



*Center for  
Health & Hygiene  
in the Home & Community*

The Center for Health and Hygiene in the Home and Community serves as a national and international resource for information and education, applied research, professional training and conferences. The Center focuses on issues relating to hygiene and infection control in areas such as:

- consumer food safety
- home hygiene
- daycare
- preschool
- homecare
- sports and leisure activity
- travel and hospitality


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**Fresh Produce and  
Food Safety:  
Tips for Keeping  
Your Family Healthy**



May 2007

### Microbial Pathogens Associated with Fresh Produce

Source: Scott, Elizabeth. 2007. Foodborne Illness. In Rapid Reference for Nurses. Edited by Nancie Herbold and Sari Edelstein. Jones & Bartlett Publishers, Inc.

Microorganism	Incubation Period	Symptoms	Source	Produce Associated with Outbreaks
<b>BACTERIA</b>				
<i>E. coli</i> O157:H7	2 to 5 days	Watery diarrhea often containing blood, abdominal pain.	Any food or water contaminated with cow feces. Infected human carriers. Cross-contamination in the kitchen from contaminated meats to produce.	apple cider, alfalfa sprouts, lettuce, radish sprouts, spinach
<i>Salmonella</i> spp.	18 to 36 hours	Abdominal pain, diarrhea, chills, fever, nausea, vomiting	Any food or water contaminated with cow feces. Infected pets: reptiles, dogs & cats. Infected human carriers. Cross-contamination in the kitchen.	alfalfa sprouts, apple cider, melons, tomatoes
<i>Shigella</i> spp.	1 to 3 days	Abdominal pain, diarrhea, fever, vomiting	Any food or water contaminated with human feces. Cross-contamination in the kitchen.	lettuce
<b>PARASITES</b>				
<i>Cryptosporidium</i> spp.	1 to 12 days	Profuse watery diarrhea, abdominal pain, anorexia, vomiting	Human and animal feces. Contaminated water	apple cider
<i>Cyclospora</i> spp.	1 to 11 days	Watery diarrhea, nausea, anorexia, abdominal cramps	Human feces, possibly others. Contaminated irrigation and washing water.	raspberries, basil, lettuce
<b>VIRUSES</b>				
Hepatitis A	25 to 30 days	Fever, malaise, anorexia, nausea, abdominal pain, jaundice, dark urine	Human feces and urine. Cross-contamination from infected humans.	frozen strawberries, lettuce

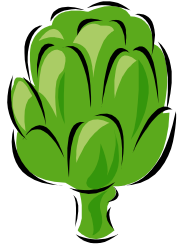
### Resources

For more information on foodborne illnesses visit the Centers for Disease Control and Prevention website: <http://www.cdc.gov/>

For more produce safety tips visit the Food and Drug Administration's website: [http://www.fda.gov/fdac/features/2007/207\\_foodsafety.html#tips](http://www.fda.gov/fdac/features/2007/207_foodsafety.html#tips)



## Fresh Produce—Food Safety Concerns



Many people touch your food before it arrives at your table

Food safety has become a hot topic in both domestic and international news during the past year. In the summer of 2006 contaminated spinach caused a widespread outbreak of E.coli O157:H7.

Illnesses associated with produce has not typically been common. However, our increasing global system of food production and distribution potentially increases exposure to foodborne pathogens. Our food system has become so complicated that we don't always know where our food was grown, how it was handled on the farm, in the factory, or before it was displayed in the store or market. Fresh fruits and vegetables can become contaminated along the way with pathogens (harmful bacteria, viruses, and parasites) which can make people sick.

### How Does Contamination Occur?

Produce can be contaminated at multiple points during the production process. Soil, animal feces, sewage, insects, animals, humans can all contaminate food. This can happen during

production, harvest, during processing, at the store, and even at home.

### Reduce Your Risk

The Federal Drug Administration recommends following these simple steps for washing fresh fruits and vegetables to reduce your risk and help keep your family healthy:

#### Buying

- Purchase produce that is not bruised or damaged.
- When selecting fresh-cut produce choose only those items that have been refrigerated or surrounded by ice.
- Bag fresh fruits and vegetables separately from meat, poultry, and seafood products when packing them to take home from the market.

#### Storage

- Perishable fruits and vegetables can best be maintained by storing in a clean refrigerator at a temperature of 40°F or below.
- All pre-cut or peeled product should be refrigerated within two hours to maintain both quality and safety.
- Keep refrigerators set at 40°F or below.

#### Wash your hands and cooking areas

Wash your hands with hot, soapy water for at least 15 seconds before and after handling food, and after touching raw meat, changing a diaper, using the restroom, handling a pet or touching anything that could contaminate your hands. Then dry your hands with a paper towel. Go to our



Purchase produce that is not bruised or damaged

website for more hand washing advice offered in our Tips to Prevent Cold & Flu. Wash and sanitize all countertops, cutting boards and utensils (including vegetable brushes) with diluted household bleach (a mixture of 1 teaspoon chlorine bleach in 1 quart of water) or other antimicrobial kitchen product formulated for food contact surfaces. Do this before and after preparing food.

#### Wash Produce

Wash all whole fruits and vegetables immediately before preparing them. This prevents pathogens from being transferred from the rind or skin to the inside of the fruit or vegetable when it is cut.

Wash fruits and vegetables under clean, running water in a clean sink. Fresh fruits and vegetables should not be soaked in water. Do not use detergents, soaps or bleach to wash produce. Scrub firm fruits and vegetables with a clean, sanitized fruit/vegetable brush. Remove the outer leaves of lettuce and cabbage before washing them.

#### Pre-packaged Produce

While prepackaged produce provides great convenience, our studies have shown that pre-packaged, pre-washed produce harbor pathogens too. Wash all bagged produce, even if the bag says 'pre-washed'.

#### Farmer's Markets & Home Grown Veggies

Supporting your local farmers' market or even growing your own vegetables is a good way to reduce the number of hands your food passes through before being served at your table. However, local farms and even home gardens cannot ensure that products are completely free of residues, due to general environmental pollution. Home grown produce and those items purchased

at the farmers' market should be cleaned and prepared just as cautiously as those items purchased through the grocery store.



Wash all fruits and vegetables before preparing them

#### Organic vs. Conventional Produce

During the past few years there has been a significantly increased interest in organic food. "Organic" is a labeling term defined by the US Department of Agriculture to identify products that have been produced in accordance with organic production standards. Organic food is grown using principles that minimize the use of external inputs, avoiding the use of synthetic fertilizers and pesticides.

As organic products become more readily available you might find yourself wondering about the safety of these products versus those grown through conventional methods. Production of organic foods must meet FDA regulations including composted manure except under strictly controlled conditions; conventional agriculture has no such restrictions. Composting has been shown to reduce pathogens and parasites. However, there are no studies to indicate whether organic produce has more or less pathogen contamination than non-organic conventional foods. There are a number of ways in which organic produce could become contaminated with pathogens and it should be cleaned the same way as conventional produce.