What Plate Counts Don't Tell US

The State of Cleanliness From Farm To Plan

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By: Neville McNaughton – CheezSorce Consulting

THE DAIRY PRACTICES COUNCIL®

CHEEZSORCE
"Get a Grip on Your Process."

What I didn't know

- Based on the experience of others around the USA when I embarked on this raw milk cheese venture my concern was Clostridia.
- For that I was prepared
- What I wasn't prepared for was something I had not considered

When Plate Counts are <2,000 cfu/ml are we clean

What caused that cheese to look that way?

- We cleaned up in the plant and found Three items that might have been contributors?
- A Butterfly Valve not being cleaned daily
  - An initial count of 6,000 Fecal Strep when swabbed
- A Curd Transfer Hose not being washed at a minimum of 145°F for 30 minutes
  - This was immediately addressed

What caused that cheese to look that way?

- The Bulk Storage Silo at the plant, washing regimen was reviewed and optimized
- The goal in the future will be to wash at 168°F min. at the end of the cycle using single step Alkali Cleaner, rinsed and sanitized with an acid sanitizer
- This practice has produced excellent results

How do we determine the correct wash temperature on the farm?

- My opinion is that it should be:
  - A time/temperature combination that is equal to Pasteurization as the minimum goal
  - Time temperature combinations that do not achieve this are:
  - On Farm Bulk Tanks
  - Parlor Pipelines
  - Tanker Washes
    - <u>The importance is often about the fittings and not so much about the actual vessel and pipeline surfaces themselves</u>

What caused that cheese to look that way?

- Nothing Changed
  - We still felt we were in the dark as to the cause but as we continued to make cheese we had another problem show up
  - The initial problems were in cheese cooked to a maximum of 100°F and blowing appeared well within 6 weeks
  - In a second cheese we cooked to 118°F, the defects were different and occurred much later 6 weeks to 3 months

What caused that cheese to look that way?

Picture taken at early 2008

What caused that cheese to look that way?

Picture taken of a May 2009 Cheese at 100 days of age

What caused that cheese to look that way?

- The early blowing problem in the low cook cheeses has been almost eliminated by the use of 148°F/18 sec.
- The late blowing in the high cook cheese has shown a variable response to farm hygiene and is only retarded by 148°F/18 sec.

The Milk

- TPC – Generally <2,000 cfu/g -1000 is excellent
- LPC – Generally <30 cfu/g -10 is excellent
- Mesophilic Spores Generally 1-3 -1 is excellent
- Coliform – Generally less than 200 cfu/ml <10 is excellent
- SCC – Generally <250,000

