

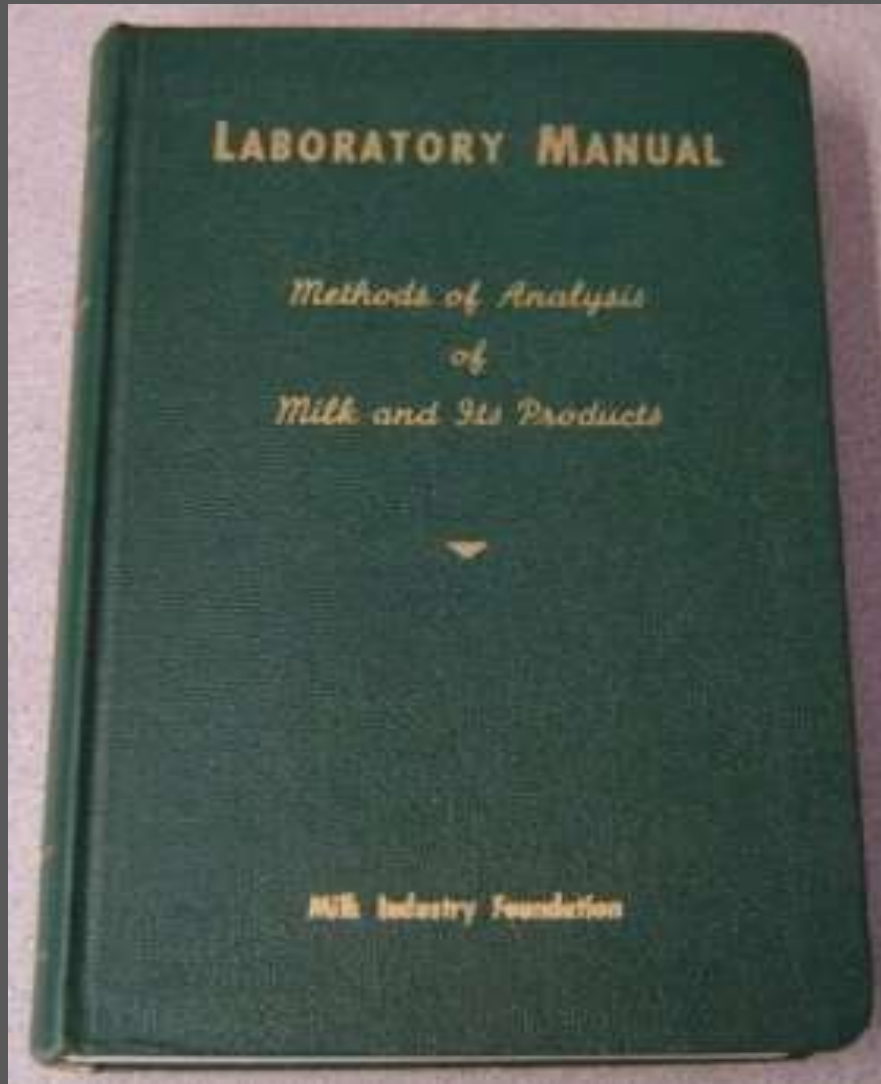


# Milk Sampling of the Future

The Dairy Practices Council®  
48<sup>th</sup> Annual Conference – November 2017

Mark Schwab

# Sampling Guidelines



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SECOND EDITION, Copyright 1949

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MILK INDUSTRY FOUNDATION  
WASHINGTON 6, D. C.

The variety of sizes and shapes of farm bulk tanks, as well as the different locations constructions and speeds of agitators suggest the need of careful attention to the matter of collecting representative samples of the product. The time required for effective agitation will vary in tanks of the same size and design, depending upon the depth of the milk and the opportunity for cream rising prior to the beginning of the agitation period. It is to the mutual interest of the producer and the dealer to determine for each type of farm bulk tank the time required for sufficiently effective agitation to give uniform tests on replicate samples.

If an extra minute is required to agitate a tank of milk effectively, it is time profitably spent by the truck driver. On a basis of 1000 pounds of milk, an error of 0.2 per cent from the true test results in a loss of 2 pounds of butter fat for the dealer or the producer. At 70 cents per pound, the extra minute of agitation would return \$1.40 or at the rate of \$84.00 per hour.

