



*Raw milk is milk that has not been pasteurized before consumption. The Food and Drug Administration (FDA) and the Centers for Disease Control and Prevention (CDC) recommend drinking only pasteurized milk, because raw milk may contain harmful bacteria such as E. coli O157:H7, Listeria and Salmonella that can cause life-threatening illnesses. This recommendation has been affirmed by the American Medical Association and the American Academy of Pediatrics, among others.*

## Raw Milk and the Law

Because raw milk, by nature, may contain harmful bacteria such as *E. coli* O157:H7, *Listeria* and *Salmonella* that can cause life-threatening illnesses, it is a violation of federal law to sell raw milk for consumer use across state lines. However, raw milk regulations vary by state, and some states allow the sale of raw milk within their borders. This means that, in some states, raw milk may be sold to local retail food stores or directly from the farm to consumers.<sup>1</sup>

## Risks of Raw Milk Consumption

The American Academy of Pediatrics (AAP) warns of the serious risks for children who consume raw milk. Similarly, pregnant women, the elderly, and those with compromised immune systems should not consume raw milk.<sup>2</sup> Before the invention and acceptance of pasteurization, raw milk was a common source of bacteria that caused serious illnesses such as tuberculosis, diphtheria, and typhoid fever. In the 1900s, many mothers recognized this risk and would boil milk before giving it to their infants and young children.

Despite repeated health warnings, the Centers for Disease Control and Prevention (CDC) identified 86 outbreaks of foodborne illness that implicated raw milk or cheese made from raw milk from 1998 through 2008. These outbreaks accounted for 1,676 illnesses, 191 hospitalizations, and two deaths.<sup>3</sup>

Since 2005, disease outbreaks related to the consumption of raw milk have been documented in multiple states. In late 2005, 18 cases of infection with *E. coli* O157:H7, mostly among children under the age of 14, occurred in Oregon and Washington.<sup>4</sup> At least 87 people became ill in Kansas in two separate outbreaks of campylobacteriosis during the end of 2007; both outbreaks were associated with consumption of raw milk or raw milk products.<sup>5</sup> In 2008, an outbreak of campylobacteriosis in California was associated with the consumption of unpasteurized milk supplied from a farm operating a cow-share program.<sup>6</sup> Farm share programs have become popular in order to circumvent state laws that prohibit drinking raw milk by one other than the cow owner. A cow-share program typically allows people to buy stock in an cow, thus giving them personal ownership of that animal and the milk she produces.

## The Importance of Pasteurization

Pasteurization is a simple, effective method that kills the harmful pathogens found in raw milk. Since its introduction more than a century ago, pasteurization has been recognized around the world as an essential tool for ensuring that milk and dairy foods are safe. During pasteurization, the temperature of milk is raised to 145° for 30 minutes or to at least 161° Fahrenheit for more than 15 seconds; it is then rapidly cooled. In addition to helping extend milk's shelf-life, this process destroys many harmful bacteria, including *Salmonella*, *Campylobacter* and *Listeria*. Some dairy foods are pasteurized using the "ultra high temperature" method, which is particularly effective in extending shelf-life. This process heats milk to 280° Fahrenheit for more than two seconds. Because of pasteurization, less than 1.5 percent of annual foodborne illness outbreaks in the United States involve dairy foods.<sup>7</sup>

While pasteurization has helped provide safe, nutrient-rich milk and cheese for over 100 years, some people continue to believe that pasteurization harms milk and that raw milk is a safe, healthier alternative. Here are some proven facts about milk and pasteurization:

- Pasteurization DOES kill harmful bacteria.
- Pasteurization DOES save lives.
- Raw milk DOES NOT kill dangerous pathogens by itself.
- Pasteurizing milk DOES NOT cause lactose intolerance and allergic reactions.  
Both raw milk and pasteurized milk can cause allergic reactions in people sensitive to milk proteins.
- Pasteurization DOES NOT reduce milk's nutritional value.<sup>8</sup>

In 1924, the U.S. Public Health Service developed a regulation known as the Standard Milk Ordinance; the ordinance was adopted by both local and state milk-control agencies. This regulation is known today as the "Grade 'A' Pasteurized Milk Ordinance" (PMO). It is periodically reviewed and modified in cooperation with state and local governments, the dairy industry, and educational and research institutions. All 50 states have voluntarily adopted the PMO guidelines, which establish maximum allowable bacterial limits in pasteurized milk.

## **Nutritional Value and Safety**

There is no scientific evidence to suggest that there is any meaningful difference in the nutritional value of pasteurized and unpasteurized (raw) milk.<sup>6</sup> In addition, vitamin D, which is not found in significant amounts in raw milk, is added to processed milk, making it an even more nutritious product. Vitamin D insufficiency and deficiency is a common problem in the United States affecting many Americans, especially those of Hispanic or African American descent. The addition of vitamin D makes pasteurized milk an excellent source of this essential nutrient, providing 25% of the daily value in one 8-ounce serving.

