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William H. Hogan, MSW, Commissioner

Division of Public Health
Ward Hurlburt, MD, MPH, CMO/Director

Editor:
Joe McLaughlin, MD, MPH

3601 C Street, Suite 540
Anchorage, AK 99503 http://www.epi.Alaska.gov

Local (907) 269-8000
24 Hour Emergency 1-800-478-0084

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Unpasteurized or "Raw" Milk — Health and Legal Issues in Alaska

Introduction

Milk is a nutrient rich food that provides an excellent culture medium for bacterial growth. Unpasteurized ("raw") milk does not undergo any bacteriostatic or bacteriocidal treatment. Certain bacteria may be shed into milk regardless of whether the animal is showing any sign of illness during milking. Bacteria present in raw dairy products can multiply and cause severe, life-threatening illness in consumers. In one study, 4 to 13% of raw milk samples collected from grade A dairies contained bacterial pathogens.[1]

Alaska Law and Share Agreements

Alaska Department of Environmental Conservation (ADEC) regulations 18AAC32.010 - .060 exist to safeguard public health and safety by ensuring that dairy products from a cow, goat, or sheep that are to be sold as part of commerce and intended for human consumption are manufactured, sold, and delivered in a safe and wholesome condition. Section 18AAC32.060 forbids removal of unpasteurized milk from premises for public consumption unless it is transported to a processor and pasteurized or denatured and labeled as animal food. Section 18AAC32.010 allows for consumption of raw dairy products by the owner of the cow, goat, or sheep. Therefore, it is legal to remove raw cow, sheep, or goat milk from premises for personal consumption if the person transporting the milk legally owns the animal. Legal ownership is evidenced by a formal contract explicitly stating the animal's ownership.

In states like Alaska with regulations that prohibit commercial distribution of raw dairy products, many consumers have entered into "share agreements" with dairy farmers. These agreements enable consumers to pay farmers a fee to gain an ownership share in a dairy animal and thereby legally collect raw milk bypassing the laws that prohibit commercial distribution. The number of share agreements that have been identified by ADEC has been increasing over the past several years (unpublished data).

The Importance of Pasteurization

The function of pasteurization is to kill pathogens without affecting the nutrient content or quality in the ready to eat product. The first pasteurization requirements in the United States occurred in the early 20th century. The most common method of pasteurization today is High Temperature Short Time (HTST) pasteurization, which raises milk temperatures to at least 161°F for at least 15 seconds, followed by rapid cooling.[2]

Unpasteurized milk may contain pathogenic bacteria including *Campylobacter* spp., *Salmonella* spp., *Coxiella burnetti*, *Escherichia coli* O157:H7 and other enterohemorrhagic serotypes, *Brucella melitensis*, and *Listeria monocytogenes*. Illness caused by infection with these bacteria range in severity from mild gastroenteritis to hemolytic uremic syndrome (HUS), Guillain-Barré syndrome, miscarriage, and death. Sometimes these bacteria can be drug resistant,[3] making treatment more difficult.

Recent reviews of U.S. outbreaks associated with unpasteurized milk or cheese consumption are summarized below (Table).

Table. U.S. Outbreaks Associated with Raw Milk or Cheese

Years	# of Outbreaks	# of Cases	# of Hospitalizations (Deaths)
2007-2008[4]	5	150+	6+ (0)
1993-2006[5]	68	1,409	134 (2)
1973-1992[6]	46	1,733	Not available

Outbreaks have also occurred following consumption of pasteurized milk in contact with contaminated processing equipment post-pasteurization.[7] However, the majority (83% [44 of 53] in one review) of liquid milk-associated outbreaks have been attributed to unpasteurized milk.[5]

No locally occurring outbreaks associated with raw milk have been reported to the Alaska Section of Epidemiology. However, in 2009, a child that reportedly consumed raw milk daily was diagnosed with *E. coli* O126 infection and subsequently HUS, although the source of the bacteria was not determined.

Discussion

Unpasteurized milk contains more bacteria than properly pasteurized milk and illness caused by some of those bacteria can result in serious health consequences. Public and Environmental Health agencies have a duty to protect the public's health, especially vulnerable populations who are at increased risk for severe disease (e.g., young children, the elderly, pregnant women, and immunocompromised patients). This is why raw milk is prohibited from being distributed commercially and why there are explicit recommendations for persons with compromised immune systems to avoid consumption. Share agreements provide the public with legal access to raw milk. Many people who take part in these agreements might be unaware of the scope and severity of health risks associated with raw dairy product consumption, and share these products with persons who are at increased risk for serious infection.

Recommendations

1. Health care providers should counsel their patients to avoid raw dairy product consumption and inform those who do decide to consume these products of the risks involved. Educational materials on health risks are available on-line.[8]
2. Health care providers should consider testing stool specimens for enteric bacterial pathogens (e.g., *Campylobacter* spp., *Salmonella* spp., *and E. coli)* in patients with gastroenteritis who have a history of raw dairy product consumption. Specimens can be submitted to the Alaska State Public Health Laboratory (ASPHL) for free testing (ASPHL does not test for *L. monocytogenes*, but can confirm isolates). Submission forms are available online at: http://www.hss.state.ak.us/dph/labs/publications/default.htm
3. Laboratorians should submit isolates of enteric bacterial pathogens, as well as of *L. monocytogenes*, to ASPHL for molecular fingerprinting. See page 42 of the Services Manual: http://www.hss.state.ak.us/dph/labs/publications/image/Lab_Svcs_Manual.pdf
4. For more information about processing milk in Alaska, interpretation of regulations, or ownership of milking animals, contact the ADEC Dairy Sanitarian at (907) 376-1853 or visit: http://www.dec.state.ak.us/eh/vet/milk.htm

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(Contributed by Louisa Castrodale, DVM, MPH, Section of Epidemiology and Bob Gerlach, VMD, ADEC.)