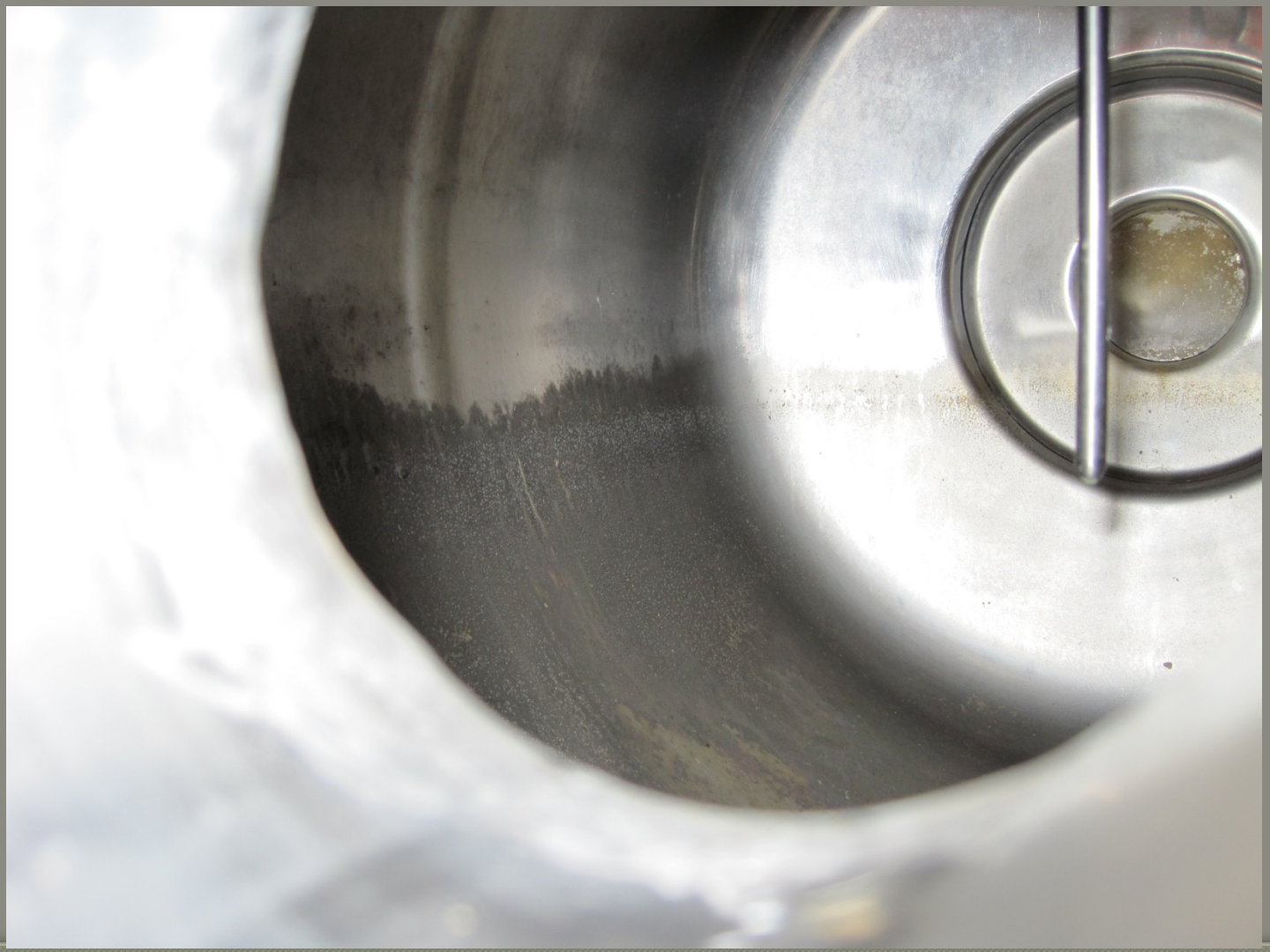
Farm Hygiene – What we found
Uncleanable Welds

