## COLORADO MILK HAULERS MANUAL



## COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

CONSUMER PROTECTION DIVISION

DENVER, COLORADO

#### INTRODUCTION

Milk haulers, hereafter referred to as hauler(s), are a vital link in the dairy industry. In performing their duties, the haulers represent the producers, processors, and the regulatory agencies. The hauler grades milk by using the senses of sight and smell to determine the acceptability of the milk in each bulk milk tank. The hauler measures the amount of milk in each bulk tank and samples the milk. These results are used for payment and quality control.

The hauler's sample collection is a fundamental step in the process of evaluating the producer's milk to determine its compliance with legal bacteriological and chemical standards and for milk fat content (as a basis of payment). The importance of proper procedures used in collecting, handling, and transporting samples from dairy farm to laboratory cannot be over emphasized. It is imperative that each sample be representative of the volume from which it is collected and that it arrives at the laboratory with no change in its bacteriological, chemical, or physical condition. It is mandatory that a strict routine be established and adhered to at every pick up, since the necessary tests may be spread out over a period of time.

Any hauler who tests, measures, or samples milk or cream is required by law to apply with the Colorado Department of Public Health and Environment for a license. A license fee of three dollars (\$3.00) for a year or any part of a year, based on this State's fiscal year (July 1 through June 30 of the following year), is required to accompany the application. To obtain a license, the hauler is required to pass a written examination, which is based on the material contained in this manual. A sampling evaluation is required to be performed on each licensed hauler at least once every two years at a dairy farm to determine if the equipment and procedures used by the hauler to obtain and transport samples are in substantial compliance with the requirements in this manual and the Colorado Grade A Pasteurized Fluid Milk and Milk Products Regulations, Appendix B. This evaluation is conducted by a FDA approved State Sample Surveillance Officer or by other certified state and industry evaluators. The certification of a hauler is subject to review and/or cancellation by the State Sample Surveillance Officer. A license is subject to cancellation at any time the person holding the license is determined to be incompetent or guilty of violating any of this State's laws or regulations. The Colorado Department of Public Health and Environment, licensed haulers, or milk companies will provide training sessions and materials to new haulers and, when necessary, provide updates on proper sampling techniques.

This manual is based on the requirements for hauler sampling contained in the <u>Colorado</u> <u>Grade A Pasteurized Fluid Milk and Milk Products Regulations, Appendix B</u> and the <u>Colorado Revised Statues, 25-1.5-104(1)(b)(I) and 25-5.5-107 (2).</u> For your reference, the <u>Bulk Milk Pickup Tanker, Hauler Report and Sampler Evaluation</u> Form <u>MD203</u> is part of this manual.

### MILK HAULER EQUIPMENT AND APPEARANCE

The hauler is a human food handler and is expected to practice good hygiene; shall maintain a neat and clean appearance; and not use tobacco in the milkhouse. Smoking is considered an impairment to checking the milk supply for off odors and flavors.

The necessary sampling equipment is sterile single service sampling bags/vials, marking pen, pocket thermometer, ample supply of ice or other cooling medium, watch, and a properly constructed, designed, and insulated sample box. The sample box is required to have racks when they are needed.

Many times the hauler carries a spray bottle of sanitizer or is required to make up a sanitizing solution at the dairy farm to sanitize necessary equipment. In this situation, the hauler is required to have available an applicable test kit (such as test papers) for checking the strength of the sanitizer being used. Also, when the milk producer's dipper is stored in a sanitizing solution, the hauler is required to check the strength of the sanitizing solution. To mix a proper sanitizing chlorine solution of 200 ppm, the hauler should mix approximately 40-50 drops (1 teaspoon) of household bleach (contains 5.25% sodium hypochlorite) per quart (32 ounces) of water. The solution should be made up each day. The hauler is responsible for knowing the strength of their sanitizer at all times.

