



Public Health Service
DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Disease Control and Prevention (CDC)

May 9, 2014

To: State and Territorial Epidemiologists
State Public Health Veterinarians

The Ongoing Public Health Hazard of Consuming Raw Milk

The purpose of this letter is to provide state and territorial public health officials with information and resources on the risks of consuming raw milk and other unpasteurized dairy products. Please distribute this letter to those involved with raw milk issues in your state or territory, and to others who have an interest in this important public health issue.

The role of raw milk and other unpasteurized dairy products in the transmission of infectious diseases is well documented. Pasteurization is the process of heating milk to a high enough temperature for a long enough time to kill disease-causing bacteria. Raw milk was recognized as a source of severe infections over 100 years ago, and pasteurization of milk to prevent these infections is one of the public health triumphs of the 20th century. Pathogens such as *Escherichia coli* O157, *Campylobacter jejuni*, and *Salmonella* can contaminate milk during the milking process because they are shed in the feces of healthy-looking dairy animals, including cows and goats. Infection with these pathogens can cause severe, long-term consequences, such as hemolytic uremic syndrome, which can result in kidney failure, and Guillan-Barré syndrome, which can result in paralysis. These infections are particularly serious in those who are very young, very old, or who have impaired immune systems. They can be fatal.

Adherence to good hygienic practices during milking can reduce, but not eliminate, the risk of milk contamination. Pasteurization is the only way to ensure that fluid milk products do not contain harmful bacteria. Routine pasteurization of milk from healthy cows in a hygienic setting began in the 1920s and became widespread in the United States by 1950 as a means to reduce contamination and resulting illness. This led to dramatic reductions in many diseases previously associated with milk. Pasteurization is recommended for all animal milk consumed by humans by the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the American Academy of Pediatrics, the American Academy of Family Practitioners, the American Veterinary Medical Association, the National Association of Public Health Veterinarians, and many other medical and scientific organizations.

In 1987, the FDA prohibited the distribution of raw milk across state lines for direct sale to consumers. Despite the federal ban on interstate sale of raw milk and broad use of pasteurization by the dairy industry, human illness and outbreaks associated with consumption of unpasteurized products continue to occur. Raw milk is still available for sale in many states, and CDC data shows that the rate of raw milk-associated outbreaks is 2.2 times higher in states in which the sale of raw milk is legal compared with states where sale of raw milk is illegal.

From 2007 to 2012, the CDC National Outbreak Reporting System received reports indicating:

- 81 outbreaks of infections due to consumption of raw milk resulting in 979 illnesses, 73 hospitalizations, and no deaths.
- Most infections were caused by *Campylobacter*, Shiga toxin-producing *Escherichia coli*, or *Salmonella* bacteria, pathogens that are carried by cattle that appear healthy.
- The number of outbreaks increased during this time, from 30 in the three year span 2007–2009 to 51 in 2010–2012.
- Eighty-one percent of outbreaks were reported from states where the sale of raw milk was legal in some form; only 19% occurred in states where the sale of raw milk was illegal.
- The reported outbreaks represent only the tip of the iceberg. For every outbreak and illness that is reported, many others occur that are not reported; the actual number of illnesses associated with raw milk and raw milk products is likely much greater.
- It is important to note that a substantial proportion of the raw milk-associated disease burden falls on children; 59 % of outbreaks involved at least one person aged <5 years.

To protect the health of the public, state regulators should continue to support pasteurization and consider further restricting or prohibiting the sale and distribution of raw milk and other unpasteurized dairy products in their states.

CDC has a recently updated raw milk website that contains useful information and materials, including a list of relevant publications and other scientific resources on illnesses associated with raw milk consumption reproduced in the attachment. The website is: <http://www.cdc.gov/foodsafety/rawmilk/raw-milk-index.html> This information can be shared with persons involved in foodborne disease outbreak investigations and the regulation of unpasteurized dairy products.

Sincerely,



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Attachment: Raw milk resources

Raw Milk Resources

Resources for Consumers

- CDC: Food Safety and Raw Milk
 - <http://www.cdc.gov/foodsafety/rawmilk/raw-milk-index.html>
 - <http://www.cdc.gov/foodsafety/rawmilk/raw-milk-videos.html>
 - <http://www.cdc.gov/Features/RawMilk/>
- FDA: Consumer Information About Milk Safety
 - <http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm079516.htm>
 - <http://www.fda.gov/Food/FoodborneIllnessContaminants/BuyStoreServeSafeFood/ucm341249.htm>
- FoodSafety.gov
 - <http://www.foodsafety.gov/keep/types/milk/index.html>
- Real Raw Milk Facts
 - <http://www.realrawmilkfacts.com/>
- Pregnant Women and Children
 - <http://realrawmilkfacts.com/PDFs/Consumption-of-Raw-Milk-by-Pregnant-Women-Children.pdf>

