

Colostrum: Lowering a High Coliform Count – a Case Study

- **High coliform bacteria counts in colostrum should not be normal.**
- **It is possible to feed colostrum with low coliform bacteria counts.**
- **Efforts to reduce coliform bacteria counts in colostrum must be a team effort – everyone has to buy into the goal of clean colostrum.**
- **It is most cost effective to focus on key critical control points:**
 - 1. Clean teats on fresh cows**
 - 2. Clean collection equipment**
 - 3. Feed quickly or cool rapidly for stored colostrum**
 - 4. Clean feeding equipment**
- **Monitor, monitor, monitor with sampling and lab cultures.**

Yes, it is discouraging to get the lab culture results back and find high coliform counts in the colostrum. However, there is good news! It is possible to deliver clean colostrum to calves.

The Case Study

Let's look at the situation for a dairy with serious health problems in young calves. At the first sampling of colostrum we had 6 samples. Our industry standard for coliform counts in colostrum is no higher than 5,000 cfu/ml. These were the coliform counts (cfu/ml is colony forming units per milliliter):

Sample #1= 38,000 cfu/ml

Sample #2 = 278,000 cfu/ml

Sample #3 = 54,000 cfu/ml

Sample #4 = 125,000 cfu/ml

Sample #5 = 46,000 cfu/ml

Sample #6 = 27,000 cfu/ml

All of the standard plate counts were much, much higher.

What to do next? On one hand, we could have spent considerable time and money on more sampling and culturing. On the other hand, with high coliform numbers like these and such a wide spread from highest (278,000) to lowest (27,000) I had to ask, "Is more sampling and culturing really necessary?"

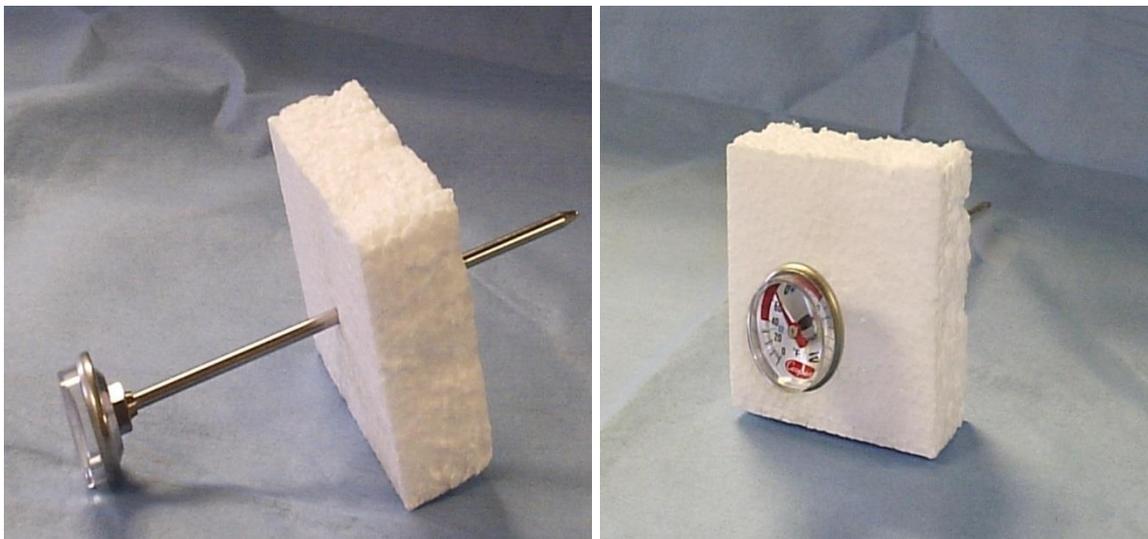
It is most cost effective to focus on key critical control points:

To correct the situation we chose to just jump in with both feet focusing on 4 critical bacteria control points. They are:

- Clean teats on fresh cows
- Clean collection equipment
- Feed quickly or cool rapidly for stored colostrum
- Clean feeding equipment

Teat preparation for fresh cows in the milking parlor was first. We met with all the milking staff that milked fresh cows. Each person was coached on a “dip-wipe-dip-wipe-scrub-teat -end” procedure. Each worker showed the parlor manager they could properly follow these rules.

One person was responsible for **cleaning the stainless steel buckets** used to collect the colostrum. Visual inspection showed significant areas of biofilm on the inside of all of the buckets. I made sure that there was a dry chlorinated detergent available as well as a stiff bristle brush, a green scouring pad and rubber gloves. We reviewed the “rinse-wash-rinse-dry” cleaning protocol. [Click [HERE](#) for a washing protocol-English, click [HERE](#) for a washing protocol-Spanish] The farm had lots of hot water so keeping the wash water above 120°F was not a problem. They use a simple floating thermometer to maintain water temperatures at 120 or greater.



The insides of these buckets now shine brightly. Good.

Cooling Challenge: The parlor manager agreed to change his handling of the colostrum buckets. He had been waiting until all the fresh cows were milked (sometimes as long as an hour) until taking the collection buckets from the parlor to the utility room. Then they would often sit there for another hour before being transported over to the calf barn. [Can

you almost hear the coliform bacteria growing?] Once at the calf barn the colostrum was poured into 2-quart plastic containers (visualize plastic food containers). Then those went into a freezer for storage until needed. Once in a while as many as 30 containers of warm colostrum were added at one time. Too many opportunities for bacteria to grow, and grow, and grow.

A whole new approach to chilling colostrum was put into place. A chest-type freezer was added to the utility room. One-gallon jugs of water are frozen in the freezer. As soon as each fresh cow is milked the colostrum is now brought to the utility room and ice-filled jugs go into each bucket of colostrum.



At the end of the milking shift all the colostrum is now transported to the calf barn where it is refrigerated or frozen. By the time the colostrum gets to the calf barn it now is chilled to around 60°F (16°C). [Coliform bacteria take 150 minutes to double at 60° compared to 20 minutes to double at cow body temperature, 102°.]

Cleaning storage and feeding equipment All the workers at the calf barn got together for training on cleaning storage and feeding equipment. Previous procedures did not include rinsing before washing. Nor were they monitoring wash water temperature – it was about

90°F the day I was there. They were using dish-washing detergent without any chlorine – not good if you want to remove milk protein.

The first change made to improve sanitation was to get the Washing Milk Containers Protocol translated into their native language Spanish. Then a native speaker explained the reason for all four steps. [Click [HERE](#) for this protocol] The success of this sanitation program was initially monitored by culturing sterile-water samples collected from the colostrum feeding equipment. [Click [HERE](#) for rinse sample collection protocol] Starting in 2016 we began using a Luminometer with Ultra-Snap sampling tubes to get instant results on sanitation success from the dry equipment surfaces.

To track the overall success at all 4 critical control points every 3 months 5 “as-fed” samples of colostrum are cultured to monitor the success of the entire bacteria management program. After a whole year of adopting new practices the most recent results were all below 5,000 cfu/ml coliforms. It is possible to feed low-bacteria-count colostrum!

Remember, too, when using colostrum replacers the same mixing and feeding equipment sanitation is a critical step in maintaining good calf health.