CALVING EASE

August 2006

Sam Leadley, Attica Veterinary Associates

Cleaning Milk Equipment, Yet Again!

Remember these cleaning procedures:

- **Rinse equipment thoroughly with lukewarm water. Remove as much colostrum, milk, milk replacer and other organic matter as possible.**
- **Wash by brushing all equipment surfaces. Use wash water with soap and chlorine that stays above 120°.**
- **Rinse with an acid solution to cover all equipment surfaces.**
- **Let dry completely.**

Why the emphasis on rinsing before washing?

We rinse to get rid of the organic matter. Milk solids, manure and just plain dirt do not belong in our wash water. If we load up our wash water with milk solids it is not long before the bottle or pail we wash may be more soiled coming out of the wash water than it was going into the water. Remember that we avoid using hot water. Lukewarm water will rinse, not denature the whey proteins making them stick to equipment surfaces.

Why add soap and bleach to our wash water?

Recall that milk contains both proteins and butterfat. Both of these components leave films on equipment. The combination of an alkaline soap and chlorine helps lift these films from equipment surfaces and keep them in suspension. One of the most cost effective ways to add soap and chlorine in one step is to use a powdered chlorinated detergent made for manual cleaning.

Why the fuss about brushing equipment surfaces?

One way or another the protein and fat films need to be broken up. In CIP pipeline surfaces we use extended circulation of wash water to do this – often for ten minutes or longer. For manual washing, we use brushing to break up the films.

Breaking up the biofilms on all surfaces should be our goal. That means reaching all the surfaces with a brush. Missing surfaces is a common error. Think about how easy it is to skip the bottom corners of a nursing bottle. Or, the shoulders at the top of a bottle. Even the bottom seams of a bucket may get passed by when brushing.

By the way, if the bristles on the brush are curled and bent, they cannot physically reach the corners and shoulders of bottles nor the bottoms of buckets.

Why the emphasis on hot wash water?

Note that the second procedure above calls for the wash water not to drop below 120°. That should be the lowest temperature during the entire wash – even as we wash the very last piece of equipment. This is rather warm – I cannot plunge my bare hands into this water and hold them there. I have to wear rubber gloves.

But why this magic number, 120? Below this temperature the milk solids we have carefully scrubbed from our equipment start to come back out of suspension. Do you recall that the protein and fat particles do not dissolve in the wash water? They are suspended. When our wash water gets cool enough to feel comfortable for our hands these particles are coming out of suspension. They end up on the bottles and pails we think we are washing. I think it is possible that with water that has cooled below 120 a pail might come out of the wash water with more solids on it than were present when it went into the water.

Just an aside here. If the prewash step has been done well, the wash water should remain fairly clean. If you can no longer see the bottom of the sink while washing, you need to drain that batch of water and start over with clean hot water.

Why the acid rinse?

To lower the pH of the equipment surfaces. Among all the conditions bacteria need to grow, one of them is a favorable pH. Bacteria most likely to cause diarrhea in calves grow best at near neutral conditions (pH 7) that are much like milk. By drastically lowering the pH we reduce regrowth of bacteria between equipment uses. CIP pipeline acid will work for this step. Specially formulated manual wash acid sanitizers tend to lower the pH farther and keep pH low longer than pipeline acid.

Why bother drying?

Bacteria must have moisture to grow. Dry equipment and we stop regrowth. The better the air circulation the more rapid the drying. In addition, on dairy facilities we often find high numbers of bacteria, especially coliforms, circulating in the air. It makes sense to store equipment for drying upside down to reduce re-inoculation with these airborne pathogens.

If you know of someone that doesn't currently receive **Calving Ease** but would like to, tell them to **WRITE** to Calving Ease, 11047 River Road, Pavilion, NY 14525 or to **CALL** 585-591-2660 (Attica Vet Assoc. office) or **FAX** (585-591-2898) or **e-mail** calvingease@rochester.rr.com. A limited number of back issues may be accessed on the Internet at either www.atticacows.com or www.calfnotes.com and clicking on the link, Calving Ease.

Our thanks to Intervet for sponsoring this issue of Calving Ease.