

Raw Milk Guide For Consumers and Producers



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Introduction:

The 68th North Dakota Legislative Session passed House Bill 1515), effective August 1, 2023. This law allows raw milk to be sold to an end consumer for the consumer's personal consumption in North Dakota. Raw milk may not be sold to a wholesaler or retailer, and the milk must be sold within North Dakota. Further, raw milk may not be donated. Raw milk producers selling direct to consumers are exempted from other dairy, food handling or consumer protection laws. The sale of raw milk products, such as cream, cheese, or yogurt is prohibited.

The sale of raw milk under these circumstances is legal, but there are no liability protections if someone were to become sick. Anyone harmed by consuming foods with microbial pathogens may have the option to take legal action to claim monetary damages for their injuries or wrongful death.

A seller of raw milk should contact an insurance agent and legal counsel for more information on liability and liability protection.

Raw milk has many advocates and consumers, despite the known food safety risks. The North Dakota Department of Agriculture is exempted from, and does not provide, any regulatory oversight of a raw milk facility, and does not provide any assurances for milk safety of a raw milk producer selling to the end consumer.

This booklet provides information about raw milk, food safety and suggestions to mitigate contamination.

Products made from raw milk are prohibited from sale, including cream, yogurt, cheese, and any other raw dairy products. Only raw whole unprocessed fluid milk is eligible for sale under this new statute.

Raw Milk Safety:

Raw milk is unpasteurized milk produced for human consumption. Milk is produced on dairy farms, an environment that naturally contains a plethora of microorganisms, including yeasts, molds, viruses and bacteria. Healthy animals can carry disease-causing germs such as *e. coli O157:H7*, *campylobacter jejuni*, and pathogenic serotypes of *salmonella*. People have also contracted tuberculosis, undulant fever and Q fever from consuming raw milk.

Raw Milk Consumers:

The Food and Drug Administration (FDA) has posted many resources for individuals, providing factual information about raw milk and misconceptions about its purported benefits:

<https://www.fda.gov/food/buy-store-serve-safe-food/raw-milk-misconceptions-and-danger-raw-milk-consumption>

Pasteurized milk is a proven safe product that provides the essential nutrients of a healthy diet, without the risks associated with raw milk.

Raw Milk Producers: Suggestions to Reduce Contamination

Raw milk can cause disease when produced under insanitary conditions, so it is critical that milk producers properly maintain their facilities, equipment, and animal health. To reduce contamination of raw milk, many actions should be taken.

Facility Construction:

All areas of the milking barn and the milkroom should be kept as clean as practical. The milking equipment should be kept as clean as possible, as this is direct milk contact.

To keep the areas clean, the facility should be made of durable and cleanable materials:

- Floors - concrete or other impervious material, so they can be cleaned
 - Slope to drain; as standing water harbors molds and bacteria
- Walls and Ceilings - washable materials, light colored is best
- Doors and windows - tight fitting and screened when opened
- The area should be large enough to operate without contamination
- Hot and cold water for handwashing and cleaning

Milking Barns:

Separation and sanitation are the most important considerations when designing a facility and choosing equipment.

The animals should be housed in areas away from milking equipment. This will limit manure and animal contamination in the milking areas. All removable milking equipment (buckets, hoses, claws, etc.) should be washed and stored in a separate clean area, often called the “milkroom,” when not in use. If your milking system is set-up for clean-in-place (CIP), then the parlor or milking areas should be closed off to animals while the system is cleaning.



The milk storage vessels should be moved to and kept in a clean milkroom. There should be no ventilation directly between the milkroom and the animal housing areas to limit odors, dust, insects and other contaminants from the milkroom. Milkrooms should be used for handling milk and milking equipment only. Milkrooms should be used for only milk handling related activities and not other activities such as wild game processing, poultry processing or soap making.

Only self-closing doors that are tight fitting should lead into the milkroom. The milkroom should have a door for easy loadout, permitting the producer to load without having to go through any animal housing areas.

The environment that the animals live in and are milked is critical to reduce contamination. Separation of the milking equipment and the animal housing mitigates the potential for contamination.

