

Food Safety and Fresh Produce

Recent outbreaks of food-related illnesses have increased many people's concerns about the safety of fresh fruits and vegetables—regardless of whether the cause is hepatitis A, *Escherichia coli* (*E. coli*), or some other foodborne microorganism. These concerns already had increased during the past decade when, due primarily to an increased awareness of the health benefits fresh produce provides, people in the United States were eating more of these foods. When mom told us to eat fresh fruits and vegetables, she knew what she was talking about: these foods contain compounds that help decrease the risk of many illnesses, including cancer and macular degeneration. In addition, consumers in the United States expect to have a multitude of fresh produce available year round. To supply this demand, the produce industry has developed a distribution system to move both domestic and foreign produce to the dinner table.

The recent outbreak of hepatitis A in Pennsylvania, which killed three people and sickened more than 600, has raised new concerns about the safety of this supply and distribution system. The source of the outbreak was identified as green onions (scallions) and, as a result, the U.S. Food and Drug Administration (FDA) has warned consumers not to eat uncooked green onions for the time being. As the story unfolds, can this tragic outbreak teach any valuable lessons about the safety of our food supply chain? Should other fresh produce items be avoided as well?

It is useful to remember that pathogenic (disease-causing) microorganisms are not part of the natural microorganisms found on or in fresh produce. Therefore, any disease-causing microbes present on fruits or vegetables are there because of inadvertent contamination, which can occur when produce comes in contact with dirty water, equipment, or storage containers; unsanitary human handlers and food preparers; and/or pests. Contamination can occur in the field or at any point in the food supply chain from production to table.

The fresh-produce processing industry uses various tools to decrease microbial contamination on products. Sanitary operating procedures common to the entire food processing industry include pest control, facility sanitation, worker hygiene, and temperature control. Fresh-produce processors often take specific steps to clean fruits and vegetables, including high-pressure washes, scrubbing, trimming, and peeling. Many processors, especially in the fresh-cut produce industry, also use sanitizing washes or dips to clean produce. These dips rely on chlorine or other sanitizers to kill harmful microbes. All the treatments, when properly applied, will substantially decrease—but may not eliminate—microbial contamination.

Consumers can take several actions to decrease their risk from disease-causing microbes on fresh fruits and vegetables. Because most microbial contamination is present on the skin or outer layers of produce, washing and peeling are effective ways to lessen the number of harmful microorganisms present.

- Wash produce with clean water before eating. (Household soaps and other cleansers are not recommended; they may not be effective in killing or removing pathogens and may leave harmful residue on the produce that poses a greater risk than any microbes potentially present.)
- Scrub firm produce, such as melons and cucumbers, with a produce brush during washing.
- Cut out damaged or bruised areas before eating.
- Control temperature of produce to prevent microbial growth.
- Refrigerate fresh produce that requires cool temperatures (below 45°F, 7°C)
- Avoid leaving cut melons at room temperature for more than two hours.
- Wash hands and food preparation surfaces often.
- Avoid cross-contaminating ready-to-eat foods with raw meat, poultry, or seafood.

These techniques are highly recommended to enhance the safety of fresh produce, but may not be sufficient to remove all pathogens present. This is especially true for leafy greens and other hard-to-wash

produce. The only sure way for consumers to eliminate harmful microorganisms in fresh fruits and vegetables is through cooking. Heating fruits or vegetables to a temperature of 160°F (71°C) or greater is enough to kill the pathogenic microorganisms that may be present. Of course, no one wants a cooked green salad. But folks who are particularly susceptible to foodborne illness—children, the elderly, and those with compromised immune systems—may want to avoid higher-risk fresh, uncooked produce.

Researchers at the Centers for Disease Control and Prevention (CDC) and at state land-grant universities are working to decrease the risk of contamination on fresh produce even further. In 1998, the FDA and the U. S. Department of Agriculture (USDA) released a *Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables (The Guide)*. Later, Cornell University released *Food Safety Begins on the Farm – a Grower’s Guide*. These publications, which have been well received, spell out what producers, packers, and distributors of fresh produce must do to decrease the risk of produce contamination.

One lesson to learn from the Pennsylvania hepatitis outbreak is this: There is no “magic bullet” to eliminate harmful microorganisms in all fresh foods. No single treatment will do it; that is why a comprehensive food safety system, from farm to table, is essential to minimize the risk of foodborne illness. No link in the food supply chain can be ignored: evidence collected so far from the Pennsylvania outbreak suggests that the green onions already were contaminated with the hepatitis virus when they entered the restaurant, but that poor food-handling practices in the restaurant spread the virus to more people than otherwise would have been infected. Progress has been made in developing and implementing a food safety system for fresh produce, and all of the measures currently in place will decrease risk, especially as more is learned about which practices work best. But even the best system cannot eliminate risk. As *The Guide* states, “Current technologies cannot eliminate all potential food safety hazards associated with fresh produce that will be eaten raw.”

Another lesson that may be lost in the clamor surrounding these events is that real health benefits come with a diet rich in fresh fruits and vegetables. But there also are real food safety risks and it is important to manage these risks, especially for particularly susceptible individuals. Consumers should be aware of outbreaks as they occur, heed official warnings, and follow good food-handling practices. With a little caution and common sense, we all can keep following mom’s advice about eating fresh fruits and vegetables.

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More information on this topic is available from these sources:

FDA Advises Consumers about Fresh Produce <<http://vm.cfsan.fda.gov/~lrd/tpproduc.html>>

Food Marketing Institute. *FMI Introduces Best Practices Guide for Fresh-Cut Produce.*

<<http://www.fmi.org/media/mediatext.cfm?id=583>>

Food Safety Begins on the Farm; A Grower’s Guide <http://www.gaps.cornell.edu/pubs/Farm_Boo.pdf>

Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables

<<http://www.cfsan.fda.gov/~dms/prodglan.html>>

Iowa State University Food Safety Website. <<http://www.extension.iastate.edu/foodsafety/>>

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