# ARRIVAL AT THE DAIRY FARM AND CONNECTING THE MILK HOSE

Upon arrival at the dairy farm, care should be taken to make certain that there are no children or obstacles in the path of the truck. After spotting the truck, place the milk transfer hose and electrical cord, if the plug is inside the milk room, through the hose port. The milk transfer hose is required to be properly capped between stops on the route and the milk transfer hose cap must be protected from contamination during pickup. If the bulk tank outlet is uncapped or there is milk residue between the cap and the outlet valve, the valve body is required to be washed and sanitized before connecting the milk hose. The sequence used for this manual will follow Method A (see attachment) where the agitator is not running and turned to the off position when the hauler arrives. If the agitator is running when the hauler arrives, turn the agitator switch to the on position, note the time, and follow Method B, which is also attached to this manual. Although the sequence of Method A is different than that of Method B, all the steps are the same and need to be performed.

#### HAND WASHING

The hauler's hands must be washed after connecting the milk transfer hose and the electrical cord. The hauler is required to use the hand wash facilities, including soap and single service clean towels. The equipment wash vats are not to be used for hand washing. The hands shall be washed at each stop and at any time during the pick up and sampling procedure that hands become contaminated. The hands shall be washed and dried prior to grading, measuring, and sampling the milk or handling any other milk contact surfaces.

#### **GRADING THE MILK**

The hauler is required to grade the milk by smelling for off odors and observing for abnormalities. The hauler shall smell the milk through a sample port or when the manhole is first opened to detect odors. This is when odors such as sour, rancid, feedy, barny, musty, and weedy are the strongest. The milk may be checked for odors with or without the agitator running, but this step is to be performed before observing, measuring, or sampling the milk.

The milk is required to be observed in a quiescent (motionless) state with the lid wide open and lights on when necessary. Any milk that is frozen, partially frozen, lumpy, curdled, or churned shall not be sampled for regulatory purposes other than for antibiotics. The producer/responsible industry person should be notified and a determination shall be made as to the acceptability of the milk.

In some cases, the milk may be taste tested by swirling the milk in the mouth and spitting out the tested sample. The hauler should rinse his/her mouth after this step. Also, this step should be performed only after the milk has been sampled and prior to pumping.

Any milk that is deemed to be unacceptable from observation, odor, or taste shall be rejected.

#### MEASUREMENT OF THE MILK

The milk must be measured only when quiescent. With a clean, absorbent single-service towel, dry the stick in the milk area without removing the stick from the tank. Rub the measuring stick with the towel until you have a warm surface in the milk zone level of the measuring stick, which is 4-5 inches above and below the milk level on the stick. The stick should be inserted slowly and straight down into the bulk tank so that the milk surface will not be disturbed. The measuring stick shall be immediately withdrawn and read. The milk shall be read twice to make certain that the reading is correct. Measuring sticks that are stored outside the bulk tank are required to be first washed and sanitized, then wiped dry with a single service paper towel.

Larger bulk tanks may be equipped with an external measuring gauge to measure the milk. The milk must be in a quiescent state when the inlet valve of the external measuring gauge is slowly opened. The inlet valve must remain in the open position during milk measurement. After measuring the milk, close the outlet valve and void the milk in the external gauge to the floor.

#### AGITATION OF THE MILK

The bulk tanks must provide agitation of a sufficient degree to assure that the milk fat content throughout the capacity volume will not vary more than plus or minus 0.1 percent. Complete homogeneity is essential for accurate milk fat, bacteriological, and antibiotic testing since fat globules, bacteria, and many antibiotics are concentrated in the cream layer. This means the milk must be properly agitated before a sample is taken. If the

agitator is not working, record that information on the shipper's ticket and contact the responsible industry official to determine if the milk is to be picked up. If the milk is to be pumped into the milk tanker, take a sample and mark the sample "For antibiotic (or AB) purposes only."

After the agitator is turned on, the time is noted. Bulk tanks with a capacity of up to 1,500 gallons must be agitated for a minimum of 5 minutes or longer if required by tank specifications. Bulk tanks with a capacity of 1,500 gallons or greater must be agitated for 10 minutes or longer or as may be required by tank specifications or by milk industry officials. If the agitator is running when the hauler arrives (Method B), the agitator is required to run the minimum amount of time. Also, if the producer is milking when the hauler arrives, the milk is required to agitate the minimum amount of time starting at the time the milk pipeline or gravity strainer is removed from the tank.