Pasteurization does not affect a person's ability to digest lactose, the sugar present in milk. The enzyme required to break down lactose, known as lactase, is produced by cells that line the small intestine in the human body. This enzyme is not present in either raw or pasteurized milk.

Dairy foods are among the most tested and regulated foods in the United States. In addition to the extensive and rigorous safety and quality tests that dairy foods go through before they reach the grocery store, dairy farms and plants must meet stringent federal and local regulations, including those developed by the U.S. Department of Agriculture, the FDA, and other state regulatory agencies.

The FDA advises consumers to be alert when they buy milk or milk products.<sup>9</sup> To avoid raw milk, here are a few things the FDA suggests:

- Read the label on milk or milk products before you buy them. Many companies put the word "pasteurized" right on the label, but it is not required by law.
- Ask store employees if specific brands are pasteurized.
- At farm stands or farmers' markets, ask if the milk and cream being sold have been pasteurized. If the market sells yogurt, ice cream, or cheese, ask if they were made with pasteurized milk.

These groups endorse the importance of pasteurization and warn against raw milk consumption:<sup>10</sup>

- American Academy of Pediatrics
- American Medical Association
- American Veterinary Association
- Association of Food and Drug Officials
- Centers for Disease Control and Prevention
- Health Canada
- International Association of Food Protection
- National Association of State Public Health Veterinarians
- National Environmental Health Association
- U.S. Food and Drug Administration
- World Health Organization

### **Additional Resources Include:**

Dairy Farming Today  
[www.dairyfarmingtoday.org](http://www.dairyfarmingtoday.org)

### **USDA Food Safety Research Information Office**

<http://fsrio.nal.usda.gov>

Modern Dairy Farming Practices and Milk Quality: Myths and Facts, Dairy Council Digest, May/June, 2007  
[http://www.nationaldairycouncil.org/SiteCollectionDocuments/footer/FAQ/food\\_safety/DairyCouncilDigest783.pdf](http://www.nationaldairycouncil.org/SiteCollectionDocuments/footer/FAQ/food_safety/DairyCouncilDigest783.pdf)

*Also refer to Midwest Dairy Association fact sheets “Dairy Food Safety” and “Critical Steps from Cow to Consumer for Wholesome Milk.”*

*This fact sheet was reviewed by John Fetrow, VMD, MBA; Mike Hutjens, PhD; Lloyd Metzger, PhD; JW Schroeder, PhD; and Leo Timms, PhD, in November 2011 for its content and accuracy.*

- <sup>1</sup> USDHHS/PHS/FDA. 2009. Grade ‘A’ pasteurized milk ordinance, 2009 revision. <[http://www.fda.gov/downloads/Food/FoodSafety/Product SpecificInformation/MilkSafety/NationalConferenceonInterstateMilkShipmentsNCIMSMModelDocuments/UCM209789.pdf](http://www.fda.gov/downloads/Food/FoodSafety/ProductSpecificInformation/MilkSafety/NationalConferenceonInterstateMilkShipmentsNCIMSMModelDocuments/UCM209789.pdf)>. Accessed 2011 November.
- <sup>2</sup> Raw Milk, Juice Dangerous for Children and Infants. 2008, Jan. AAP News 29(1).
- <sup>3</sup> CDC Morbidity Weekly Report. 2009, Mar.
- <sup>4</sup> Denny J, Bhat M, Eckmann K. 2008. Outbreak of Escherichia coli O157:H7 associated with raw milk consumption in the Pacific Northwest. Foodborne Pathog Dis; 5:321-8.
- <sup>5</sup> Campylobacteriosis, unpasteurized milk—USA Kansas. 2007, Dec. International Society for Infectious Diseases; ProMEDmail 20071205.3922.
- <sup>6</sup> Campylobacteriosis, unpasteurized milk—USA California. 2008, Aug. International Society for Infectious Diseases; ProMEDmail 20080817.2557.
- <sup>7</sup> USDHHS/FDA/CFSN, 2003, Mar. Sale/consumption of raw milk-position statement; M-1-03-4. <[www.cfsan.fda.gov/~ear/mi-03-4.html](http://www.cfsan.fda.gov/~ear/mi-03-4.html)>. Accessed 2011 November.
- <sup>8</sup> USDHHS/FDA/CFSN. The dangers of raw milk: unpasteurized milk can pose a serious health risk. Food Facts. <<http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm079516.htm>>. Accessed 2011 November.
- <sup>9</sup> USDHHS/FDA/CFSN. 2011, Mar. Raw milk may pose health risk. <<http://www.fda.gov/downloads/ForConsumers/ConsumerUpdates/UCM245236.pdf>>. Accessed 2011 November.
- <sup>10</sup> Pasteurization: implications for food safety and nutrition. 2010, Sept/Oct. Nutrition Today 45(5).