

**Commonwealth of Virginia
Department of Agriculture and Consumer Services
Dairy Services
PO Box 1163, Richmond, VA 23218
804-786-1452**

**Study Guide to Weigh and Sample Milk from Farm
Bulk Milk Holding Tanks for Official Analysis
03-25-2020**

This publication has been prepared for the purpose of pointing out important information and procedures that a permitted milk hauler must follow in carrying out his/her duties.

A permit to *Weigh and Sample Milk In Farm Bulk Milk Holding Tanks* is issued after an applicant successfully passes a written examination and sampling evaluation based on the information in this publication.

Introduction

The bulk milk hauler/sampler (referred to from this point on as “hauler”) is responsible for the collection and transportation of official milk samples for regulatory purposes, which may include follow-up samples after somatic cell or bacteria count violations. This individual may transport raw milk from a dairy farm and/or raw milk products to or from a milk plant, receiving station, or transfer station. A hauler must be able to accurately measure and sample milk, as well as handle and store samples properly. He/she must have a permit from a Regulatory Agency (Virginia Department of Agriculture and Consumer Services, Dairy Services – VDACS) to sample raw milk and/or products. His/her operating habits directly affect the quality and safety of milk in the food supply. At any time, VDACS has the authority to check both the condition of the hauler’s equipment and the degree of conformance with required practices.

Items to be evaluated in determining compliance include:

I. Personal Appearance

A. Haulers

1. Shall practice good hygiene
2. Shall maintain a neat and clean appearance
3. Shall not use any tobacco products in the milkroom

II. Equipment Requirements

A. Each hauler shall have the following equipment and supplies, provided by the contract hauler:

1. Single-use sample containers, properly stored to prevent contamination
2. A cooler with ice and water to maintain sample temperature between 0°C and 4.5°C (32°F and 40°F), clean and in good repair
3. A sample rack or “floaters” to maintain the top of the samples above ice/water
4. A sample dipper or other aseptic sampling devices of sanitary design and material approved by VDACS; clean and in good repair
5. A sample dipper container; clean and in good repair
6. Sanitizer
 - a. An approved sanitizing agent of proper strength,
 - (a) 200 ppm chlorine solution
 - (b) Other suitable sanitizing solution
 - b. An applicable sanitizer test kit capable of testing the strength of the sanitizer used
7. A calibrated pocket probe type thermometer; certified for accuracy every six (6) months; accuracy $\pm 1^{\circ}\text{C}$ (2°F); intended to work in the temperature zone for refrigerated products
8. An accurate device for timing milk agitation
9. Single-service sanitary towels shall be provided by the producer for bulk tanks with a measuring rod

III. Tanker requirements

- A. Each tanker and related equipment (any hoses, pumps and fittings) shall comply with 3-A Sanitary Standards and be maintained clean and in good repair
- B. Each hauler shall
 - 1. Ensure each tanker and related equipment is properly cleaned and sanitized after unloading
 - 2. Ensure a cleaning and sanitizing tag is affixed to the outlet valve of the tanker after it is washed and sanitized
 - 3. Ensure a tanker is re-sanitized if 96 hours has elapsed since the last cleaning and sanitizing
 - 4. Ensure when the tanker is next washed, the previous cleaning and sanitizing tag is removed and stored at the location where the tanker was washed
 - 5. Ensure that all equipment for the milk transfer system is properly drained, easily disassembled and accessible for inspection
 - 6. Ensure that each opening into the tanker is properly sealed for security purposes once the tanker is loaded
 - 7. Ensure the following information is recorded on the wash/sanitize tag before it is attached to the outlet valve of the tanker
 - a. Tanker identification number
 - b. Date and time of day of cleaning/sanitizing
 - c. Location of cleaning/sanitizing
 - d. Signature of person who cleaned/sanitized tanker
- C. Tanker identification
 - 1. VDACS shall assign an identification number to each tanker
 - 2. The identification number shall be affixed to the left rear bulkhead of the tanker
 - 3. Contract haulers are responsible for ensuring the numbers are legible
- D. Tanker inspection
 - 1. Tankers shall be inspected annually by VDACS
 - 2. Current inspection sticker shall be affixed to the rear bulkhead of the tanker, and/or the current inspection sheet shall be stored in a suitable enclosure on the tanker