Farm Hygiene – What we found
Dirty Pipelines

Farm Hygiene – What we found
Dirty Pipelines

Farm Hygiene – What we found
Dirty Receiver Tank

Farm Hygiene – What we found
Dirty Receiver Tank



Farm Hygiene – What we found

A Bulk Tank Valve that had no history of being disassembled and cleaned

Farm Hygiene – What we found

Another Bulk Tank Valve that had no history of being cleaned

Farm Hygiene – What we found

Non Sanitary Components on CIP Circuits

Farm Hygiene – What we found

Diaphragm Drain Valves with broken diaphragms

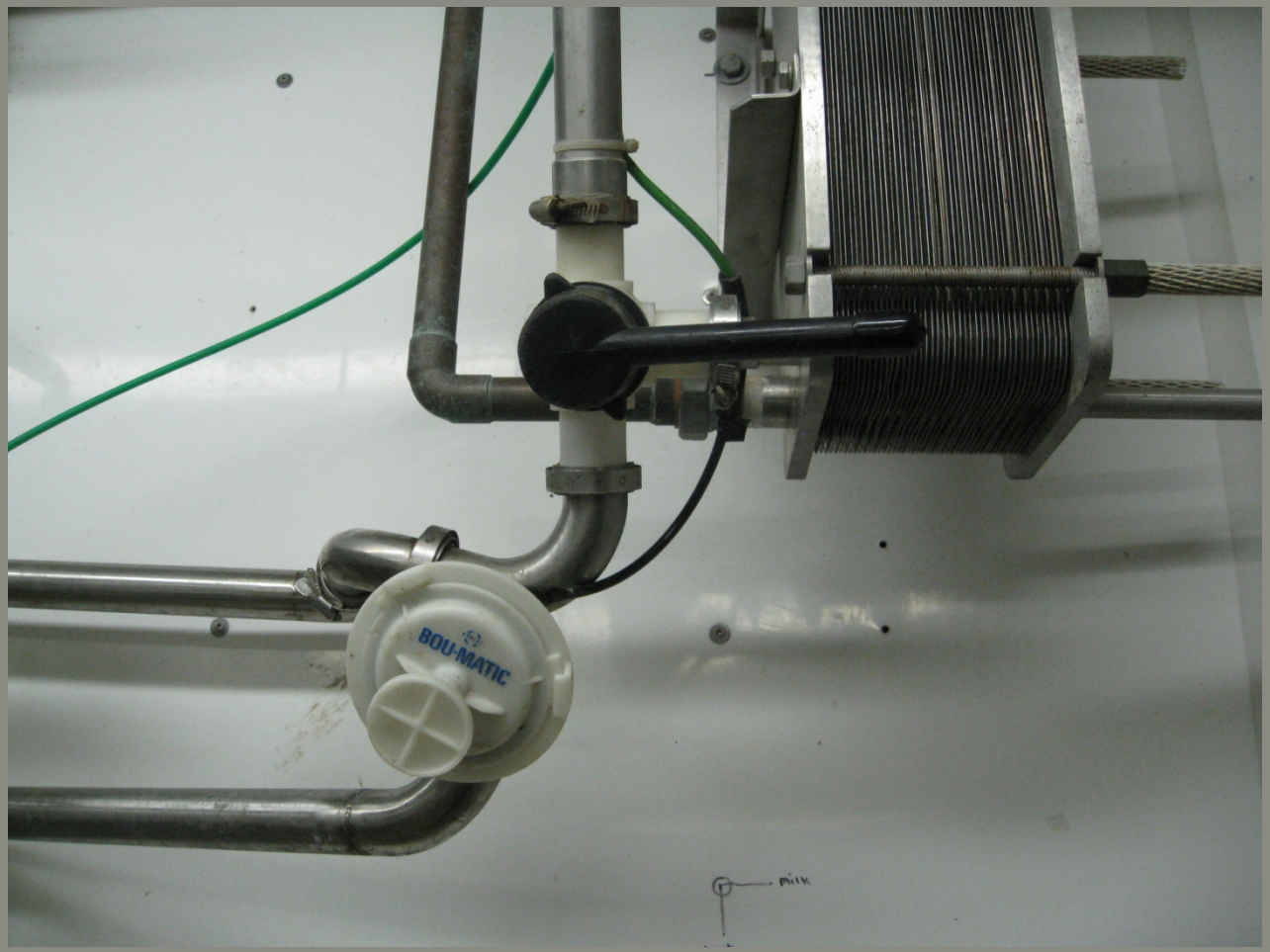
Farm Hygiene – What we found

Diaphragm Drain Valves with broken diaphragms

Farm Hygiene – What we found

Plate Coolers in Series with a By-Pass

Farm Hygiene – What we found
The By-Pass



Farm Hygiene – What we found

Plate Coolers in Series with a By-Pass

Farm Hygiene – What we found

A travesty – Rolled Fittings with welded gasket faces

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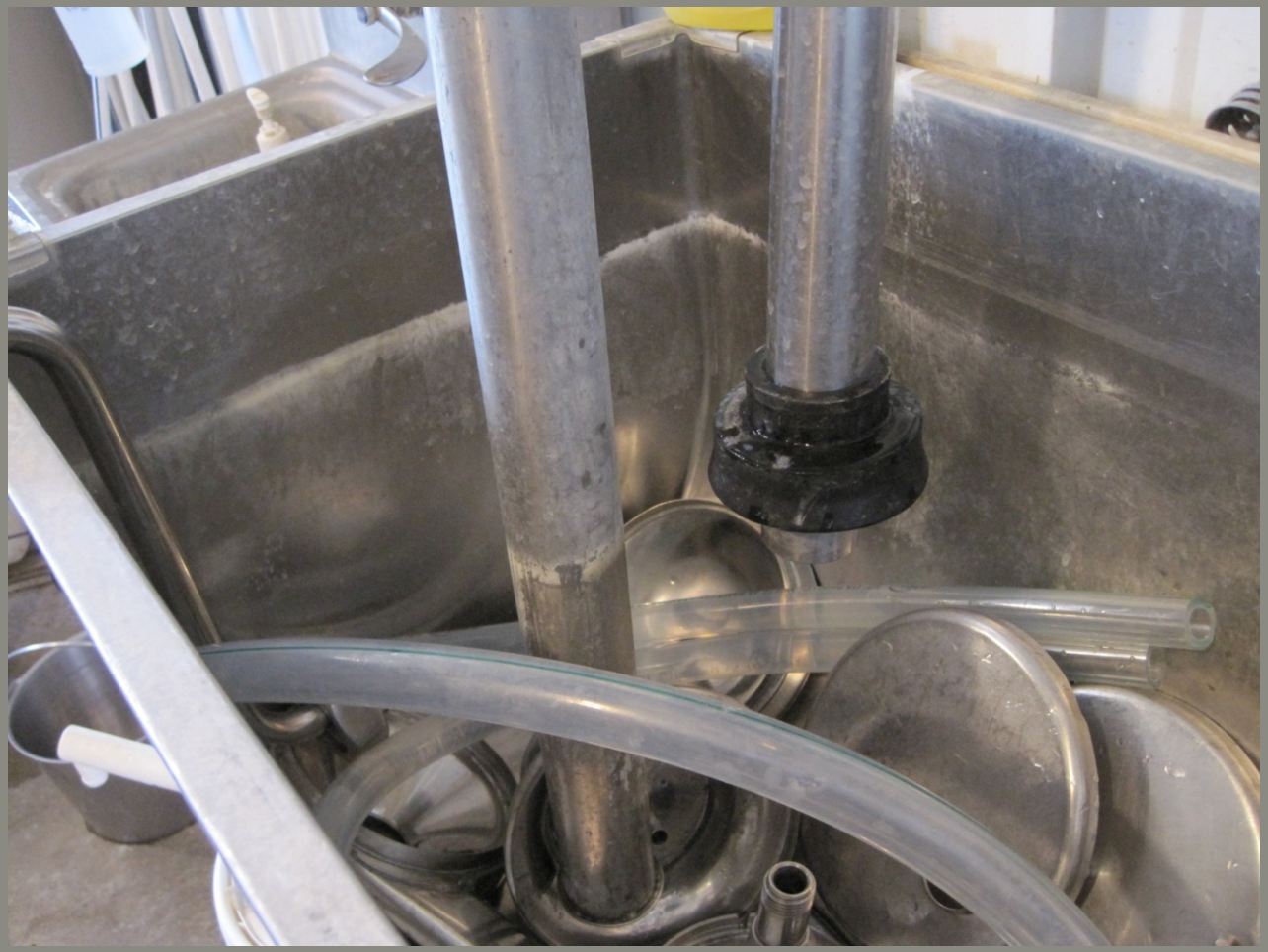
A travesty – Rolled Fittings with welded gasket faces

