

Production and Sale of Raw Milk and its Products

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Introduction

I am happy to speak today on behalf of food safety researchers, extension educators at Penn State and the veterinary community that is comprised of over 3000 veterinarians who work in various roles around the Commonwealth. Over the last 20 years, I have been actively involved in the area of food safety and veterinary public health. The issue of the sale of raw milk and its products is of particular concern because of its overall impact on public health. The most vulnerable population in the Commonwealth of Pennsylvania to the exposure of bacteria in raw milk are young children and the elderly. In recent years, this issue of sale of raw milk has become more relevant than ever before due to the **emergence of antimicrobial resistance in food borne pathogens** such as *Salmonella* and *Escherichia coli*. Some strains of these bacteria have become **resistant to several antibiotics used to treat infectious diseases in humans**. I would like to share with you and the committee my experience and analysis of the scientific data regarding this issue. I believe that my testimony will closely align with the views and opinion of the State and National scientific communities on the issue of the sale of raw milk and its products. The issue of sale of raw milk is not only a public health concern, but it also impacts the economic viability of the dairy industry as I believe raw milk sales negatively impact the public trust of the dairy industry. I and members of the veterinary public health community would strongly urge you and the committee to take the necessary action to ensure that **raw milk does not become another food commodity that could lead to milkborne disease outbreaks in the Commonwealth of Pennsylvania**.

Why Pasteurize Raw Milk?

Pasteurization is a process where milk is heated to 161°F (72°C) for 15 seconds. This process ensures that most of the foodborne pathogens (*Salmonella*, *Escherichia coli*, *Campylobacter*, *Listeria monocytogenes*, *Yersinia enterocolitica*, and *Staphylococcus aureus*) are destroyed thus making milk safe for human consumption. These organisms are frequently isolated from the feces, udders of healthy dairy cattle and from the dairy environment. These pathogens gain access into the bulk tank at the time of milking or through the milk from an infected udder.

Before the widespread use of pasteurization in the 1930s, milk products were a major vehicle for transmission of human diseases such as typhoid fever, diphtheria, septic sore throat, tuberculosis, and brucellosis. However, after the enforcement of the Pasteurized Milk Ordinance (first published in 1924), the number of such outbreaks that were associated with dairy products declined dramatically. ***As a reminder the “baby boom generation” should be thankful for being provided with pasteurized milk, as this has been one of the several factors that has contributed to the longevity and improved health of the post World War II generation.***

Prevalence of Foodborne Pathogens in Raw milk

Several surveys in the United States have detected food borne pathogens in raw bulk tank milk. I would like to share with you two important reports. The first report is from Dr. Joan Van Kessel and her research group at the USDA Agriculture Research Service Laboratory in Beltsville.

They conducted the 2002 National Animal Health Monitoring Survey that looked at foodborne pathogens in 861 bulk tank milk samples collected from farms in 21 states. The findings of the study have been published in the Journal of Dairy Science. They found 2.6% of raw milk samples were culture-positive for *Salmonella* while *Listeria monocytogenes* was isolated from 6.5% of raw milk samples. Many of the *Listeria monocytogenes* serotypes found in raw milk have also been implicated in human illnesses. **They concluded that although the prevalence of *L. monocytogenes* and *Salmonella* was low, these pathogens pose a potential risk to consumers of raw milk and raw milk products.**

The second report is the one we conducted in 2002 at Penn State. The findings of this study have been published in the Journal of Dairy Science. In this study, we examined raw bulk tank milk for foodborne pathogens from 248 participating dairy herds from 16 counties in Pennsylvania. The study showed that *Campylobacter jejuni*, Shiga toxin-producing *Escherichia coli*, *Listeria monocytogenes*, *Salmonella*, and *Yersinia enterocolitica*, were present in anywhere from 2 to 6% of the raw bulk tank milk samples. Of particular concern was *Salmonella* Newport which was isolated from 5 bulk tank milk samples that were resistant to more than 5 antibiotics. **Based on the findings of the study, we felt that developing farm community-based educational programs on the risks of consuming raw milk was needed.**

Disease Outbreaks caused by Consumption of Raw Milk

Outbreaks associated with the consumption of raw milk occur routinely every year. In 1987 the FDA banned the interstate sale of raw milk; however, the sale of raw milk within state boundaries falls under the jurisdiction of each state's government.

Dr. Marica Headrick and her co workers in Washington DC conducted an epidemiological study on raw milk associated foodborne diseases in the United State that occurred between 1973-1992. They reported that **between 1973 and 1992, raw milk was associated with 46 outbreaks of foodborne illness in the United States, and it is significant to note that 40 (87%) of these outbreaks occurred in states where the intrastate sale of raw milk was legal at the time.**

In many states where the off-farm sale of raw milk is prohibited, people have circumvented the law through "cow-sharing" or "cow-leasing" programs. In such programs, people pay a fee to a farmer to lease a share of a cow in exchange for raw milk. **Outbreaks of foodborne illness have been linked to raw milk obtained from these cow-leasing programs.**