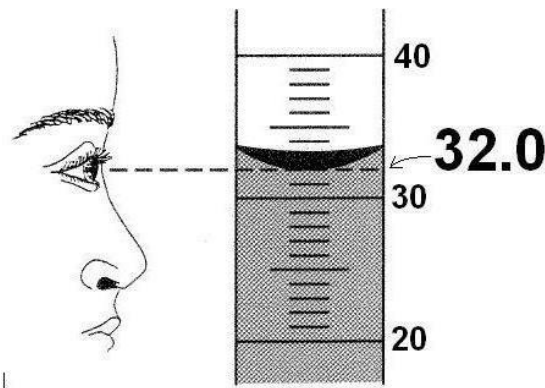
IV. Milk Quality Checks

- A. Observe the recording chart to ensure all recorded temperatures since the last pick up are within acceptable limits.
- B. Milk shall only be picked up if it is 45°F or colder, but not frozen
- C. Only milk stored in an approved, refrigerated bulk tank shall be picked up by the hauler
- D. Open the bulk tank lid and examine the milk by sight and smell for any off odor or other abnormalities that would classify the milk as not being acceptable. Reject if necessary; notify contract hauler representative, producer, cooperative field representative, and/or the dairy inspector.
- E. **WASH HANDS THOROUGHLY AND DRY WITH A CLEAN SINGLE-SERVICE SANITARY TOWEL, OR OTHER APPROVED HAND-DRYING DEVICE, IMMEDIATELY PRIOR TO MEASURING AND/OR SAMPLING THE MILK!**

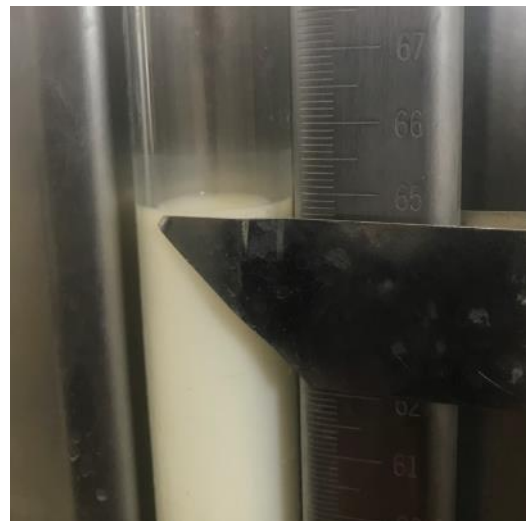
- F. The hauler shall take actual milk temperature with a calibrated probe type pocket thermometer (sanitized 1 minute prior to use) and record the temperature on the farm weight ticket and the sample container. – OR –
The hauler shall use a calibrated probe type pocket thermometer (sanitized 1 minute prior to use) to check the accuracy of the bulk tank thermometer once a month. The date of the accuracy check shall be recorded on the farm weight ticket.

V. Milk Measurement

- A. The measurement of the milk shall be taken before agitation.
- B. If the agitator is running upon arrival at the milk room, the measurement can be taken only after the surface of the milk is completely still.
- C. Types of measuring devices
1. Rod
 - a. Remove rod from tank
 - b. Wipe with a single use towel
 - c. Return rod to original position in tank
 - d. Remove rod and take reading after ensuring it's clean, dry, and free of fat
 - e. Repeat steps "a" through "d" until two (2) identical measurements are obtained
 - f. Record the measurement on farm weight ticket
 2. Sight tube
 - a. Attach adapter to tank outlet if necessary
 - b. Attach end of sight glass tube to adaptor on the outlet valve
 - c. Open tank valve to allow milk to flow into sight tube
 - d. Allow the milk to settle in the tube, with no bubbles visible
 - e. Read the gauge using the bottom of the meniscus (see example below)
 - f. Record the measurement on farm weight ticket



<https://calaski.files.wordpress.com/2015/09/meniscus.jpg>



- D. Record the following on the farm weight ticket after measurement:
1. Farm name, number and month/year
 2. Collection date
 3. Collection time
 4. Milk temperature
 5. Stick reading and corresponding weight from chart
 6. Hauler's full name – LEGIBLE – on initial pick-up for that month (on subsequent pick-ups, hauler may use initials)
 7. Hauler's permit number – LEGIBLE – on initial pick-up for that month (not required for subsequent pick-ups that month)
- E. Example of a properly completed farm weight ticket, including monthly temperature check

