What is PI?

- PI = Preliminary Incubation
- PI is a bacteria that prefers temperatures between 50-60 degrees Fahrenheit
- The bacteria lives through pasteurization and limits the shelf life of milk, before the expiration date

How to test for PI

- Certified lab incubates the sample for 18 hours at 56 degrees Fahrenheit
- Once complete, a Standard Plate Count (SPC) test will be conducted
- Personally, I prefer to run a SPC before the PI is run to compare and eliminate other problems
- A high PI count is not high unless it is double the SPC

Troubleshooting Milk Quality Problems in the Parlor

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![Image of a milk sample]

Producers fast find result

<table>
<thead>
<tr>
<th>SCC (x 1000)</th>
<th>SPC (x 1000)</th>
<th>PI Count (x 1000)</th>
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</table>

Where does PI come from?

- First, PI is not the result of the cow
- PI’s are the results of:
  - Poor sanitation
  - Poor cooling
  - Poor cow prep
  - Milking wet cows
- Interesting factor:
  - The PI spores are air born, they can float around in the milking system; if you smell soured milk, you are smelling PI’s
Items needed to clean a milking system

- Water
- Detergent or chemicals
- Physical contact
- Temperature of the wash water

Air temperature is also a factor

- Dirty equipment > 50-60 degree temperature = the bacteria growth rate will double every 20 minutes
  - In one hour a 10,000 doubles 3 times, and becomes 80,000.
  - In the second hour it becomes 640,000
  - In the third hour it becomes 5,120,000
- A milk tank that is not cooling correctly will have the same effect

It takes all four together to work correctly!
Where to look for PI and LP problems

- Fresh cow pails
- Traps
- Vacuum reserve tank
- Udder prep
- Milking wet cows
- Washcloths
- Not washed and dried properly
- It requires 120 degrees for at least 12 minutes to kill the bacteria
- Washing does not kill the germs, it requires heat from drying

Milk tanks – poor cooling

- Tanks are designed to cool the milk in four milking’s
- Tanks that are filled in two milking’s are working double the capacity
  - The tank cools slower than it should
  - Recommend to add pre-cooling
- Tanks that don’t automatically agitate every 20 minutes, will tend to have problems
  - The probe or temp sensor is at the bottom of the tank
    - Cool goes down and heat goes up
    - The probe reads that the milk is cool enough and doesn’t start the compressor and the milk at the top can be 60 degrees

Ice in a tank insulates the next milking from cooling

Milk lines

Dead ends
Spray ball

2 ¾ inches from floor to bottom of wand

Tank washer and spray balls

Objects in wash line

Old rubber parts...rubber has memory

Pulsator line and cracked inflations
What is the heaviest organ in your body?
- This can be a water temperature problem.
  - If the swing line is dirty, it is a water temperature problem
  - Water temperature is the hottest as it leaves the vat and is the coolest when it returns
  - The fat will redeposit as it cools
- Milking around the clock? Should stop 3 times to wash
- If system is down for more than 20 minutes, rinse and sanitize before milking resumes
- When milk is left by hauler and more milk is added, it is the same as if you didn’t wash the tank

Foreign air supply
- If hauler takes a sample from the valve, it will result in a high count
- Received one good count and then received a bad count
  - Possible build up and the hot water is sterilizing
  - Bad count results when a build up chunk breaks off in the milk
- Producer with two tanks
  - One tank is high and the other is not
    - Usually is an issue with that tank
  - If both tanks are high
    - Issue with the pipeline
Sanitize before you milk

Should not be done more than 20 minutes prior to milking

Chlorine is a gas and it leaches into the atmosphere

Tank filter – 800 cows

Milk filter and plate coolers

Mechanical breakdowns