# Early days of the Industry



# Storage got Larger



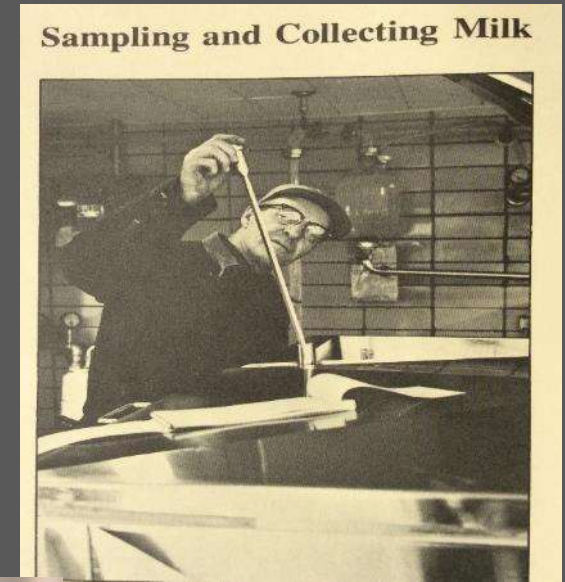
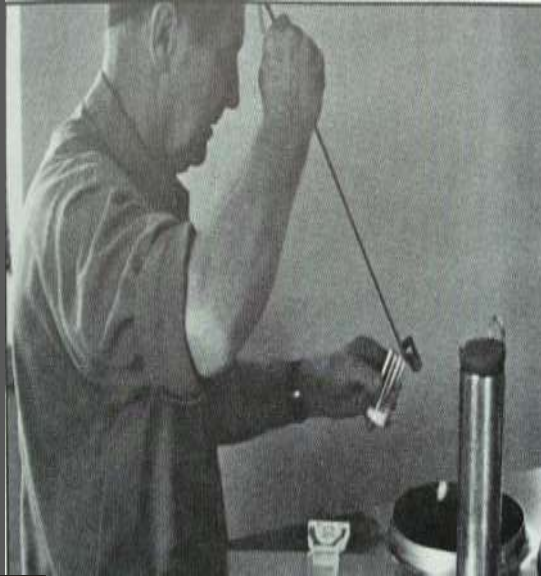
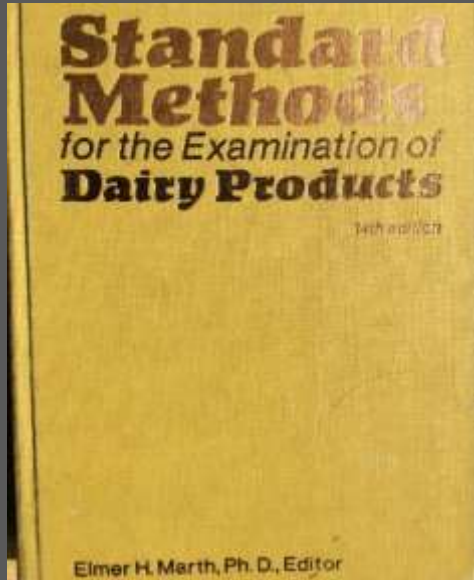
# Tanker Trucks got Larger



# Safety is a Concern



# Sampling Stayed the Same



# Procedures have become more detailed

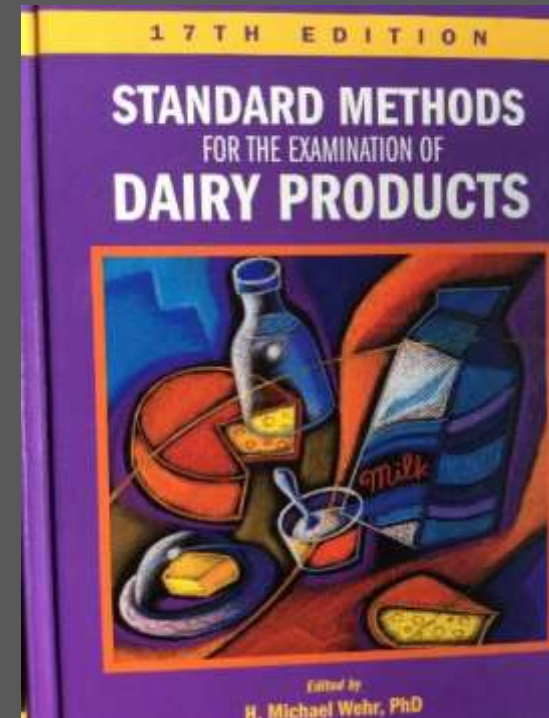
Section  
3.042

Section  
3.050

“Is adding additional detail to the existing procedures the answer?”

