Why are sprouts more susceptible to microbial contamination than other foods?

In all of the reported outbreaks, the likely source of the pathogen was contaminated seed. Seeds may become contaminated by bacteria in animal manure in the field or during postharvest storage. Using animal manure in fields of alfalfa intended for nonhuman use may be hazardous if seeds from that alfalfa are then used for sprouting. During germination, abundant nutrients, high levels of moisture, and heat generated from the sprouting process help to ensure survival and growth of bacteria.

Mishandling of sprouts during production, packing, or distribution has not been implicated as the source of sprout contamination. However, bacteria already present in the sprouting seed can continue to thrive if proper food handling techniques are not practiced during harvest, processing, and preparation.

Are homegrown sprouts safer than commercially grown ones?

Probably not, since the seed appears to be the source of contamination. If pathogenic bacteria are present in or on seed, they can still grow to high levels during sprouting, even under sanitary conditions.

How can I avoid foodborne illness from eating sprouts?

The Food and Drug Administration and state health departments have offered the following tips:

- Purchase only high-quality sprouts. Do not eat sprouts that are older than their recommended shelf life, or that appear slimy or discolored.
- Cook sprouts. This significantly reduces the risk of illness.
- Check sandwiches and salads purchased at restaurants and delicatessens. These entrées often contain raw sprouts. You may wish to specifically request that raw sprouts not be added to your food.
- If you have eaten raw sprouts and are experiencing diarrhea or other symptoms of foodborne infections, consult your health care provider.

For more information about food safety, contact Penn State's Department of Food Science at (814) 865-5444.

Prepared by
Luke LaBorde,
assistant professor of food science.

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Food Safety: Production, Processing, Food Service, Retail, Consumers

Topics in Food Safety

What You Should Know About

Sprouts

In recent years, raw sprouts have been involved in a number of cases of foodborne illness. To reduce the risk of illness, the U.S. Food and Drug Administration has advised consumers to be aware of the risks associated with eating raw sprouts. This publication contains information to help you make sure that the food you're eating is safe.

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What You Should Know About

Sprouts

Sprouts are germinated seeds of alfalfa, clover, sunflower, broccoli, mustard, radish, garlic, dill, and pumpkin, as well as various beans, such as mung, kidney, pinto, navy and soy, and wheat berries. Considered by many to be a "health food," sprouts are low in calories, fat, and sodium. They also supply fiber, vitamins, minerals, and other health-promoting phytochemicals.

By far, alfalfa is the most popular type of seed used for sprouting. The sprout industry uses only a small fraction of the total alfalfa seed crop, so seeds for sprouting are grown with those used to grow forage. After the entire seed crop has been harvested and stored in warehouses, seeds for sprouting are separated, sorted, packaged, and sold to sprouters.

In commercial operations, seeds are soaked in water, drained, and spread out in specialized drums or trays. The seeds are continually irrigated and, depending on the desired level of maturity, are harvested 3 to 10 days after sowing. The sprouts are washed to remove their seed coats and packed into bags or plastic trays.

In recent years, raw sprouts from commercial growers have been linked to several outbreaks of foodborne illness:

October 1999. An outbreak of *Salmonella* that sickened at least 19 people in six Wisconsin counties was linked to contaminated alfalfa sprouts.

May 1999. Approximately 30 people in California were infected with *Salmonella* bacteria after consuming clover sprouts.

March to May 1999. Approximately 70 cases of salmonellosis in Colorado were associated with consumption of clover sprouts.

July 1998. Eight people in California and Nevada were infected with dangerous *E. coli* O157:H7 bacteria after consuming alfalfa/clover sprouts.

May 1998. Eighteen cases of salmonellosis were associated with the consumption of alfalfa sprouts in California.

Late 1997 to July 1998. Sixty cases of salmonellosis in California were associated with the consumption of an alfalfa/clover sprout mixture.

Healthy people infected with *Salmonella* and *E. coli* O157:H7 may experience diarrhea, nausea, abdominal cramping, and fever for several days. However, in children and the elderly, an *E.coli* O157:H7 infection can lead to hemolytic uremic syndrome, followed by kidney failure or death. *Salmonella* infections also can cause serious illness in children, the elderly, and people with weakened immune systems.

The following questions and answers will help you decide if you should eat sprouts.

I have never had a problem with sprouts. Why should I be concerned?

Most sprouts are safe to eat. However, in some groups of people, foodborne illness can lead to serious complications. People who eat sprouts should evaluate their risk from foodborne pathogens.

What types of individuals should avoid eating sprouts?

Most healthy adults who become infected with *Salmonella* or *E. coli* O157:H7 experience diarrhea and nausea. However, young children, the elderly, and people with any medical condition that suppresses the immune system should not eat raw sprouts.

Are all sprouts capable of causing foodborne illness?

Alfalfa and clover sprouts have been involved most often, but all raw sprouts may pose a risk because they are produced under similar conditions.