Recent Raw Milk Incidents

- **December 2005**—Public health officials in Clark County, Washington were notified of four county residents with laboratory confirmed *Escherichia coli* O157:H7 infection. All four residents reported having consumed raw milk obtained from a Cowlitz county farm that was not licensed.
- **July 2004**—The Indiana Public Health Department advised consumers to check their refrigerators and freezers for raw milk cheese that may be contaminated with *Salmonella*. Routine product sampling found *Salmonella* in "Natural Raw Milk Cheese" made by Meadow Valley Farm after the cheese was distributed to farmers' markets and specialty food stores in parts of Indiana and Wisconsin.
- **2002-2003**—Two children were hospitalized in Ohio for infection with *Salmonella* Typhimurium. These children and 60 other people in Illinois, Indiana, Ohio, and Tennessee developed bloody diarrhea, cramps, fever, chills, and vomiting from *S. Typhimurium* tracked to consuming raw milk.
- **2000-2001**—In North Carolina, 12 adults were infected with *Listeria monocytogenes* linked to homemade, Mexican-style fresh soft cheese produced from contaminated raw milk sold

by a local dairy farm. Ten of the 12 victims were pregnant women, and infection with the bacterium resulted in five stillbirths, three premature deliveries, and two infected newborns.

Who consumes raw milk?

Consumption of raw bulk tank milk is a common practice among farm families. Studies have reported that the most prevalent consumers of raw milk are dairy farm families and dairy farm employees.

- Dr. Rohrbach from the University of Tennessee reported that 34.9% of dairy producers in eastern Tennessee and southwest Virginia consumed raw milk.
- Dr. Jayarao and Dr. Henning at South Dakota showed that nearly 60% of dairy producers in eastern South Dakota and western Minnesota consumed raw milk.
- In California, the sale of raw milk is legal, making the state the largest producer of "certified raw milk" in the United States. Certified raw milk is unpasteurized milk with a total bacterial count below a specified standard, but this is not a guarantee that the milk is free of bacterial pathogens.

In 2002, we conducted a survey to determine raw milk consumption habits of dairy producers in the commonwealth of Pennsylvania. The findings of the study were as follows:

- A total of 248 dairy producers from 16 counties in Pennsylvania were surveyed. Overall, 105 (42.3%) of the 248 dairy producers consumed raw milk and 170 (68.5%) of the 248 dairy producers were aware of foodborne pathogens in raw milk.
- Dairy producers who were not aware of foodborne pathogens in raw milk were 2-fold more likely to consume raw milk compared with dairy producers who were aware of foodborne pathogens.
- The majority of dairy producers who consumed raw milk indicated that **taste** (72%) and **convenience** (60%) were the primary factors for consuming raw milk.
- Dairy producers who resided on the dairy farm were nearly 3-fold more likely to consume raw milk compared with those who lived elsewhere.

In recent years, the "post baby boom" generation, comprised of a very small but growing subset of urban/suburban individuals is perhaps the most likely population that consumes raw milk and raw milk products. Their demographics and their perception of milk safety issues related to raw milk consumption have not been scientifically documented in literature. It can be assumed many of the "post baby boom" believes that raw milk has more health benefits than pasteurized milk. ***The health benefits of raw dairy products are unsubstantiated. However, the risks associated with foodborne pathogens are well-documented. There is no compelling health reason to drink raw milk or eat dairy products from raw milk. The perception of health benefits should not outweigh the considerable risk of consuming raw milk.***

Risks Involved with Consumption of Raw Milk

Gastroenteritis is the primary condition associated with cases of foodborne illness attributable to raw milk consumption.

- Enteritis caused by enterotoxigenic *E. coli* and *Salmonella* spp. is usually self-limiting. **The very young, elderly, and immunocompromised individuals are at a higher risk of serious illness.**
- *Campylobacter jejuni* and *Y. enterocolitica* illnesses are typically characterized by gastritis and enterocolitis; however, debilitating postinfection immunologic sequelae, including Guillian-Barré syndrome and reactive arthritis are known to develop in some individuals following an episode of foodborne illness with these pathogens.

- Unlike other foodborne bacteria, which mainly cause gastritis and enteritis, *L. monocytogenes* causes listeriosis, which is characterized by septicemia and meningitis in humans.

American Veterinary Medical Association Position on Raw Milk Sale

***"Milk Quality and Pasteurization.** The House of Delegates resolved that, inasmuch as apparently healthy cows and goats can shed in their milk organisms which are pathogenic to human beings and may cause diseases such as brucellosis, *Campylobacter enteritis*, salmonellosis, and tuberculosis; and, inasmuch as milk handlers may introduce pathogenic agents during the handling of unpasteurized milk (including certified and raw milk), only pasteurized milk and milk products should be sold for human consumption. Be it further resolved that in those states where the sale of unpasteurized milk is authorized, those products should be labeled "Not Pasteurized and May Contain Organisms that cause Human*

Summary

- Raw milk can be a potential source of foodborne pathogens.
- Consumption of raw milk by an immunocompromised, young or elderly population puts them at higher risk of infection.
- Scientific evidence does not exist to support the fact that the raw milk has more health benefits as compared to pasteurized milk.
- With the emergence of new diseases and antibiotic resistant bacteria in raw milk, it is **absolutely essential that milk sold to the public must be pasteurized**, and milk products be made from pasteurized milk.
- **Public health safety should be the number one priority** over other issues related to sale of raw milk and milk products in the Commonwealth of Pennsylvania.

Thank you and please feel free to contact me or the PVMA if you have any questions in the future

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