#### CHECKING THE MILK TEMPERATURE

The hauler is required to have an accurate thermometer within 1°F that has been checked against a standard thermometer at least once every 6 months. The results of this test are to be recorded in a ledger at the location where the checks are conducted or the date checked. The bulk tank thermometer may be used to determine the milk temperature providing the thermometer is accurate and checked monthly as required against the haulers thermometer. If the tank thermometer is used as a test thermometer, the results of this test are to be recorded on the farm weight ticket during the first pickup of the month. If the tank thermometer is not accurate, the owner, if available, and the responsible industry official should be notified and the results recorded on the farm weight ticket.

The milk temperature shall be checked while the milk is being agitated and in motion. The hauler's thermometer is required to be sanitized with an approved sanitizing solution (200 ppm chlorine, 25 ppm iodine, etc.) with a one-minute contact time prior to insertion into the milk. When the milk in the bulk tank is above the maximum allowable temperature, the hauler shall be governed by instructions from the responsible person receiving the milk and the regulatory agency. The **Colorado Grade A Pasteurized Fluid Milk and Milk Products Regulations** requires raw milk to be cooled to and held between 0°C (32°F) and 4.4°C (40°F) during transit to the laboratory. Most milk transportation companies, receiving stations, and milk plants require the raw milk to be 40°F or less to be accepted.

#### PREPARING TO TAKE THE MILK SAMPLE

After the temperature of the milk has been taken and during the agitation time but prior to extracting the sample, other necessary preliminary chores should be completed. The farm weight ticket shall be completed with the milk temperature, time, date of pickup, hauler identification, and any grading or measuring problems that were noted. The milk sample container shall be completed with the milk temperature, date of pickup, producer number, and route or hauler identification. Additionally, at the first sampling location for each rack of samples, a temperature control sample container shall be completed with date, time, temperature, producer number at which the sample was taken, the hauler or route identification, and the letters "T.C." or the words "Temperature Control." This sample is

used to check the temperature of the samples at the terminal, and for use by the regulatory agency or field person who may be checking on the hauler's sampling procedures. No other samples may be used as a temperature control. Samples that are not held at proper temperatures cannot be used for bacteriological tests. Sample containers are required to be legibly identified and completed at the dairy farm where the sample is to be collected and not in advance.

#### SAMPLING THE MILK

The milk sampling instrument used most often is the two ounce stainless steel dipper. This sample transfer instrument is required to be clean, properly sanitized, of proper construction and design, and in good repair. When the sampling dipper is stored inside the bulk tank and is not in contact with the milk, sanitizing the dipper is not required. If the dipper is stored in a sanitizing solution, the hauler is required to check the strength of the sanitizing solution to ensure that it is of proper strength (200 ppm chlorine, 25 ppm iodine, etc.). If the dipper is not stored in one of these manners, the hauler has the responsibility of properly sanitizing the dipper. The dipper is required to be sanitized from the bottom of the dipper to a point 6-8 inches up the dipper handle with a minimum of one-minute contact time. The sampling instrument shall be aseptically handled throughout the sampling process.

The sampling containers used most often are single service sterilized polyethylene bags or plastic vials. These containers shall be from an approved source, properly handled and stored to maintain their sterilized condition. The sample container shall be handled during sampling in a manner that prevents contamination of the inside surfaces by touch or from surrounding sources of contamination.