Agitation

Sampling  
Raw Milk



# Questions to the Industry?

- What if there was a sampling method that could:
  - Remove large portions of human error?
  - Mitigate the risk of cross contamination to the sample and capture what is actually there?
  - Provide a representative sample, even if the tank was not agitated properly?
  - Take a sample using the same sampling technique at the farm, on the milk truck and at the plant and provide statistically identical results?
  - Bring accountability to the sampling process

# Variables in Obtaining a Sample



## Agitation times

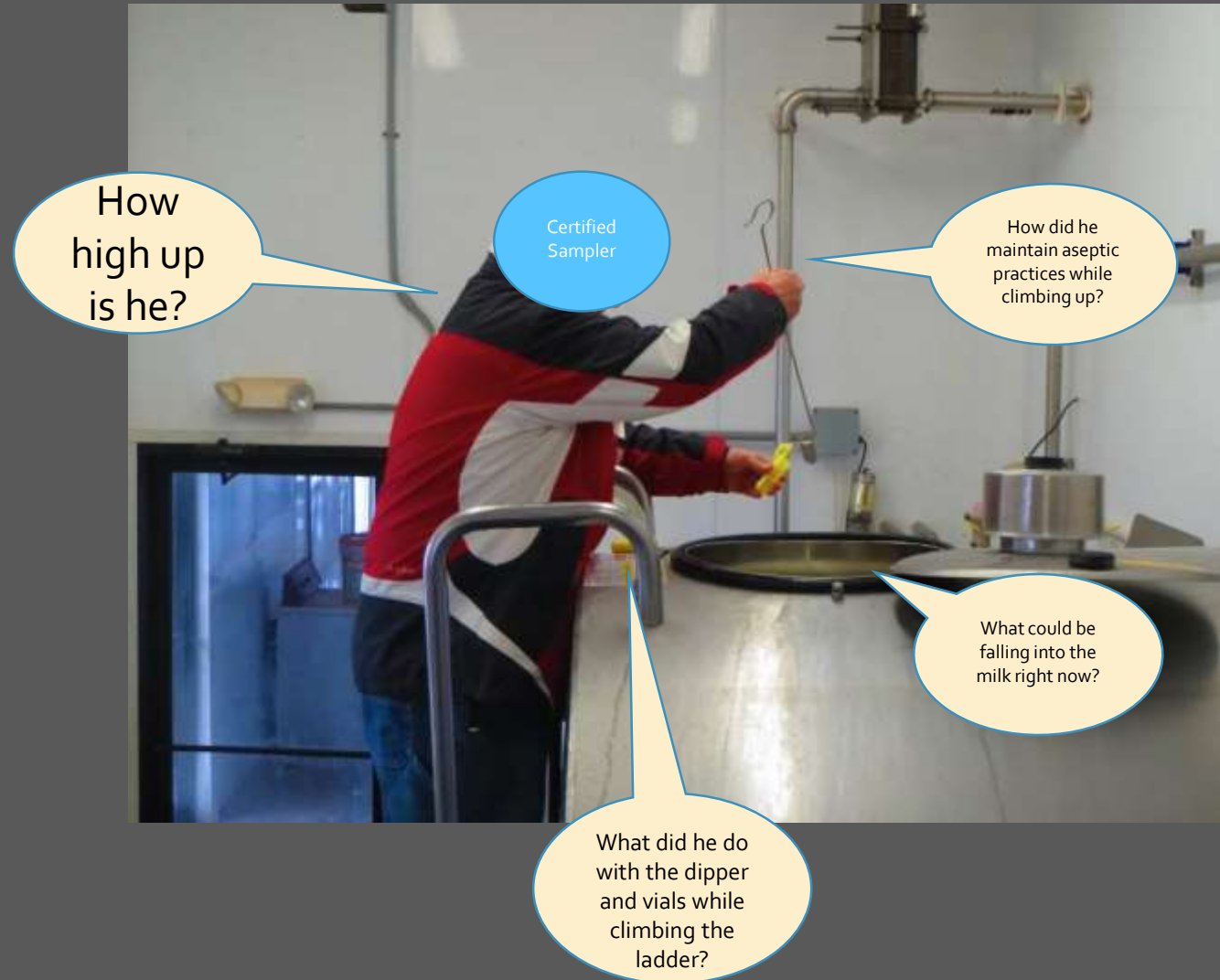
- Is the agitation time on the side of the tank accurate or have we proven it to be accurate?
- Is 10 minutes really adequate to agitate a 10,000 gallon tank properly? What about a 30,000 or 60,000 gallon silo?
- Are the tanks and silos truly agitated for 10 minutes prior to sampling?



