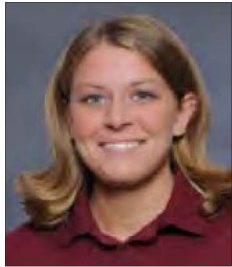


# How to Effectively Manage High Somatic Cell Counts



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Herd wide high somatic cell count (HSCC) issues can negatively impact both milk quality and overall farm profitability. A recent study estimated that the cost of subclinical mastitis to the U.S.

dairy industry exceeds \$1 billion annually. The overall production loss for the average U.S. dairy farm was estimated at \$110/cow annually. This loss can be attributed to discarded milk, treatment costs, extra labor costs, milk production losses, culling and death loss. The following article will outline what steps are needed to determine the cause of a high somatic cell count, how to interpret diagnostic test results and how to create a plan to help reduce the overall herd somatic cell count.

## Step 1: Culture Milk

The first step in determining the origin of a HSCC is to collect and submit milk samples for milk culture testing. Pulling a pooled sample from the bulk tank can help determine what specific type of bacteria is causing the issue. Many creamery

field consultants can help with the sample collection process and can be a great resource to have on your team when dealing with milk quality issues. Once milk culture results are received, the next step is to identify which individual cows are contributing to the high count. If DHIA milk testing is used on the farm, evaluating individual cow test results can indicate which cows have the highest somatic cell count. Cow side testing using the CMT paddle test can also be helpful but this method will not identify the cause of the mastitis.

## Step 2: Interpret Test Results

When the milk sample culture results come back, the lab will have identified which bacteria are involved. There are two groups of bacteria that could be causing the high somatic cell count, either environmental or contagious. Environmental causes of mastitis are bacteria that the cow contracts from the environment. These bacteria are often related to cow and stall cleanliness. Contagious causes of mastitis are types of bacteria that are spread during the milking process. **Table 1** shows the threshold levels for each type of bacteria while **Table 2** shows which bacteria are considered environmental and which are considered contagious.

**THRESHOLD LEVELS OF COMMON MASTITIS BACTERIA**

**Table 1**

Shown in CFU (Colony Forming Unit) / ml

Type of Bacteria	LOW levels	MODERATE levels	HIGH levels	VERY HIGH levels
<i>Strep. agalactiae</i>	< 50	50-200	200-400	> 400
<i>Staph. aureus</i>	< 50	50-150	150-250	> 250
<i>Non-ag. strep.</i>	500-700	700- 1200	1200-2000	> 2000
Coliforms	< 100	100-400	400-700	> 700
<i>Staph. species</i>	< 300	300-500	500-750	> 750

Source: Minnesota DHIA and The University of Minnesota

**Table 2 SOURCES OF INFECTION: ENVIRONMENTAL OR CONTAGIOUS**

Type of Bacteria	Usual Infection Source	Major Means of Spread	Mastitis Control Measures
<i>Strep. agalactiae</i>	Contagious: Infected udders of other cows in herd.	Cow-to-cow by contaminated udder wash rag, teat cups, etc.	Use separate towels to wash / dry, teat dipping, dry cow treatment, eradication in special cases.
<i>Staph. aureus</i>	Contagious: Infected udders of other cows, contaminated bedding from milk of infected cows.	Cow-to-cow by contaminated udder wash rag, milkers hands, contaminated milking equipment, and improperly functioning equipment.	Use separate towels to wash / dry, teat dipping, dry cow treatment, milk infected cows last, cull chronically infected cows.
<i>Mycoplasma</i>	Contagious: Infected udder of other cows, often from infected purchased cows.	Cow-to-cow by hands of milkers, equipment, and common towels. Aerosol transmission from animals with respiratory signs may also occur.	Careful purchasing of cattle using bulk tank and cow culturing. Use separate towels to wash / dry, teat dipping, dry cow treatment, milk infected cows last, cull any positive clinical case.
<i>Non-ag. strep.</i>	Environment	Environment of the cow by wet, dirty lots, contaminated bedding, milking wet cows, poor cow prep, milking machine air slips.	Improve stall and lot sanitation, milk clean dry cows, avoid air leaks and liner slips, change bedding frequently. Keep cows standing after milking.
<b>Coliforms</b>	Environment	Environment of the cow by wet, dirty lots, contaminated bedding, milking wet cows, poor cow prep, milking machine air slips, hot humid weather.	Improve stall and lot sanitation, milk clean dry cows, avoid air leaks and liner slips, change bedding frequently. Keep cows standing after milking.
<i>Staph. species</i>	Environment	Environment of the cow by poor teat dip coverage, poor cow prep, old bedding.	Consistent teat dipping, adequate cow prep, and more frequent bedding changes.

