

**ANIMAL AND HUMAN HEALTH PREVENTION OPPORTUNITIES**

**Raw Milk Does Not Do a Body Good**

Proponents of “raw milk” or non-pasteurized milk products claim consumption protects against development of allergies, cancer, chronic fatigue, and other health problems. However, consumption of non-pasteurized milk products has serious health risks. During 1998–2009, non-pasteurized milk products were associated with 93 recognized illness outbreaks, 1837 illnesses, 195 hospitalizations, and 2 deaths. Unfortunately, the number of illnesses caused by consumption of non-pasteurized milk products is likely 25–30 times greater than those reported to public health. Each year, DPHHS receives at least several case reports of enteric illnesses associated with non-pasteurized milk products.

Raw milk advocates argue consumption of non-pasteurized milk products is a choice; however, enteric illnesses caused by non-pasteurized milk products can spread through the fecal-oral route from ill persons to those who did not choose to consume these products. Furthermore, a substantial proportion of enteric illnesses associated with non-pasteurized milk products occur among children, a population who cannot make informed judgments about food products they consume, and who can be more susceptible to medical complications from infection. Because of the risk to public health, the U.S. Food and Drug Administration prohibits the interstate shipment of non-pasteurized milk for human consumption. Additionally, Montana and 18 other states do not allow for any sale of non-pasteurized milk products. During 1993–2006, states prohibiting the sale of non-pasteurized milk products had a lower incidence of disease outbreaks associated with non-pasteurized milk products compared with states where sales were legal (**Figure 1**).

In this issue of *Montana One Health*, we describe organisms associated with non-pasteurized milk products and the importance of pasteurization, and recommend continuing to prohibit non-pasteurized milk product sales in Montana.

**Animal Health**

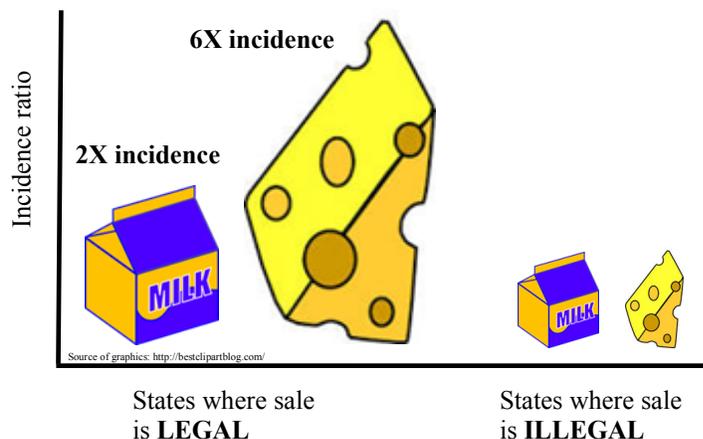
Milk from healthy cows, goats, and sheep can contain organisms capable of causing human illness (**Table 1**). However, a survey of Ohio dairy farmers demonstrated 91%, 88%, 81%, and 36% of respondents believed *Campylobacter* spp., *Cryptosporidium* spp., *Listeria*, and *Salmonella* spp., respectively, were not associated with human illness.

Milk can become contaminated with bacteria for several reasons, including: a) cow feces coming into contact with milk; b) mastitis; c) zoonotic diseases [e.g., Q fever, bovine tuberculosis]; d) bacteria living on the skin of the ruminant; e) insects, rodents, other vectors; and, f) human contamination [e.g., contact with contaminated hands or clothing].

Pasteurization (i.e., heating milk for a determined time and temperature to destroy disease-causing bacteria) remains the only practical method for eliminating pathogens from milk. The use of pasteurization improves the safety of milk and increases shelf life. Adherence to hygienic farming and milking practices does not eliminate the possibility for bacterial contamination of milk. Further, use of diagnostic testing for the purposes of environmental screening does not sufficiently eliminate bacterial contamination of milk. Pasteurization became widespread in the

United States in the 1920s, which led to a sharp decline in disease outbreaks associated with milk consumption. Presently, an estimated 97% of all U.S. dairy products undergo pasteurization; yet, during 1993–2006 non-pasteurized dairy products resulted in 73 (60%) of the 121 outbreaks caused by dairy products where pasteurization status was known.