Cleanliness and Sanitation:

Cleaning milk equipment should only be done on equipment that is smooth and made of materials that are cleanable. Cleaning is removal of *all* milk soils, so that there is nothing for bacteria to adhere to and grow.

Milking equipment and containers must be cleanable:

- Stainless steel is best. Aluminum, copper, and other metals will react with the cleaning solutions, so they should be avoided
- All seams and joints must be smooth
- Any food grade silicones, rubber or other hard plastics must be maintained with smooth surfaces. Replace once cracked, crazed or otherwise beginning to deteriorate
- Avoid slip joints or barbs on hose fittings because milk and debris will get in the crevices



Even the smallest cracks, crevices or inclusions in the materials will make cleaning and sanitizing ineffective and contaminate milk with debris or spoiled milk from one milking session to the next.

Most effective method for cleaning the equipment after milking or bottling:

- 1) Flush with warm, not hot, water to rinse away milk and organic debris
- 2) Hot alkaline wash - high pH detergents break up fat and protein from milk contact surfaces
- 3) Warm acid rinse - this reduces the pH, which is unfavorable for bacteria growth, and helps dissolve mineral deposits, if there are any
- 4) Dry - moisture allows bacteria to grow, so all equipment must drain between milkings
- 5) Sanitize just prior to milking - this inactivates bacteria that may have grown

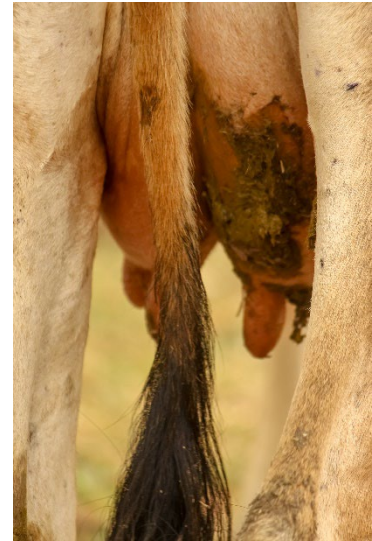
Sanitize: This can only be done on equipment that is absolutely clean. Any milkfat, protein residue other organic materials or mineral deposits may harbor and protect bacteria during the sanitizing step, negating most of the effects.

Only cleaners and sanitizers specifically formulated for dairies should be used.

Milking Practices:

Udder cleanliness is incredibly important to the overall health of the animal and the safety of the milk. Proper udder preparation is critical in reducing pathogen contamination in raw milk.

1. Brush and clean udders; a clean towel for each animal limits spreading diseases from one animal to the next
2. Iodine or peroxide teat dips will reduce bacteria levels prior to milking
3. Dry teats to prevent pre-dip from getting into the milk; use a new towel for each animal
4. Remove first milk from each teat (strip), and look for abnormalities in the milk
5. Attached the milking claws
6. Apply teat treatment after milking (i.e. post-dip)



Udders get dirty. Cleaning them is paramount for milk safety.

If you will be milking by hand, personal hygiene is critical.

1. Wash hands often - install sinks close to the milking area
2. Dry hands - do not 'wet-hand' milk, as this is likely to contaminate the milk
3. Covered pails will help prevent contamination

Milk Cooling: As quickly as possible

Milk should be cooled as quickly as possible. Some bacteria can double within 20 minutes, so cooling is essential to keeping the bacteria levels as low as possible. Bulk milk tanks are deliberately designed to effectively cool milk, but in the absence of a bulk milk tank:

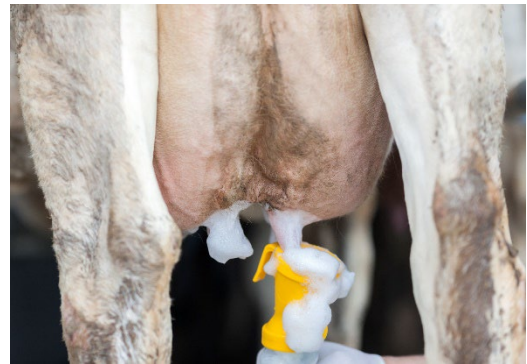
- Subdivide the milk into smaller jars
- Submerge them in ice/water slurry mix - a large cooler works well for this
 - Salting the ice water decreases the temp of the slurry, cooling milk even faster
- Agitate or shake jars to hasten cooling
- Store chilled milk jars in refrigerator

A standard refrigerator is not likely to cool large containers of milk quickly enough.