Source: Minnesota DHIA and The University of Minnesota

## Step 3: Enact a Plan

### Contagious Bacteria

Contagious types of bacteria can easily be spread from cow to cow. Cows with *Mycoplasma* or *Staph. aureus* infections are the highest on the cull list because these types of bacterial infections are not treatable. While it is not ideal to keep cows with contagious mastitis, they can be managed by being milked last, thoroughly sanitizing milking claws in between cows, and properly pre- and post-dipping. These cows should ultimately be removed from the herd.

### Environmental Bacteria

There are numerous factors that can contribute to a HSCC caused by environmental bacteria such as bedding type, milking procedure, milking equipment failure and other stressors.

#### Bedding

Bedding should be clean and dry. If bedding is not completely dry, it can be a breeding ground for bacteria and will increase the chances of bacteria entering the udder. *Klebsiella* bacterial infections are common in herds that use

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organic bedding such as sawdust or recycled manure. Making sure your bedding is clean and plentiful will help reduce HSCC issues.

### **Milking Procedure**

Crystal Creek® can help producers evaluate milking procedures and provide suggestions for areas that may need improvement. It is important to perform each step in the milking routine as accurately as possible. As the teat canal opens to let milk out, it also becomes an entry point for bacteria to enter. Key points to remember in a proper milking routine include:

1. Provide a low stress environment. Stressed animals will not milk out properly.
2. Wipe off teats with a clean paper or cloth towel. Use different towels for each cow to reduce spread of bacteria.
3. Pre-dip to disinfect the teats. Pre-dip should stay on the teats for at least 30 seconds to kill any bacteria. Crystal Creek® Teat Saver II or Teat Saver Concentrate are both high quality pre-dip options that will help with overall teat condition.
4. Forestrip each quarter prior to milking. Remove 3-4 squirts of milk from each quarter to help remove the milk that has accumulated in the teat canal which can contain the highest SCC.
5. Wipe the teat with a clean cloth or paper towel. To ensure proper removal of pre-dip is taking place, hold a paper towel flat under the teat ends and press up. No dip should show / be transferred to the paper towel if the pre-dip has been properly removed.
6. Attach the milker. Make sure the milker is attached squarely to the cow's udder to prevent squawking.
7. Post-dip immediately after the milker is removed. Post-dip should thoroughly cover the entire teat. Cows should stand for at least 10-15 minutes after getting milked to make sure the teat canal closes before the post-dip gets removed.

Take the time to analyze these management areas and periodically review procedures with employees to ensure consistency. Consistent practices will help lower somatic cell counts, increase milk production and increase overall profit.

### **Milking Equipment**

Routine testing and maintenance of milking equipment is key to maintaining a low SCC. If the equipment is not at the right vacuum pressure or if inflations are cracked and damaged, the cows will not be milked properly. This can result in damaged teat ends and infections in the udder. Work with a local dairy supplier to plan routine maintenance checks on all milking equipment.

### **Stress Factors**

There are a variety of stress factors that can lead to a HSCC. Transitioning into the lactation period and experiencing heat stress are two of the most common stressors cattle face. As cows freshen, the immune system is at its weakest point. This makes it a challenging time to cope with any added stress and increases the possibility of an infection establishing itself in the cow's body. Heat stress can also increase chances for a HSCC to occur. Providing plenty of fresh, clean water and proper ventilation can help reduce the effects of heat stress but will not eliminate it. Crystal Creek® Crystal Pellets™ are a nutritional tool that can be used during any type of stress event to help cows better manage the effects of these stressors.

If you are having a herd wide somatic cell count issue, submit milk samples for culturing to determine if the bacterial infection originates from an environmental or contagious cause. Create a plan of action to address problem areas that may be noted in the milking procedure, the equipment itself or stress related factors. Consistency in your plan will be key in its effectiveness. Including a Crystal Creek® representative on your team when dealing with high somatic cell counts will be time well spent. Don't let high somatic cell counts take away from your farm's profitability.

*References available upon request.*