Resources for Public Health Officials

- Selected MMWR Articles
 - CDC. Notes From the Field: Recurrent Outbreak of *Campylobacter jejuni* Infections Associated with a Raw Milk Dairy – Pennsylvania, April-May 2013. MMWR Morb Mortal Wkly Rep 2013;34:702-702.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6234a4.htm?s_cid=mm6234a4_w
 - CDC. Notes from the Field: *Salmonella* Newport infections associated with consumption of unpasteurized milk --- Utah, April—June 2010. MMWR Morb Mortal Wkly Rep 2010;59:817-818.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5926a6.htm?s_cid=mm5926a6_w
 - CDC. *Campylobacter jejuni* infection associated with unpasteurized milk and cheese--- Kansas, 2007. MMWR Morb Mortal Wkly Rep 2009;57:1377-1379.
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5751a2.htm>
 - For additional MMWR articles and other publications
<http://www.cdc.gov/foodsafety/rawmilk/raw-milk-publications.html>
- Selected Publications (available online and through research libraries)
 - Robinson, TJ, Scheftel JM, Smith KE. Raw Milk Consumption among Patients with Non-Outbreak-related Enteric Infections, Minnesota, USA, 2001-2010. Emerging Infectious Diseases. Jan 2014; 20 (1) 38-44.
 - Buzby, JC, Gould LH, Kendall ME, Jones TF, Robinson T, Blayney DP. Characteristics of Consumers of Unpasteurized Milk in the United States. Journal of Consumer Affairs, Spring 2013; 47(1):153-166.

- Langer AJ, Ayers T, Grass J, Lynch M, Angulo FJ, Mahon BE. Nonpasteurized dairy products, disease outbreaks, and state laws-United States, 1993–2006. *Emerging Infectious Diseases*. Mar 2012;18(3):385-391.
 - Lejeune JT, Rajala-Schultz PJ. Unpasteurized Milk: A Continued Public Health Threat. *Clin Infect Dis*. 2009; 48(1) 93-100.
 - Gould LH, Mungai E, Barton Behravesh C. Outbreaks Attributed to Cheese: Differences Between Outbreaks Caused by Unpasteurized and Pasteurized Dairy Products, United States, 1998–2011. *Foodborne Pathog Dis*. 2014 Epub, ahead of print.
- Position Statements by National Organizations
- American Academy of Pediatrics
<http://pediatrics.aappublications.org/content/early/2013/12/10/peds.2013-3502>
 - National Environmental Health Association Position Statement
http://www.neha.org/position_papers/position_raw_milk.htm
 - American Association of Public Health Veterinarians
http://www.marlerclark.com/images/uploads/about_ecoli/PUBLIC_HEALTH_VETERINARIAN_COALITION_COMMITTEE.pdf
 - American Veterinary Medical Association Position Statement
<https://www.avma.org/KB/Policies/Pages/Raw-Milk.aspx>
 - American Medical Association (AMA) – page 144
<http://www.ama-assn.org/ad-com/polfind/Hlth-Ethics.pdf>
 - International Association for Food Protection Position Statement
http://www.foodprotection.org/files/general-interests/Milk_Pasteurization_Paper.pdf
 - National Conference on Interstate Milk Shipments
<http://www.ohiodairyvets.org/wp-content/uploads/2007/08/ncims-raw-milk-resolution.pdf>
 - Association of Food and Drug Officials
<http://www.ohiodairyvets.org/wp-content/uploads/2007/08/ncims-raw-milk-resolution.pdf>
 - Dairy Processors of Canada
<http://www.newswire.ca/en/story/616469/dairy-processors-support-government-actions-to-ban-the-sale-of-raw-milk>
 - Health Canada
<http://www.hc-sc.gc.ca/fn-an/securit/facts-faits/rawmilk-laitcru-eng.php>
 - International Dairy Foods Association & National Milk Producers Federation
<http://www.realrawmilkfacts.com/PDFs/NMPF-IDFA-Letter-Sen-Rand-Amendment-060812.pdf>
 - Kentucky Association of Milk, Food, and Environmental Sanitarians
<http://www.kamfes.com/rawmilkpp.pdf>
 - National Mastitis Council
<http://nmconline.org/docs/RawMilkStatement.pdf>

- North Carolina Association of Local Health Directors
<http://www.ncalhd.org/documents/RawMilkPosition.pdf>
 - FDA Health Education Materials
 - Educator's Toolkit on Preventing Listeriosis in Hispanic Populations (in English and Spanish)
<http://www.fda.gov/Food/ResourcesForYou/HealthEducators/ucm062993.htm>
 - Food Safety for Moms-to-Be Educator's Toolkit with section on Listeriosis (in English and Spanish)
<http://www.fda.gov/Food/ResourcesForYou/HealthEducators/ucm081785.htm>
 - Moms-to-Be video (with *Listeria* information section in English and Spanish)
<http://www.fda.gov/Food/ResourcesForYou/HealthEducators/ucm089619.htm>
 - Food Fact Sheet on the Dangers of Raw Milk (in English and Spanish)
<http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm079516.htm>
 - FDA "Grade 'A' Pasteurized Milk Ordinance." 2011 Revision.
<http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Milk/ucm297717.htm>
 - Abuela Project
<http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1508756>
- **Resources for Health Care providers**
 - American Academy of Pediatrics Committee on Infectious Diseases. Appendix VIII. Prevention of Disease From Potentially Contaminated Food Products. Red Book; 2009:857-859. [Subscription Required]
<http://aapredbook.aappublications.org/cgi/content/full/2009/1/6.8>