MOOS NEWS

From the Stall of
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Calf Health & Proper Cleaning

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With the uptake of our calf health program, we are pulling out our trusty luminometer a bit more often. What is a luminometer you may ask? Well, it is a device that measures bacteria levels on surfaces. We use it often to assess cleanliness of calf milk feeding equipment and determine if changes need to be made to cleaning protocols.

This had brought up more questions about how to properly clean calf feeding equipment. Below you will find the gold standard protocol. Of course, depending on the calf feeders and system this may not work for every farm but worth having a conversation with your herd vet as to how it can be modified for your system.



Applies to: Bottles, pails, nipples, tubes, and milk-mixing vats.

Required Cleaning Products:

- Chlorinated Alkaline Detergent (pH 11–12) & Citric/Phosphoric Acid Rinse.

Cleaning Steps:

Step 1: Rinse all equipment with cool water

Action: Disassemble all nipples, rings, and valves. Rinse all equipment inside and out.

Water Temp: 90°F to 100°F (32°C to 38°C).

Why: Water that is too cold turns milk fat into grease that sticks to plastic. Water that is hotter than 120°F (49°C) cooks milk proteins, baking them permanently onto the surface as a biofilm.

Goal: Flush away all visible milk, colostrum, and dirt before adding chemicals

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Step 2: Chlorinated Alkaline Wash (Target: pH 11–12)

Action: Submerge all parts in a wash vat mixed with your Chlorinated Alkaline Detergent (pH 11–12). Use a stiff-bristled brush to vigorously scrub all surfaces, paying extra attention to nipple openings, threads, and bottle bottoms.

Water Temp: Start at 140°F (60°C).

Temperature Limit: Do not let the wash water drop below 120°F (49°C) while scrubbing. If the water cools too much, suspended milk fats will fall back out of the solution and coat your equipment.

Why: The high pH (alkalinity) emulsifies and cuts through tough fats, while the chlorine breaks down protein bonds and sterilizes bacteria.

Step 3: Rinse off detergent

Action: Thoroughly rinse all washed parts with clean, sanitizing-quality water.

Water Temp: 100°F to 110°F (38°C to 43°C).

Why: This completely flushes away the dirty wash water, leftover soap residues, and loosened organic material before the final step.

Step 4: Acid Sanitizing Rinse (Target: pH 2.5–3.5)

Action: Rinse or submerge the equipment in a solution of warm or cold water mixed with an Agricultural Acid Rinse. Do not rinse the acid off with plain water afterward.

Why: This step does three critical things:

- Neutralizes any remaining alkaline detergent film.
- Removes "milkstone" (calcium mineral deposits) so surfaces stay smooth.
- Lowers the surface pH, creating a hostile environment where scours-causing bacteria cannot grow while the gear sits.

Step 5: Drying

Action: Place all pails, bottles, and utensils upside down on a clean, elevated drying rack. Store nipples and small parts in a clean, perforated tray.

Why: Equipment must dry completely. Never stack wet pails inside one another, as dark, damp spaces allow surviving bacteria to multiply rapidly before the next feeding.

Measurement & Safety Best Practices for the Barn

- ✓ **Always Add Chemical to Water:** Fill your wash vat or bucket with the measured 140°F water first, then pour in the chemical. Never pour water directly onto concentrated chemicals, as it can cause an aggressive chemical splash back.
- ✓ **Keep a Dedicated Measuring Cup:** Dedicate a marked plastic fluid-ounce/milliliter measuring cup solely for the milk room. Never guess or "eyeball" the chemical pour.
- ✓ **Wear PPE:** Always wear rubber gloves and safety glasses when handling concentrated chemicals.
- ✓ **Never Mix Chemicals:** Never mix the chlorinated alkaline detergent with the acid rinse. Doing so creates lethal chlorine gas.

Note: Automatic feeders will have their own cleaning systems but external surfaces still need to be manually cleaned and those systems need to be verified from time to time.

If you are not signed up for our Calf Health Program but curious how your cleaning protocols stand up reach out to have Chelsea or your herd vet spend some time on your farm with the luminometer.