

Calving Ease

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Cleaning and Disinfecting

- **Why do feeding equipment and calf pens need to be cleaned?**
- **Key points for effective cleaning.**
- **Why do we disinfect feeding equipment and calf pens?**
- **Key points for effective disinfecting.**

Successful calf management rests on five key parts: colostrum, calories, **cleanliness**, comfort and consistency [this borrowed from Dr. Sheila McGurk, Univ. Wisconsin]. **Cleanliness** is part of a much larger management strategy we call bio-security. It makes sense to reduce all sources of pathogen exposure of which calf pens and feeding equipment are just one piece of bio-security.

Why do feeding equipment and calf pens need to be cleaned?

Dirt and manure are easy to see on equipment and pens. Scrubbing with a detergent solution works well to remove them. Along with the dirt and manure we are trying to wash away pathogens like bacteria and parasite eggs.

Much of our feeding equipment also comes in contact with milk products. Colostrum, milk and milk replacer contain protein, milk fat and milk sugar (lactose). If we fail to do a good cleaning job regularly with pails and bottles the milk protein and fat stick to surfaces. Over time layers of residue add up – we call these “bio-films.”

Biofilms usually develop because of poor cleaning of equipment. For example, the prewash rinse may be excessively hot. This causes particles of whey protein to bond to the surfaces. The wash water may be too cool [less than 120° (49°C)]. This causes particles of fat and/or protein to fall out of suspension and stick to surfaces.

During the wash step thorough brushing may not reach all surfaces. Alternatively, we might run out of either detergent or chlorine and wash without them. Even worse, we may just “rinse” the equipment while planning to wash it more carefully after the next use.

Bacteria recognize these residues on the equipment. Using a biological connector, the bacteria attach to the protein, fat or lactose particles. Microbiologists call this “adhesion behavior.” Bacteria literally cement themselves to equipment surfaces using the milk residues.

Once the bacteria are cemented onto the surfaces, they produce organic compounds designed to protect themselves. Bacteriologists call these exopolysaccharides. These compounds stick together in forms called matrices. Think of them as biological apartment developments. For more on “biofilms” click [HERE](#).

Key Points for Effective Cleaning

The simple cleaning procedures that work well for dirt and manure are ineffective for removing milk-related solids. The key points for effective cleaning are:

- Rinse with lukewarm water.
- Wash with chlorinated detergent solution over 120°, brush all surfaces.
- Rinse with an acid solution to lower surface pH.
- Allow to drain and dry.

[For more on washing feeding equipment click [HERE](#).]

If it looks clean, why do we disinfect it?

Well, how clean is clean? Just because we have removed nearly all the dirt, manure, or milk solids from a surface does that mean there are no pathogens (bacteria, viruses, parasites) lurking on the surfaces? No! Ah, that is why we disinfect AFTER we clean. Most disinfectants do not work well on “dirty” surfaces. That’s why we first wash and then disinfect.

We know that one way to promote good calf health is to reduce their exposure to pathogens like bacteria and parasite. A well-planned program of disinfecting equipment and pens is a cost-effective way to cut pathogen numbers.

Key Points for Effective Disinfecting

A good disinfection program includes: [for a comprehensive review of disinfecting click [HERE](#)]

- Getting all the surfaces clean before using the disinfectant. Dirt, manure and biofilms work to shield pathogens from the disinfectant solution. As a friend told me, “You cannot disinfect manure!”
- Choosing the right product – depending on what we are trying to kill, some disinfectants work better than others. Talk this over with your herd veterinarian. The most reliable online source on disinfecting and disinfectants I know is at <http://www.cfsph.iastate.edu/Disinfection/index.php> or click [HERE](#). They have two excellent summary charts at this site, “Characteristics of Selected Disinfectants” and “The Antimicrobial Spectrum of Disinfectants.”
- Mixing the disinfectant correctly.. Follow label directions to get the proper concentration to get the desired results. Don’t fall into the trap of “if a little is good, more is better.” Using too high a concentration wastes money, can be unsafe for both humans and animals and may be corrosive to equipment.
- Achieving the correct contact time. The desired pathogen kill depends not only on selecting the right disinfectant and mixing it correctly. The proper length of contact is also essential to kill pathogens. Don’t rush! Label directions will specify the required time. For example, for Virkon-S disinfectant specifies using a 1% solution with contact time of 10 minutes.

For a calf pen this means soaking the surface until the solution runs down the surface and then keeping surfaces wet for ten minutes. For calf feeding equipment this means soaking them in the solution for the time on product label. Do not fool yourself into thinking a quick dip will be effective!

**Thanks to Merck Animal Health for their support of Calving Ease.
Remember to search for “Calves with Sam” blog for profit tips for calf rearing.**