Farm Hygiene – What we found
Poorly cleaned drain valves

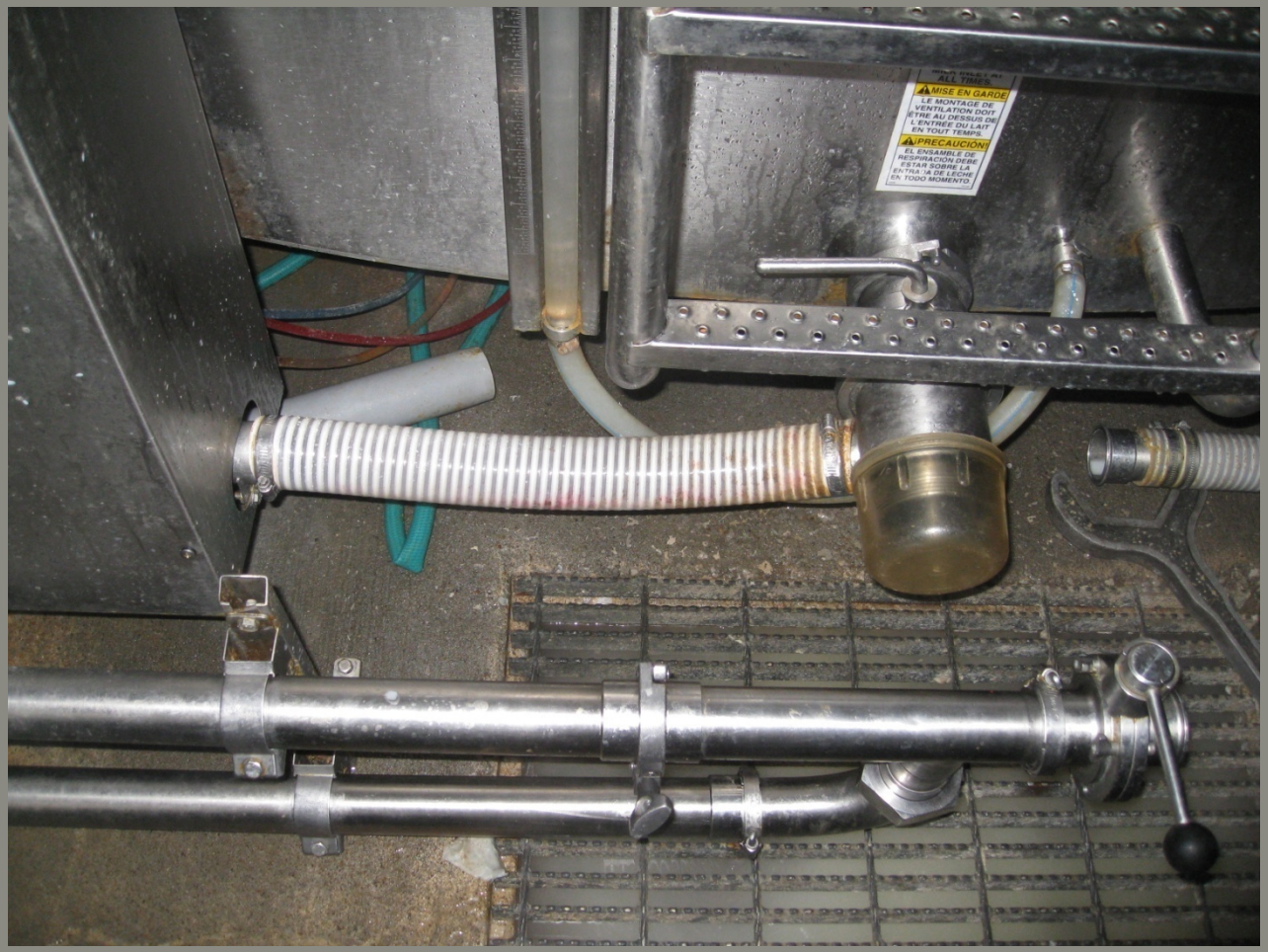
Farm Hygiene – What we found

Ridiculously low wash temperatures



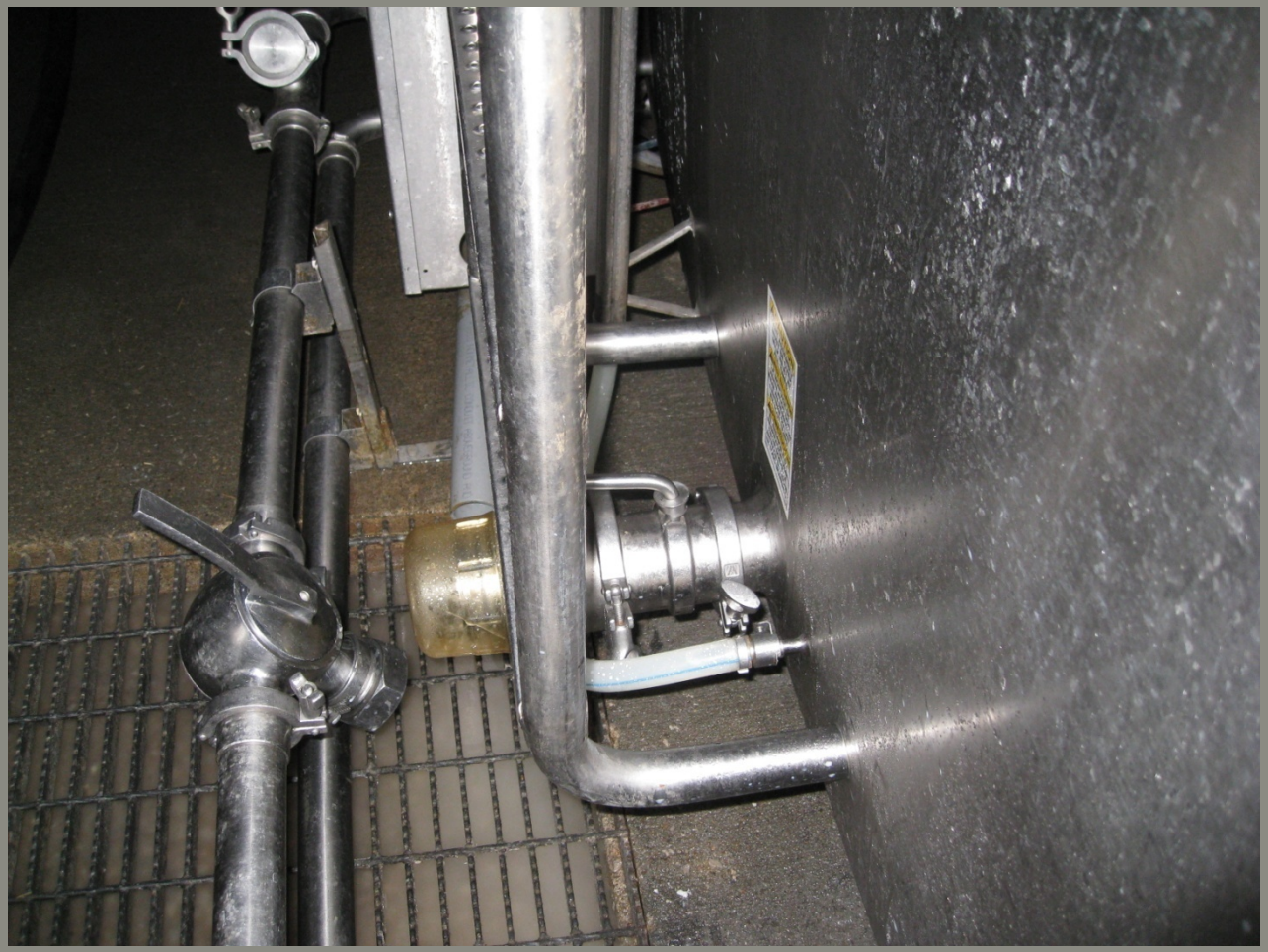
Farm Hygiene – What we found

Non 3A Butterfly valves and hose clamp fittings



Farm Hygiene – What we found

Non Sanitary Non 3A Bulk Tank Valves



Tanker Hygiene

Non Sanitary Fittings No scheduled cleaning

Tanker Hygiene


TREMCAR
CAUTION
Open manhole cover before
unloading or spray cleaning
FRONT
COMPT.
REAR
COMPT.

Other Findings

- To low washing temperatures
- Chemicals with misleading statements indicating 100°F was sufficient to wash