# Risk of Contaminating the Sample

No control over:

- Sanitizing the dipper
  - ✓ Solution strength
  - ✓ Time in solution
- Maintenance of the dipper
- Storage or transport of the dipper
- Proper technique used by the certified sampler



# Business Decisions are Made Everyday

- ❖ **USDA Federal Milk Market Administrator**
- ❖ **FDA**
- ❖ **State Agency**
- ❖ **National Milk**
- ❖ **Processor- Coop Milk Buyer**
- ❖ **Co-Op Labs**
- ❖ **Processor Labs, Plant Manager**
- ❖ **Truck Hauler**
- ❖ **Producer**
- ❖ **Veterinarians**
- ❖ **Nutritionist**

# Foundation Exists to Make Improvements

## Grade “A”

Pasteurized

Milk

Ordinance

(Includes provisions from the Grade “A” Condensed and Dry Milk Products and Condensed and Dry Whey--Supplement 1 to the Grade “A” PMO)

2015 Revision



U.S. Department of Health and Human Services

Public Health Service

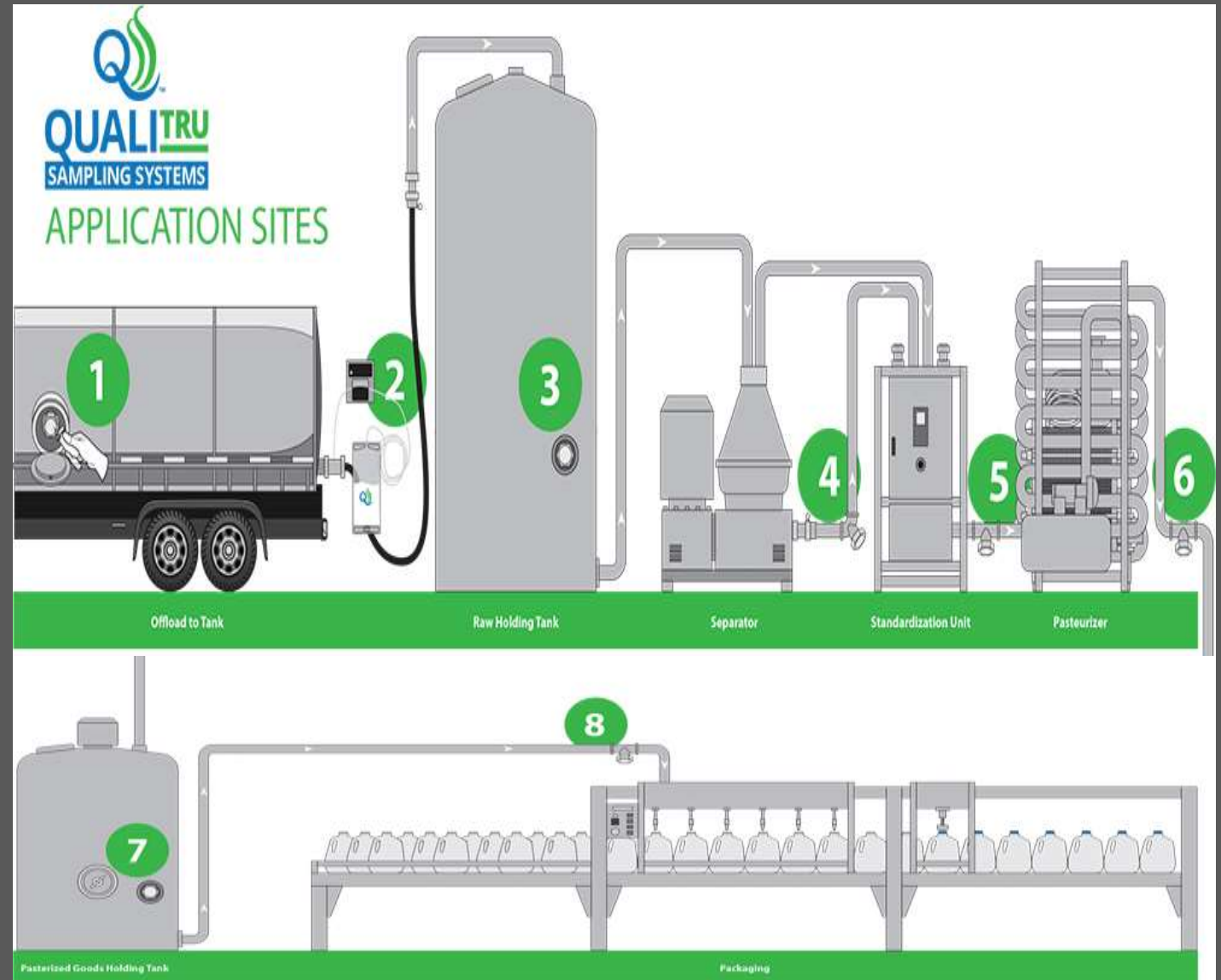
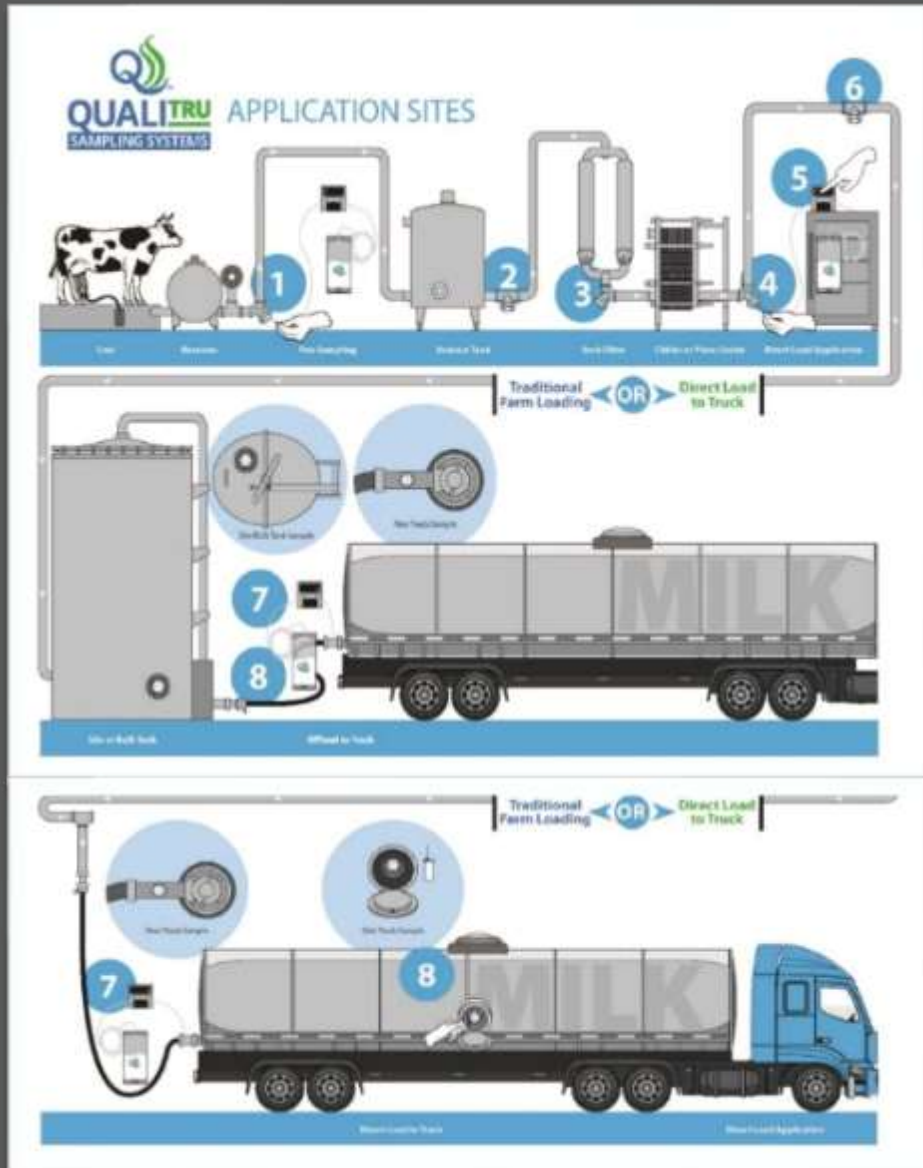
Food and Drug Administration