MEMBERS MILK SHIPMENT RECORD

MEMBER NAME: VT Dairy Complex						FARM NUMBER 51-0010 MONTH 12 20 19	
DATE	STICK READING	WEIGHT IN LBS.	TEMP.	TIME	# OF DAYS PROD	DRIVER SIGNATURE/LICENSE #/COMMENTS	
1							
2	56-30	35,693	37°F	6:00	2	John Jones	53-396093
3							
4	55-25	34,936	37°F	6:00	2	JJ	
5							
6	56-23	35,550	36°F	6:15	2	JJ	
7							
8	55-10	34,629	37°F	6:00	2	JJ	
9							
10	55-04	34,506	37°F	6:00	2	JJ	
11							
12	56-10	35,224	37°F	6:00	2	JJ	
13							
14	58-04	36,449	36°F	6:00	2	JJ	
15							
16	57-08	35,228	37°F	6:00	2	JJ	
17							
18	59-04	37,069	37°F	4:00	2	JJ	
19							
20	58-04	36,449	36°F	5:35	2	Vince Bell	53-396093
21							
22	58-12	36,606	36°F	4:30	2	VB	
23							
24	58-10	36,507	37°F	5:15	2	VB	
25							
26	58-14	36,695	37°F	5:30	2	VB	
27							
28	57-0	35,134	37°F	5:30	2	VB	
29							
30	55-20	34,233	37°F	6:00	2	JJ	
31							

MONTHLY THERMOMETER CHECK - TEMP: 37 DATE: 12-2-19 INITIALS: JJ

VI. Agitation of milk

- A. Importance - Butterfat (or cream) is the lightest component of normal raw milk. When agitation stops, it begins to rise to the top. A sample collected from an improperly agitated tank may result in an inaccurate (falsely elevated) somatic cell count and or butterfat for the producer. Therefore, it is extremely important that all bulk tanks be properly agitated.
- B. Procedure
1. Agitate the milk in each tank as per the tank manufacturer specifications; if that info is not available:
 - a. Agitate the milk in each tank holding one thousand (1,000) gallons or less of milk a minimum of five (5) minutes before collecting a sample
 - b. Agitate the milk in each tank holding more than one thousand (1,000) gallons of milk a minimum of ten (10) minutes before collecting a sample
 2. If the milk does not appear to be properly mixed (cream streaks still visible), continue to agitate the milk for as long as necessary.

VII. Milk sampling

- A. Bring the following into the milkroom
1. Sterile sample containers
 2. Dipper
 3. Dipper well containing sanitizer

B. Sample collection

1. Ensure milk is properly agitated
2. Using a properly sanitized thermometer, take the temperature of the milk
3. Ensure the sample dipper has been immersed in an approved sanitizing solution for a minimum of one (1) minute
4. Remove dipper from the dipper well and discard the sanitizing solution in the dipper
5. Climb the bulk tank ladder and open the lid, ensuring not to touch the dipper to any unsanitary surface (which would require re-sanitization)
6. Rinse the dipper in the milk a minimum of two (2) times
7. Collect a representative sample by submerging the dipper 6" – 8" below the surface of the milk
8. Transfer the milk from the sample dipper to the sterile sample container, away from the tank opening to avoid spilling any milk back into the tank
9. The sample container should be filled $\frac{3}{4}$ full (to the specified line), which will allow the correct amount of space for proper agitation by the laboratory personnel; **DO NOT OVERFILL**
10. Samples to collect:
 - a. Producer samples - Two representative samples shall be collected from **EACH** farm at **EACH** pick-up
 - (a) If a farm has two separate bulk tanks, each tank should be separately weighed, sampled, and recorded
 - b. Temperature samples – Two additional samples shall be collected at the first stop of each load
11. Close the cover on the sample container
12. Close the lid on the bulk tank
13. Rinse the sample dipper with water until it's free of milk, and return to its dipper well or carrying container

14. Labeling

- a. Producer samples
 - (a) Date
 - (b) Time
 - (c) Temperature
 - (d) Producer number
 - (e) Initials of hauler