Milk Testing:

Monthly milk testing is a tool used to identify issues with your milk. The lower the bacteria and somatic cell count the less likely that the milk is contaminated. Testing does not guarantee pathogen free milk, but it may help identify if there is an animal health issue or a milking equipment issue.



Teat treatments are effective measures to protect udder health

Test Method	Purpose	Suggested Target Goal and Testing Frequency
Standard Plate Count Estimate of total viable microorganism in food	High counts may indicate animal health issue, dirty milking equipment, or post milking contamination.	< 10,000 cfu/ml Monthly
Coliform Specific type of bacteria used as an indicator of contamination	May indicate fecal contamination, as coliforms are always found in animals' digestive tracts and manure	< 10 cfu/ml is best Monthly
Somatic Cell Count Naturally occurring, but high levels would indicate herd health concerns	Somatic cells indicate udder health. Two types of infection lead to higher somatic cell counts Environmental or contagious infections	<750,000 ssc is acceptable, but under 100,000 is achievable Monthly
Pathogen testing Even the slightest contamination, may cause illness	Salmonella, Listeria, E.coli O157:H7 and Campylobacter are commonly found in farm environments and may cause severe illness or death	Zero tolerance for pathogens Monthly
Water potability Safe water is required for cleaning, washing etc.	Contaminated well water may inadvertently contaminate your milk	<1.1 coliforms Annually or whenever work is conducted on water system
Herd Health Tuberculosis and Brucellosis are communicable diseases	Tuberculosis and Brucellosis may cause disease in humans and other livestock and may be spread through consumption of raw milk Blood tests can be taken by veterinarians	Talk to your veterinarian for testing procedures and suggested testing frequency

A low bacteria or coliform count does NOT indicate pathogen free. Any milk with pathogens or milk from animals that are positive for communicable disease should be withheld from sale and destroyed.

Filling and Capping:

Bottles or jars should be clean and sanitized. A dishwasher does a good job of sanitizing bottles with heat. Sanitizing bottles will help eliminate any bacteria from dust or debris that would start to grow in milk.

- Do not dip bottles into milk. Fill from spout, valve or with a filling nozzle
- Never handle jars by the rim or insert fingers into jars to handle
- Clean clothes, hair restraints and clean hands are vital for sanitation
- Consider using new tamper evident caps
 - Store caps in dry clean areas
- Avoid touching inner portion of bottle caps
- Immediately store milk in refrigerator



Any dust or debris contaminating the bottles, caps, or milk will have a drastic impact on the shelf-life and safety of the milk.

Labeling:

North Dakota law does not require labeling, but some suggested food safety information for a label might include:



- Farm name and contact information
- “Raw Milk” or “Unpasteurized Milk”
- Bottling date
- “Perishable - Keep refrigerated”
- Warning Label – “This product has not been pasteurized and may contain harmful bacteria. Pregnant women, children, elderly and immune compromised people have the highest risk of harm from this product.”

Distribution:

- Maintain milk below 40F cold temps at all times
- Protect jars from dust and debris
- Sales must be to end-consumer and for personal consumption
 - Raw milk cannot be sold to retail or at wholesale
 - Raw milk cannot be donated for potlucks, fundraisers, schools, foodbanks or other uses
- Sales and transactions must be within North Dakota
 - Federal and State Law prohibit selling raw milk across state lines

Resources:

University of Minnesota Extension (2019) “Lowering Somatic Cell Counts in Milk” found at <https://extension.umn.edu/dairy-milking-cows/dairy-somatic-cell-counts>

Centers for Disease Control and Prevention (2023) “Raw Questions and Answers” found at <https://www.cdc.gov/foodsafety/rawmilk/raw-milk-questions-and-answers.html>