**Figure 1.** Risk for enteric illness outbreaks associated with consumption of non-pasteurized milk products in states where sale of non-pasteurized milk products is legal and illegal by fluid milk and cheese, United States, 1993–2006



## Human Health

The causative agents for 73 outbreaks associated with non-pasteurized milk products identified nationally during 1993–2006 included *Campylobacter* spp. (n=39 [53%]), *Salmonella* spp. (9 [12%]), Shiga toxin-producing *Escherichia coli* (STEC) (3 [4%]), *Brucella* spp. (3 [4%]), *Listeria* spp. (3 [4%]), *Shigella* spp. (2 [3%]), and both *Campylobacter* spp. and STEC (1 [1%]). Children, elderly, and the immunocompromised are at greater risk of complications from certain enteric illnesses (e.g., hemolytic uremic syndrome) and should only consume dairy products that have undergone pasteurization. A high proportion of illnesses associated with non-pasteurized milk products occur among children. An analysis of enteric illness cases associated with non-pasteurized milk products in Minnesota during 2001–2010 revealed 38% of cases were aged ≤10 years and 59% ≤20 years. For every recognized case of campylobacteriosis or salmonellosis, an estimated 30 cases of these illnesses are not identified. Consequently, the public health impact of non-pasteurized milk products is likely much greater than often recognized. As such, the sale of non-pasteurized milk products is opposed by many leading health organizations worldwide (**Table 2**).

**Table 1.** Organisms in non-pasteurized milk products

**Table 2.** Organizations opposed to the sale of non-pasteurized milk products

<p><b>Bacteria</b>  <i>Brucella</i> spp.  <i>Campylobacter jejuni</i>  <i>Coxiella burnetii</i>  Enterotoxigenic <i>Staphylococcus aureus</i>  <i>Listeria monocytogenes</i>  <i>Mycobacterium bovis</i>  <i>Salmonella</i> spp.  <i>Escherichia coli</i>            Shiga toxin-producing <i>E coli</i> (STEC)            Enterohemorrhagic <i>E. coli</i> (EHEC)            Enterotoxigenic <i>E. coli</i> (ETEC)  <i>Shigella</i> spp.  <i>Streptococcus</i> spp.  <i>Yersinia enterocolitica</i></p>	<p><b>Parasites</b>  <i>Cryptosporidium</i> spp.  <i>Giardia</i> spp.</p> <p><b>Viruses</b>  Norovirus  Rabies  Vaccinia</p>	<ul style="list-style-type: none"> <li>• American Academy of Pediatrics</li> <li>• American Association of Public Health Veterinarians</li> <li>• American Medical Association</li> <li>• American Public Health Association</li> <li>• American Veterinary Medical Association</li> <li>• European Food Safety Authority</li> <li>• Health Canada</li> <li>• International Association of Food Protection</li> <li>• National Environmental Health Association</li> <li>• U.S. Animal Health Association</li> <li>• U.S. Centers for Disease Control and Prevention</li> <li>• U.S. Department of Agriculture</li> <li>• U.S. Food and Drug Administration</li> <li>• World Health Organization</li> </ul>
<p>*Adapted from Pediatrics. 2014;133:175–9.</p>		

## Raw Milk Key Points

### Animal health

- Milk from healthy cows, goats, and sheep can contain organisms capable of causing human illness.
- Pasteurization is the only practical method for reducing pathogenic contamination of milk.
- Animal health authorities should work with farmers to ensure proper pasteurization methods are used.

### Human health

- Consumption of non-pasteurized milk products increases the risk for enteric illnesses and hospitalization; the health risks of non-pasteurized milk products outweigh the theoretical and unproven benefits often attributed to their consumption.
- Children are disproportionately affected by illnesses associated with consumption of non-pasteurized milk products.
- **Montana should continue to prohibit the sale of non-pasteurized milk products.**

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