After the milk has agitated the correct amount of time, obtain the required samples with the agitator on using the sanitized dipper. When using the dipper, hold it at the tip of the handle to prevent contaminating the milk contact surface. Draw the dipper through the milk and empty it at least two times to remove any sanitizing solution left on or in the dipper. Insert the dipper into the milk at least six to eight inches for the sample. Do not hold the sample container over the milk when transferring the milk into the sample container. The milk sample container shall not be filled more than three-fourths full or above the maximum fill line used on some containers. Samples shall always be taken from the manhole/port lid and never from the outlet valve or external gauge. If the milk in the tank cannot be reached from the manhole/port lid, contact a responsible industry official for instructions. Samples that have not been properly taken can be used for antibiotic and flavor-odor purposes only. Samples must be taken at every pickup and from each bulk tank. To prevent the contamination of the milk, the lids on the bulk tank shall be open only for the grading, measuring and sampling of the milk. Care should be taken during these procedures so as not to handle any milk contact surfaces and to avoid dropping any material into the milk. The lids shall be closed at all other times. Do not open the bulk tank outlet valve until all grading, measuring, and sampling has been completed. Prior to pumping the milk, make sure that the bulk tank is adequately vented.

#### SAMPLE STORAGE

After the sample has been collected, rinse the dipper and place the milk sample immediately in a refrigerated sample box. The sample shall be in contact with the ice water up to approximately the milk level in the sample container. Do not allow the tops of the samples to be buried below the surface of the cooling medium. The samples shall be stored to maintain the temperature of the samples between 32° and 40° F. If the sample is allowed to freeze, the milk sample's character could be changed creating inaccurate test results. If the sample is allowed to warm, the sample could have rapid bacterial growth and other biological changes.

The sample box is to be of rigid metal or plastic construction, completely insulated with a tight cover, and supplied with ample refrigerant to maintain samples in the required temperature range. The sample case shall be provided with racks, compartments or baffles to hold the sample containers vertically, to keep the top of the sample containers above the surface of the cooling medium at all times, and to maintain the cooling medium no higher than the level of liquid in the sample containers.

#### OBSERVATION OF BOTTOM OF TANK AND DEPARTURE

When all the milk is drained from the bulk tank and prior to rinsing, the bottom of the bulk tank shall be observed for sediment and other abnormalities. If there are any abnormalities observed, the hauler should note this on the milk receipt form that is left at the dairy and the responsible industry official should be notified.

After the bulk tank is observed for sediment or other abnormalities, the milk hose is disconnected and the tank is rinsed. The tank must not be rinsed until the milk transfer hose is disconnected. The milk transfer hose is then capped and placed in its compartment on the tanker. The floors around the bulk tank should be rinsed, the bulk tank switches checked, lights turned off, and the hose port and doors should be closed tightly.

#### SAMPLING FROM A SAMPLING-COCK

Some bulk tanks require the milk sample to be taken from a sampling-cock. For this type of sample, the sanitation procedures would be the same as with any other bulk tank, including the prevention of contamination of milk contact surfaces and the washing of hands prior to sampling. Also, the requirements for thermometers, sample containers, and sample storage cases are the same.

To properly sample from this type of tank, the sampling-cock is required to first be sanitized. The milk sampler shall prepare the proper strength sanitizer and place it in a plastic container such as an 18-ounce whirl-pak bag. Then place the sanitizer container over the entire exterior of the sampling-cock making sure that the opening to release the product is covered. Hold the bag tightly around the sampling-cock beyond the opening and gently massage the sanitizer container for two minutes forcing the sanitizer up into the sampling-cock opening.

The next step is to collect at least two liters (approximately ½ gallon) of milk into a container to purge the sampling-cock of sanitizer. These two liters can be used to take the temperature of the milk in the tank and/or for filling a temperature control container if this is the first pick-up of the route or rack. The remainder of the two liters of milk should be discarded. When obtaining the sample, care must be taken to avoid contamination from over-head condensation or from the hands pushing against the tension of the sampling-cock springs. The flow of the product shall be started before the sample container is placed under the sampling-cock and continue until the container is removed.

In many instances, this type of tank cannot be easily observed or checked for odor prior to sampling due to inaccessibility to the manhole or other openings while milk is in the tank. In these situations, a sample of milk should be taken after purging the sampling-cock and after the official sample. This sample is then examined for any off odors or other abnormalities. After the milk has been pumped onto the tanker, the manhole can be opened and the inside of the storage tank checked for any odors and other abnormalities. If there is a problem with the milk, the proper industry official should be notified prior to unloading the milk.