- Section 6: The Examination of Milk and/or Milk Products
- Appendix B: Milk Sampling, Milk Hauling and Transportation
- Appendix N: Drug Residue Testing and Farm Surveillance

# Approved Aseptic Sampling Systems



# Versatile



# Adaptable

- Whether you are attaching the Sanitary Bevel Seat Port to the bulk tank/silo or directly to the back of the truck the method is the same
- Can be adapted to any size line



# Benefits of Aseptic Sampling

- Completely closed system so no external environmental contamination can occur and the samples flows through a sterile fluid path.
- Pulls a controlled-metered amount of everything that goes by the needle. What does that mean?
  - ✓ If the tank is or is not agitated, you will still get a representative sample.
- Can be taken at the farm, on the milk truck or at the plant.
- Provides statistically identical results because of the mechanics of the sampling method are the same.
- Is more efficient and saves time.

# The Method is Easy and Consistent:

- Wash hands thoroughly and put on all applicable Personal Protection Equipment (PPE).
- Connect the QualiTru Bevel Seat Sanitary Fitting to the outlet valve of the Bulk Tank or Silo and connection hose leading into the milk hauling truck.
- Swab the smooth plastic surface of the QualiTru Sterile Septum with sanitizing agent for the appropriate time period (typically 15-20 seconds).
- Line and insert the needle
- Place the QualiTru Sterile Collection Bag in an ice bath.
- Place the peristaltic section (larger “soft” portion) of the bag tubing into the clam shell pump roller head.
- Open the valve and fill the line.
- As soon as you start the pump to fill the truck, start the peristaltic pump.
- At the completion of the unload or when the tanker truck or bulk tank is full, turn off the peristaltic pump and remove the needle.



The screenshot displays the QualiTru Training Center website. On the left, a blue header reads "Training Center". Below it, a list of links includes "Standard Operating Procedures (SOPs)", "Dairy Farm Training Schematic", "Dairy Processor Training Schematic", and "Installation Drawings". A prominent green button with white text says "Request a Quote". On the right, the heading "Standard Operating Procedures (SOPs)" is followed by a list of links: "Guidelines for System Diagnostic Sampling and Process Verification", "Bulk Tank & Silo Sampling SOP", "Direct Load - Inline SOP", "Line Sampling SOP", "Pen Sampling SOP", "Bulk Tank With or Without Agitation SOP", "Side Mount Truck Sampler SOP", "Needle insertion SOP-English", "Needle insertion SOP-Spanish", and "TruDraw Single Sampler SOP".

# Significance of Aseptic Sampling

- To the industry:
  - ✓ Mitigating the risk of cross contamination from the environment to the product, or vice versa.
  - ✓ Sampling is the key to validating quality control activity for Producers and Processors.
  - ✓ It's also a key tool in Quality System Compliance and validating regulatory requirements from the beginning of the process.



# *"Bringing integrity to your samples and confidence to the process"*

- Controlling the variability of the sampling process is as easy as 1-2-3:
  - An access point (fitting) that can be installed anywhere throughout a milking system
  - A sterile septum that almost completely mitigates the risk of contamination
  - A sterile collection unit that will maintain the existing quality of the milk being sampled



# Future of Sampling



# Solutions to Our Challenges Exist