On the Plus Side

The replacement of drains with caps

A Change in Washing and Sanitizing Protocols

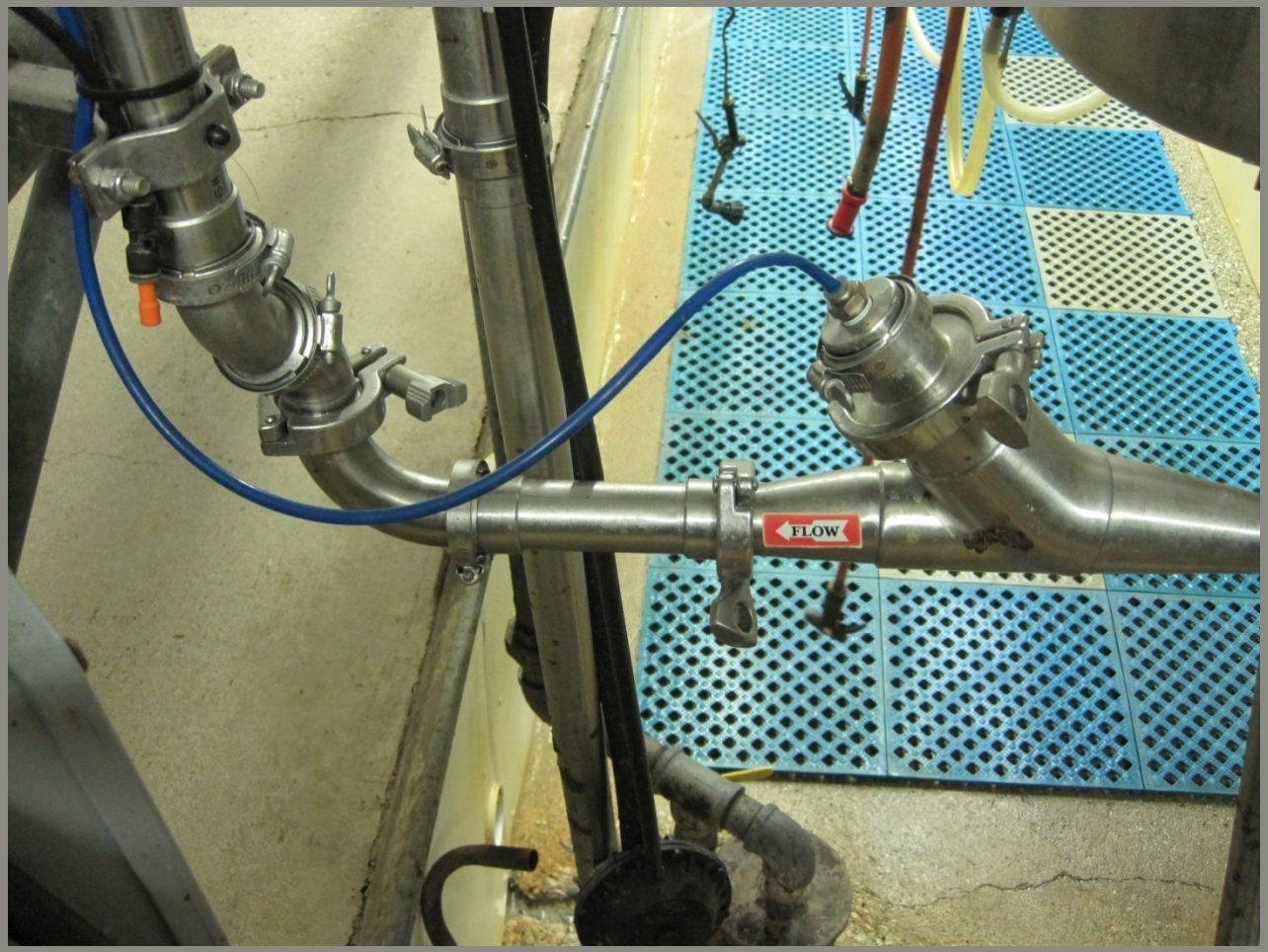
Why do milking Parlors have to be drained at the end of washing?

This one is left wet with an Acid sanitizer in place

The caps are drained prior to the commencement of milking

On the Plus Side

The replacement of drains with a simple break of the line



On the Plus Side

Sanitary Hose Fitting but failed to change out the Butterfly Valve

Summary

- The hygiene standards and installation protocols required within the manufacturing unit begin at the receiving bulk tank
- They are rigid and usually applied by trained personal

Summary

- A Different Set of Rules for:
- Tanker
- Farm Bulk Tank
- Milking Parlor

Summary

- Who's at Risk here?
- Consumers of Raw Milk
- Manufactures of Cheeses
  - Mozzarella, Gouda, Mediterranean Style Non-Cultured Cheeses – Queso Fresco etc. Italian including Parmesan
  - Raw Milk Cheese Manufactures
  - Pasteurized Milk Cheese Manufacturers
    - Slits in Cheddar Cheese are becoming and issue

Summary

- Who's at Risk Here?
- Bottled Milk Operations

Summary

- There are bacteria in this system that we do not pick up with standard testing
- Found in the Cheese are high numbers of:
- L. casei
- Wild Propioni
- Anaerobic thermophiles

Finally

- The solutions are multifaceted:
- Good Practices Produced Better Results
- There are bacteria in our milk system that cause problems that we are not fully aware of
- Our Questionable Practices exacerbate the problems.

Thank You

- Questions