, or simply bringing food into an animal-holding area can be hazardous. People who eat or drink in animal-holding areas were almost five times more likely to get ill than people who do not eat or drink in those areas. Food should be stored and consumed in areas completely separated from animal-holding areas and only consumed after thoroughly washing hands.

### Are Waterless Hand-Sanitizing Gels Effective at Disinfecting Hands Following Animal Contact?

Waterless hand sanitizers, such as those containing alcohol, are often provided at animal exhibits. These products have been proved effective at reducing the transmission of infections in hospital settings. However, there's no evidence that sanitizers will work on dirty hands after visiting animal-housing environments. It only takes a few *E. coli* cells to cause human infection, and they can be hiding in dirt under nails, where hand sanitizers won't be able to kill them. Also, *Cryptosporidium* is notoriously resistant to many disinfectants. These hand-hygiene products may be helpful, but they should not be relied upon as a substitute

for hand washing with soap and water, which should be done as soon as possible after visiting a barn, and definitely before eating.

## Summary

Contact with agricultural animals and their housing environments poses the obvious hazards of being kicked, stepped-on, or knocked over. Other hazards that are not so obvious include a variety of infections including, but not limited to, those listed previously.

Notwithstanding, visits to agricultural fairs and petting zoos can be made safe. Refraining from eating and drink-

ing in animal-holding areas are practices clearly shown to reduce the risk of human infection at animal exhibits.

Young children should be supervised at all times while in animal-holding areas to prevent hand-to-mouth activities. Adequate hand washing with soap and water, including assistance to young children, is an effective measure to prevent infection. Following these two simple steps will help make visits to animal exhibits safer.

## For More Information

For more information, log on to: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5404a1.htm>

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