

Calf Barn Cleanliness

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Over the past several years there has been a large amount of growth on Canadian dairy farms. Dairies have created more space to milk more cows. Adding in the use of sexed semen and seasonal calving surges, the result is an increased workload for calf facilities. On many Ontario farms the infrastructure for raising pre-weaned calves is being pushed to the limit, with a very rapid throughput of animals. While this is certainly a good problem to have, it does pose a challenge to properly clean and sanitize the calving areas, calf pens, and calf feeding equipment between uses.

A lot can be learned by observing the biosecurity and disinfection practices of fellow agricultural industries. One could argue that the swine and poultry sectors in Ontario have a better handle on managing pathogens in young livestock facilities than the dairy industry. Much of this, however, is due to outbreaks of hyper-contagious pathogens in these sectors in past years. While we can be grateful as an industry that we have not faced similar dilemmas, we can and should learn from our peers.

In other livestock industries, there is an extreme emphasis on “all-in all-out” management styles with a thorough disinfection and sanitation procedure between groups. Logistically an “all-in all-out” system may pose a challenge due to the nature of how we manage dairy cattle in Ontario. There are, however, still applications for these concepts to be used.

Often, the perceived purpose of a cleaning protocol is to remove manure and visible filth from surfaces. While this is the first crucial step, it is just the beginning. The next critical sanitation step is to address the invisible pathogens that are embedded in biofilms. Biofilms are collections of microorganisms that form a film (or a layer of bacterial slime) on a surface. These biofilms contain millions of bacteria, viruses, and parasites. Included in these are the major causes of calf diarrhea. The calf penning and calf feeding equipment may look and feel spotless, but below the surface remains a robust reservoir of cryptosporidium, E. coli, salmonella and even some viruses. Calf feeding equipment and housing are a perfect environment for biofilm formation- leftover milk on bottles and nipples provide an all-you-can-eat buffet for microorganisms. Calf diarrhea on the walls of calf hutches contain millions of microorganisms. Biofilms exist in every aspect of the calf's environment.

It is possible to eliminate this invisible enemy. Biofilms are not removed by high pressure washing but rather, are removed by the appropriate use of chemical disinfectants. If the cleaning protocols are not targeted at removing biofilms, they are likely not going far enough and the presence of biofilms will continue to be a major risk factor for calf diarrhea.

Prior to creating a new protocol, it may be worthwhile to assess how well the current system is performing. There are several tools that you can use to measure the cleanliness of calf facilities. First is evaluating overall calf health by tracking calf mortality rate. This will provide an initial starting point and will be used to set specific goals. Most farms will already have this information recorded on site. Take the time to look at this data on a regular basis. You might be surprised to find that calf mortality is higher than you think.

A second effective way to determine the contamination of calf feeding equipment is to collect a milk/colostrum sample from the nipple as if it were being fed to a calf. Performing a bacterial count on this sample can provide a quantification of the bacterial content in milk being fed to calves. This will give an indication of the cleanliness of all the milk containers from the cow to the calf. There are multiple types of bacterial counts that can be used to indicate that the milk/colostrum being fed to calves contains excessive amounts of bacteria. Work with your veterinarian and diagnostic lab to test milk feeding equipment bacterial levels.

A third and more specific way to determine the extent of biofilm formation within an environment would be with the use of an adenosine triphosphate (ATP) meter or luminometer. This device provides a direct measure of cellular material on a surface. This can be used to assess a current cleaning protocol's performance and to determine precisely which areas of the calf environment are major hotspots of microorganisms. Luminometers are relatively expensive pieces of equipment, but have become an increasingly popular tool that many vet clinics and calf health specialists maintain.

An effective disinfectant protocol can make a large impact on the health and well-being of young calves. Below are two examples of thorough cleaning protocols. It is important to design a protocol on an individual basis keeping in mind the disease prevention priorities of each farm and the capabilities of the disinfectants available. Reach out to your herd veterinarian to go over your calf cleaning protocols.

Calf Pen Disinfectant Protocol

1. Remove visible manure and bedding from calf penning. It is important to have all manure cleaned away prior to disinfectant.
2. Apply an alkaline foaming detergent paying special attention to cover every square inch of calf penning. Apply from low to high.
3. Soak for 10-15 minutes. Rinse off the foam.
4. Apply an acidic foaming detergent paying special attention to cover every square inch of calf penning. Apply from low to high.
5. Soak for 10-15 minutes. Rinse off foam. .
6. Allow to dry.
7. Spray a suitable disinfectant on all calf pen areas (Chlorine dioxide works well to eliminate cryptosporidium).
8. Allow to dry.

Calf Feeding Equipment Disinfectant Protocol

1. Rinse milk residue with cold-lukewarm water.
2. Scrub with hot water (>49°C) and a chlorinated detergent.
3. Rinse with warm water and an acid sanitizer.
4. Allow calf feeding equipment to thoroughly dry.

*references available upon request