

## Safe Consumption of Apple Juice and Apple Cider

On August 26, 1997 the federal Food and Drug Administration (FDA) asked makers of unpasteurized apple juice and cider to warn customers that these drinks could contain bacteria dangerous to children, the elderly, pregnant women, and people with weak immune systems. The bacteria of primary concern in these products is E. coli $0157: \mathrm{H} 7$. This bacteria was associated with an outbreak of illness due to consumption of unpasteurized apple juice in Washington, California and Colorado in October 1996 that killed a child and sickened 66 other people. Outbreaks of this illness associated with apple cider have also occurred in the past few years in Washington, Massachusetts, and Connecticut.

In almost every case, contamination of the juice or cider has been linked to the use of windfall apples that had been contaminated with manure and not properly washed. Both cows and deer are known carriers of the $E$. coli bacteria, and it is not uncommon to find these animals in apple orchards, especially at this time of year. In addition, people harvesting apples by hand can transfer manure or other contaminants to apples still on the tree if their hands touch the rungs of a ladder where dirty boots or shoes have been.

While no cases of illness associated with $E$. coli in unpasteurized apple juice or cider have been noted in Wisconsin, the public is correct in expressing concern over these products as the fall apple season starts. In 1995 and 1996, 44 cider and juice samples were tested in Wisconsin, with no indication of contamination at any of the plants. In addition, the Wisconsin Apple Growers Association and the University of WisconsinExtension held a workshop in June 1997 to update processors on making, handling, and marketing safe, high quality juice and cider.

Effective pasteurization is the only guarantee against the presence of this harmful $E$. coli bacteria in apple juice and cider. Apple juice is usually pasteurized, however cider is not. Since the state of Wisconsin is not requiring pasteurization for apple cider at this time, consumers can take the following steps to provide a margin of safety in apple juice and apple cider consumed:

1. Drink only pasteurized apple juice and cider. There is no requirement that pasteurized juice be labeled as such. However, juice sold in heat-sealed metal-lidded glass jars is usually pasteurized.
2. Check the product label for the presence of the preservatives sodium benzoate and potassium sorbate. These preservatives will cause most, if not all, E. coli present to die, but they will not by themselves guarantee safety. Of the two preservatives, sodium benzoate is more effective against the bacteria than potassium sorbate.
3. Do not rely on refrigeration to ensure safety. While the bacteria will not grow at refrigeration temperatures, it can still survive in the juice or cider and cause illness.
4. Consider a mild heat treatment of unpasteruized juice and cider. The Center for Disease Control recommends boiling apple cider for 30 seconds to ensure safety. However, you should be aware that this treatment will change the flavor and it will be more like commercially pasteurized apple juice. New York State advocates heating cider to $160^{\circ} \mathrm{F}$ for 6 seconds which is adequate to ensure safety without drastically changing the flavor. If you use this method, be sure to stir the cider well while heating.
5. Do not rely on freezing to ensure safety. While freezing will eliminate the risk of other harmful microorganisms such as Cryptosporidium, it will not completely eliminate the risk of $E$. coli contamination.
6. Use freshly harvested apples for home production of juice and cider. As apples age, they become less acid, and $E$. coli is better able to survive in the juice or cider produced.
7. Never use drops (apples that have fallen to the ground) for home cider making or for eating. Do not purchase cider made from drops, even cider that has been pasteurized.
B.H. Ingham \& S.C. Ingham, 1997

The authors are affiliated with the Department of Food Science, University of WisconsinExtension, 1605 Linden Drive, Madison, WI 53706.