Example →



- b. Temperature control samples
 - (a) "T" or "Temp" or "TC"
 - (b) Date
 - (c) Time
 - (d) Temperature of milk
 - (e) Initials of hauler

Example →



15. Place samples in an ice/water mixture in the cooler on the tanker to maintain sample temperature between 0°C and 4.5°C (32°F and 40°F)

VIII. Pump Out Procedures

- A. Do not begin pumping milk prior to sample collection
- B. Hose Attachment
 1. Pass the milk transfer hose through the hoseport into the milkroom
 2. Remove the cap from the bulk tank
 3. Examine outlet for milk deposits, foreign matter, or leaking
 4. Rinse with water and sanitize outlet if necessary with a sanitizing solution of proper strength
 5. Remove the end cap from the hose and store in a location to prevent contamination (not on the floor or steps of the bulk tank ladder)
 6. Connect the transfer milk hose to the bulk tank outlet valve
- C. Pumping
 1. With the agitator still running, open the outlet valve and start the pump
 2. Close the tank lid during the pumping process
 3. Completely empty the bulk tank each time that milk is picked up
 4. When the bulk tank is empty, DO NOT add any water to the tank while the milk transfer hose is connected
- D. Disconnection
 1. Disconnect the milk transfer hose from the outlet valve
 2. Cap the milk transfer hose
 3. Pass the milk transfer hose back out through the hoseport and store properly in the tanker
- E. Tank
 1. Observe the walls and bottom of the tank for foreign matter and record any objectionable observations of the barn weight ticket
 2. With the outlet valve open, thoroughly rinse the entire inside surface of the tank with water.

IX. Recording Chart

- A. Overlapping of the recording chart is prohibited.
- B. It is the hauler's responsibility to ensure that the recording chart is changed at each milk pick-up, or as needed when 7-day charts are used
- C. Record the following on each chart
 1. Date
 2. Patron/permit/BTU number
 3. Hauler initials or signature

Example of properly completed recording chart →



- D. The producer shall supply charts for the recording thermometer (if no new charts are available, please notify the producer)
- E. If there are multiple pickups on one chart (example – daily pickup on a 2-day chart), each pick-up shall be documented on the chart

X. Pick-up and delivery

A. Partial pick-ups

1. Allowed only if the tank is equipped with a seven (7) day recording chart
2. The tank **MUST** be emptied, cleaned, and sanitized at a minimum of every 72 hours, or whenever the tank is emptied

B. All producer samples must remain with the tanker until

1. the load of milk has been received at a plant, receiving station, or transfer station,
2. samples are picked up or received by VDACS personnel, or
3. samples are picked up or received by the cooperative field representative

XI. VDACS sampling permit

A. To obtain a valid hauler/sampler permit through VDACS, the individual must

1. Complete and pass a written test
2. Complete an on-site evaluation of sampling procedures
3. Complete and sign an application

B. The hauler must hold and have in their possession a valid permit in order to collect official milk samples

C. The permit must be renewed annually; the VDACS Richmond office will mail each hauler a renewal form in the fall which must be signed and returned to that office by December 31 each year

D. Sample evaluations must be conducted within 18 months of the previous evaluation

E. VDACS has the authority to suspend or revoke a hauler's permit for the following reasons:

1. Manipulating measurements/weights
2. Improper sampling procedure
3. Falsifying samples
4. Failure to submit signed annual renewal form
5. Failure to make themselves available for evaluation every 18 months

F. **IT IS THE HAULER'S RESPONSIBILITY:**

1. **TO MAKE THEMSELVES AVAILABLE FOR EVALUATIONS**
2. **TO SEND IN THEIR PERMIT RENEWAL EACH YEAR**
3. **TO NOTIFY VDACS OF ADDRESS AND PHONE NUMBER CHANGES**

XII. Protection of milk and sample chain of custody

A. Each hauler shall ensure the proper protection of all milk and milk samples in their custody

B. Each hauler shall seal or lock each opening into the tanker prior to leaving the tanker unattended

C. Each hauler shall inspect the condition of the seals and locks placed on each opening into the tanker upon his/her return after an absence to determine if the seals or locks have been tampered with

D. Each hauler shall report immediately to VDACS instances of tampering with the seals or locks