The overall cleanliness and cleaning of the sampling-cock is the responsibility of the owner of the dairy farm. The hauler is responsible for properly sanitizing the sampling-cock and correctly obtaining the milk sample.

#### TANKER WASHING RESPONSIBILITIES

When the milk hauler delivers the tanker of milk to a milk plant, the hauler and milk plant have a shared responsibility that the tanker and all appurtenances are cleaned and sanitized properly. Generally, the milk hauler is responsible for cleaning and sanitizing the sample storage compartment, the milk hose/milk pump compartment, the milk pump, outlet valve, milk tank transfer hose, connecting jumper hoses, caps, plugs and any other fittings in the compartment. Many of these parts will need to be broken down to clean and sanitize adequately. The cleaning of the filter in the dome is the hauler's responsibility. Due to liability, some milk plants clean this lid assembly. It is important that the milk hauler and the milk plant receiver determine whose responsibility it is to clean these parts. Generally, the milk plant has the responsibility to clean the dust cover, dome lid, manhole gasket, and the inside of the milk tanker.

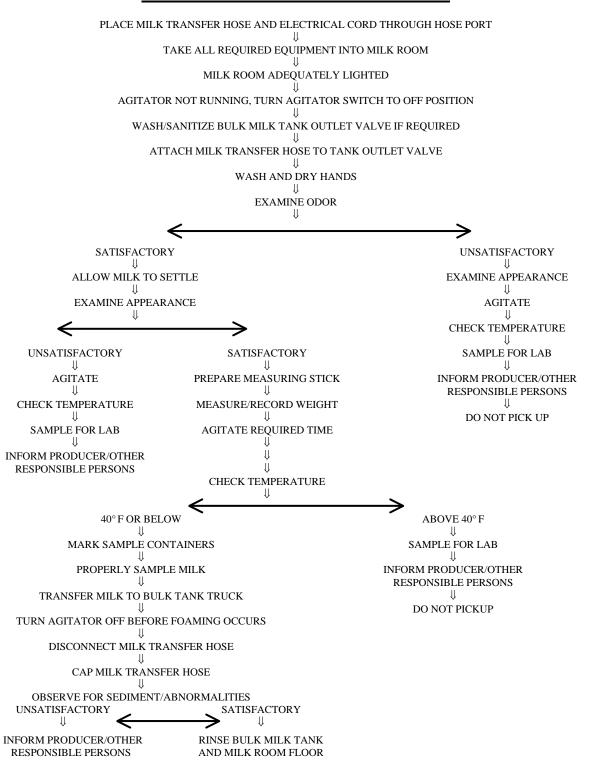
There are some exceptions to the above responsibilities. It is allowable to pickup multiple loads continuously within a twenty-four (24) hour period, provided the milk tank truck is washed after each day's use. The other exception is if the tanker of milk is dropped off at the milk plant and a cleaned tanker is picked up by the milk hauler. In this case, it is the milk hauler's responsibility to assure that the milk tank truck and parts such as the pumps, hoses, caps, and other accessories are cleaned and protected.

In summary, it is important that each time the milk tanker is washed, all milk contact surfaces and compartments are cleaned and sanitized before reuse.

#### **CONCLUSION**

The hauler/sample collector is completely responsible for the collected sample(s) from the moment the milk sample is taken until it is in the possession of the analyst at the laboratory. The sampler must handle the sample so as to maintain the sample's integrity and to ensure that the sample is stored at the correct temperature. The test of any milk sample is only as accurate as the sample delivered to the laboratory. This fact makes the collection, handling, and transportation of samples the most important step in the milk sanitation program and the laboratory control program. Following standard sampling procedures can eliminate contaminated samples and can provide the milk producer, processor, and regulatory agencies with valid laboratory results.

#### **METHOD A - AGITATOR NOT RUNNING**



#### **METHOD B - AGITATOR RUNNING**

