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## **Manure Contamination of a Dairy Cow's Feet and Legs**

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One of the biggest issues affecting dairy farms today is environmental mastitis. As the dairy farm improves its milk quality, the contagious bacteria are gone but the farm is continually plagued with individual clinical cases of mastitis that drive them crazy. Many people feel this problem exists because their SCC is too low and the cows don't have the ability to fight off environmental mastitis. I can assure you that the research does not support this theory. When herds have low SCC, the only bacteria left to effect the cows are environmental bacteria. (Strep species, Coliforms, etc.)

When a herd is having a problem with environmental bacteria or wants to implement the best "plan" against new environmental infections, the veterinarian needs to look a little closer at the environment. Environmental mastitis is usually not solved with the right treatment, but is better resolved through prevention. I am amazed how many farms struggle with environmental mastitis, yet the treating veterinarian has never looked at the cow housing, the outside yards, or the pastures. You have to find the source of the contamination if you want to resolve the mastitis problem.

When you investigate dairy herds with environmental mastitis, you still need to look at milking routine first. The key factors are whether the people milking cows are properly sanitizing the teat skin, properly cleaning the teat end, milking a dry teat, and properly post dipping. A great way to quickly evaluate the results of a milking routine is to look at the milk filters in the garbage. If the filters are dirty and brown colored, this clearly shows you that clean teats are not being milked. I consider the milk filters to be great report cards of each milking.

The milking equipment also needs to be properly evaluated and make sure the system is operating within the normal guidelines established by the NMC protocol. If a system has unstable vacuum, poor regulator function, poor pulsator function or air flow problems, there tends to be higher incidence of environmental mastitis. Don't forget to rule out the milking equipment before you make your final opinions.

The environment is a key part of the mastitis triangle. Once the milking routine and milking equipment have been evaluated, you then need to go look at the cows. If you don't go to the source of the environmental problems, it is unlikely you will resolve the problem.

When cows are dirty, there will be more environmental mastitis. For some reason, most veterinarians are very shy when it comes to telling their farmer the cows are dirty. If you can't tell them the truth, you can't help them. On many farms, the source of the dirty cows is very easy to find. You can find deep manure piles, you can find a mud hole at the end of the concrete yard, or you can find a mud hole out in the pasture. The cows are very easy to identify because the mud is up to their hocks and the udders are also covered with mud. It would be great if all the problem herds were this easy to identify.

Sometimes, the source of the deep manure on the cow's legs will surprise you. A major problem in large free stall barns with scrapers or flush systems is the removal of the manure. In long

barns, the manure gets very deep in front of the alley scrapers as they travel down the barn. As the alley scrapers pass by the cows, they are forced to step through the manure and contaminate their legs similarly to walking through a mud hole. In dairies with flush systems, if the barns are flushed while the cows are in the barn, the dirty water runs up the cow's legs just as though the cows walked through a deep mud hole. When alley scrapers are to be used, ideally, the scrapers will only scrape half a barn so the level of manure does not get so deep. The scrapers should also be run more times a day to reduce the manure load. All flush systems should be designed so they flush only one pen of cows. With this design, the alleys can be flushed while the cows are being milked so the dirty water never is exposed to the milking cows.

Some of the other common causes of manure contamination to the cow's feet are not scraping the cross walks at every milking, not scraping around the water tanks at each milking, and allowing cows access to piles of manure. With some simple management changes, all of these problems can easily be avoided.

When cows are generally dirty, then one should look at the area in which the cows sleep. Often times the free stalls are very dirty due to poor maintenance or poor stall design. If the cows are on a bedding pack, often times there is inadequate square footage per cow or the packs are not being properly maintained. A very important thing to determine is whether all cows are dirty or just certain animals. On many farms that I visit, there are specific cows that are very dirty while the others are clean. The specific animals, which are dirty, are often time's fresh cows and/or heifers. If this is the case, then you need to look at the springing heifer facilities, dry cow facilities, pre-fresh facilities, and calving area. On farms where the fresh animals are the problem, their DHIA records often times support your findings by having lots of animals freshen with a high first test SCC.

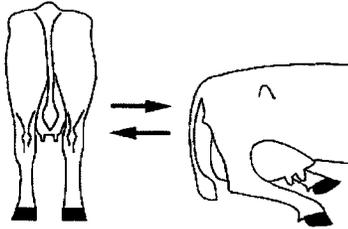
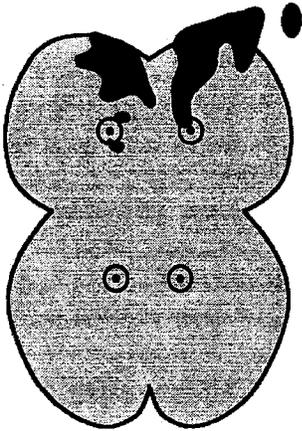
Another important step is to make sure you take a very good history. In many of the herds that I work with that are having an environmental mastitis problem, the vast majority of the clinical cases are occurring in first or second lactation animals. This seems unusual especially since older cows have lower udders that are more easily contaminated by the environment.

What about the cows where only the hoof has manure on it or the manure is only up to the dewclaws. Does this little amount of manure matter? The little amount of manure on their feet looks pretty normal compared to most farms and the level really isn't very deep. Obviously, when the manure is really deep, there is a problem.

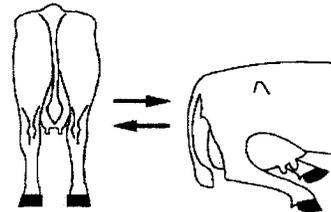
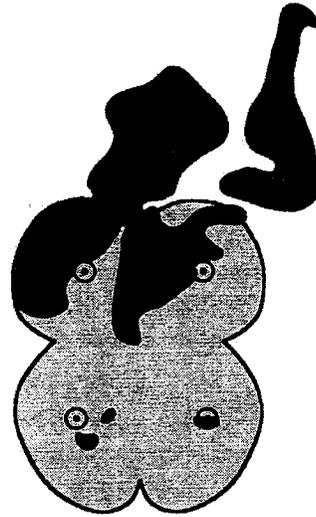
A paper written by a veterinarian in Japan (Hoard's 6/99) has done the best job of clearly demonstrating the importance of manure contamination of the cow's feet and it's relationship to dirty udders. This data clearly shows that any level of manure on a cow's feet will cause manure contamination to the udder. What surprised me is how much more significant the problem is on first lactation animals versus an older cow.

When you look at this data, it sure makes it easier to understand why first and second lactation animals have the most problems. When an animal with a high udder is gets up, she actually drags the leg and foot across their udder, whereas, an older cow's larger udder tends to keep the leg further away. (See pictures)

**Older Cow:**



**First Lactation Animal**



Manure contamination of the cow's feet is a major issue that must be addressed when evaluating an environmental mastitis problem. On many well managed dairies, the problem is not as obvious as you think, however, if you do a complete job of evaluating the situation, the answers are easier to find. When you have all the data, the picture is much clearer and you have several key tools (culture results, milk filters) to help you support your opinions. The biggest issue I deal with in milk quality is environmental mastitis. Unfortunately, this issue will continue to plague dairy farms as long as cows are being milked. Prevention is the solution. Find the source and resolve the problem.