

LOCALIZING A SPC PROBLEM

The differential count of bacteria in the bulk tank can be used to give an initial indication as to the likely source. High numbers of *Streptococcus agalactiae* will be coming from infected cows. A high environmental *streptococci* and coliform count will indicate a contaminated environment and manure covered teats. Large numbers of CNS bacteria will indicate poor teat preparation and dip coverage.

Two further tests will help differentiate the source of bacteria from the machine or the teat skin.

- Coliform Count: This count is performed on a specialized media (Violet Red Bile Agar) and high counts indicate an excessive amount of fecal contamination entering the milk from the teat skin.
- Laboratory Pasteurized Count (LPC): This is simply a plate count performed on milk which has been pasteurized. This process will kill bacteria which live in the udder and leave only the thermotolerants – the bacteria which live at high temperatures and therefore resist plant cleaning. This count usually reflects machine hygiene and cleaning efficiency, occasionally soil contamination will also raise the LPC.

A 2X2 table of Coliform count and LPC can therefore be used to localize the source of the high SPC. When both counts are moderately high, the problem is usually predominantly one of poor teat hygiene. When both counts are extremely high incubation must be suspected – indicating a fault with the cooling process.

Coliform Count

		Low	High
L P C	Low	No Problem	Teat Hygiene / Environment
	High	Machine Hygiene	Teat Hygiene / Machine Hygiene / Incubation

Bulk tank culture tests can be used to solve problems and they can also be used on a regular basis to monitor farm hygiene practices, so that problems can be rapidly identified and prevented.

WHAT HAPPENS IN THE LAB?

Sterile milk samples are frequently taken from individual cows with a high somatic cell count or a case of mastitis, but what happens in the laboratory?

In order to identify which pathogen is infecting the cow or quarter we must allow that bacteria to grow so that we can identify it. Different bacteria require different growth media and will react to various tests in slightly different ways.

To grow the bacteria, a very small sample of milk (0.01 - 0.2 ml) is put on a plate containing a special media. When incubated for 24 – 48 hours the bacteria in the milk will grow to form accumulations of bacteria on the media – these are called colonies. These colonies can look very different and allow us to differentiate between different species of bacteria very quickly. Identification is confirmed using a series of tests, which usually involve mixing the bacteria with various sugars and other reagents and observing the subsequent reaction. This process may take an additional 24 hours.

Thus, culture and identification may take 3 days of lab time – more in the case of *Mycoplasma*, which are very slow growing.

So that's why it takes so long to get your culture results!