

# MIDLANDS MILK

## Coliform Standards for Raw Milk

The purpose of this fact sheet is to provide brief answers to questions regarding coliform bacteria in general, and what the standards mean with regard to the quality and safety of raw milk.

### What are coliforms?

Coliforms are a group of bacteria commonly found in the environment, including soil, surface water, vegetation and the intestinal tracts of warm-blooded animals. Detection of coliforms is used as a general indicator of sanitary conditions in dairy production and processing environments. Most coliforms do not cause disease, but a small percentage can cause illness in people, especially young children, the elderly, and those with weakened immune systems. One example of these toxin-producing bacteria, known as *E. coli* O157:H7, can cause serious food-borne illness, especially in children, including abdominal cramps, bloody diarrhea and acute kidney failure in severe cases.

### How do coliforms get into milk?

Coliform bacteria are normally shed in the faeces of healthy livestock, including dairy cattle. Thus, poor herd hygiene, contaminated water, unsanitary milking practices, and improperly washed and maintained equipment can all lead to elevated coliform counts in raw milk at the dairy farm. Even though cows with coliform mastitis can in some instances influence coliform counts, the milking of cows with wet and manure-soiled udders and inadequately cleaned milking equipment, are the most common ways for coliform bacteria to enter milk on-farm.

### Coliforms in milk: What does it mean?

Most coliforms originate from the intestines of warm-blooded animals, including people. Since most coliform bacteria are not harmful, the finding of coliforms in milk does not necessarily mean that a disease causing, or pathogenic, form of the bacteria is present. However, elevated coliform counts in milk and dairy products suggest unsanitary conditions exist during production, processing or packaging. In the dairy farm setting, a coliform count is a useful indicator of the extent of faecal bacteria in the milk, and is a recognized index of the level of sanitation at a facility. The use of coliform counts as an indicator of sanitation has been a common tool in public health protection for many years. For example, the presence of coliforms is used as one signal that environmental contamination of drinking water supply systems has occurred. In dairy products, the

process of pasteurization easily kills coliform bacteria. Therefore, the finding of coliforms in pasteurized products indicates some level of contamination has occurred after pasteurization during product manufacturing or packaging. For milk sold raw, where no intervening pasteurization step is utilized, coliform counts reflect sanitation practices throughout milk handling, from the cow to final bottling. In addition to food safety and public health concerns, coliforms, along with other bacteria, may produce off flavors in milk and reduce shelf life of dairy products.

Since most food-borne pathogens originate from faecal contamination, including E.Coli, Salmonella and Campylobacter, it is essential that strict sanitary practices be followed to minimize the risk to people consuming raw milk products.

### What level of coliforms is allowed in raw milk?

The standard sets a maximum amount of coliform bacteria at no more than 10 bacteria per milliliter in raw milk, the same limit required for pasteurized milk. This level is consistent with both national and international public health and food safety requirements.

### Is this coliform standard achievable in milk that is not pasteurized?

Yes. Coliform counts of < 10 bacteria per milliliter can be routinely achieved in raw farm milk with utilization of sound cleaning and sanitation practices. On average, about 25% of regulatory bulk milk samples collected during the year from dairy farms inspected by the Department have coliform counts at or below this level, even though virtually all of this milk is ultimately pasteurized at a milk products plant.

### Some common and effective practices to control coliform counts in raw milk include:

- Properly managing manure, bedding, housing and pastures to prevent cows from arriving overly dirty at the milking parlor.
- Washing the udders and teats of cows, and ensuring they are clean and dry prior to milking.
- Ensuring the hands of milkers are clean and dry
- Use of an appropriate commercially available pre-milking teat sanitizer to further reduce the amount of bacteria contacting milking equipment.
- Milking any cows with infected udders last, and ensuring such milk is properly excluded from milk intended for consumption.
- Ensuring all equipment throughout the entire milking system is properly cleaned and sanitized after each milking.
- Ensuring detergents and sanitizers are used at effective concentrations, and that adequate amounts and temperatures of hot water are utilized.
- Establishing and adhering to a maintenance schedule for milking equipment to ensure proper operation and to replace worn out liners, hoses, gaskets and other parts that can harbour coliform bacteria.

- Providing sufficient refrigeration to ensure milk is properly cooled and stored at 4 degrees or below.
- Ensuring the milk products plant where the raw milk is handled and finally packaged for the consumer is also properly constructed, clean and sanitary. Bottles of raw market milk must be mechanically capped to avoid contamination from workers' hands.

All of these procedures are well-recognized and proven means to help control the bacterial quality of milk, including coliforms. Cleanliness and sanitation are of the utmost importance when producing raw milk that it is of a safe and suitable quality for the consumer.