

Tank Milk Receiver Manual

for British Columbia

Revised 2000



**Ministry of Agriculture, Food
and Fisheries**

IMPORTANT

How To Use This Manual

This manual is intended for commercial Tank Milk Receivers in BC and is based on the most recent recommendations and regulations at the time of writing. Each Tank Milk Receiver and their hauling firm or dairy processor should be aware of changes to the Code and/or policies and be in contact with the BC Ministry of Agriculture, Food and Fisheries to receive any updates in this material.

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BCMAFF: Dr. Merv Wetzstein, Roger Pannett, John Murray, Annette Moore

AAFRD: Ray Grapentine

SAF: Deb Haupstein

MA: On Chan

Dairyworld Foods Inc: Gerry Adams (retired), Kevin Price

Vedder Transport Inc: James Janssen

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Preface

The purpose of this manual is to acquaint the Tank Milk Receiver (TMR), supervisor and/or plant manager of all the policies and procedures concerning the collection of quality raw milk from a licensed dairy farm. Depending upon the breadth of the TMR's role he or she may not need to assimilate the entire book for day to day activities. However, as pick-up procedures can impact the quality and safety of the end product and ultimately effect the producer, processor and consumer, the reader is advised to be familiar with all aspects of this book for the fulfillment of the BC Ministry of Agriculture, Food and Fisheries (BCMAFF) TMR license requirements.

Introduction

Milk, nature's most perfect food, competes against numerous fluid products on the market today in order to attract the attention of the consumer. Competition is fierce and as a result milk must be of the highest quality possible. As a TMR, you are the first person outside of the dairy producer to see the milk. It is your job to ensure the system starts with fresh, clean, high quality milk. The dairy farmer and the milk processor depend on you to do a good job of milk collection. Your judgment, actions and decisions in regard to the sampling and quality of the milk received has a direct impact on milk payment, raw product analysis, producer penalties and ultimately the quality of the finished product. In order to make a great product we must start with a great product—no end of processing or pasteurization will “fix” any problems on the farm.

It is very important that the milk is measured accurately, and that the samples obtained for butterfat, bacteria, and other tests accurately represent the contents of the bulk tank. The quality of milk that is delivered to the plant (and that ultimately reaches the consumer) depends upon how well the milk is identified and all unsatisfactory milk is eliminated at the time of collection. The TMR must be alert and must not pick up any milk which is too warm, has an off odour, or shows any other significant defect. Your actions must not contribute to the deterioration of milk quality in any way. Although you may not think of yourself as a food handler and a representative of the dairy industry, you are both. By your appearance, your actions and your words, you represent the industry.

To be successful a TMR must possess many varied attributes and skills in addition to being able to operate a truck. As a food handler your appearance and personal habits must reflect this role. Clean, neat appearance and good personal hygiene portray an image. A keen sense of smell and ability to identify milk odours is also an essential part of the job. An ability to communicate tactfully and clearly is an asset. As the link between the buyer and the seller your complete understanding of all aspects of farm milk collection, handling, and raw milk analysis will contribute to the team approach between the producer, dairy plant and quality assurance staff.

Legislation

License Requirements

All TMR's of farm bulk milk must hold a valid license issued by the Ministry of Agriculture, Food and Fisheries, Health Management and Regulation, located at the Abbotsford Agriculture Centre. This includes, all drivers transporting milk. The license is renewed annually on January 1st, and is subject to:

- receipt of payment,
- successful fulfillment of the duties and,
- the person is an active TMR.

In order to become a licensed TMR the applicant must complete the following:

- fifty hours of training accompanied by a licensed TMR,
- successful completion (minimum 75%) of a written exam,
- successful completion of a field exam, soon after completion of the written exam. (Eight demerit points on the field exam will result in failure of that exam), and,
- successful completion (minimum 75%) of the milk grading exam within the first and every third year.

If either of the written or field exams receive a failing grade, another exam is permitted following another 50 hours of training. Inspections can occur at anytime throughout the year. An inspection, involves the following:

- demonstration of proper sampling, handling and storing procedures of the sample taken,
- accurate reading and measuring of the rod and direct reading gauge,
- correct conversion to litres of milk from the calibration chart and recording of those readings,
- adherence to proper procedures for the picking-up of quality milk,
- personal cleanliness, and,
- cleanliness of the bulk milk truck and equipment.

During inspection, demerit points will be given for unsatisfactory items. At 10–14 demerit points a peer review will be held. At 15 demerit points or greater, a peer review will determine whether to suspend or cancel the license; and under what circumstances the license may be reinstated. Peers may include: representatives from the hauling firm, processor, BCMAFF staff, and any other related or affected parties.

Licenses can be revoked if the TMR does not follow the recommended procedures. In the event of a license cancellation, a peer review will be done and/or rewriting of the exam and field exams may be required.

The applicant must complete an application for license prior to completion of the exams and make payment of the license fee in the form of a cheque or money order made payable to the **Minister of Finance**.

Recommended Pick-up Procedures

Quality Milk Starts With Clean Equipment and Good Hygiene

1. BULK MILK TRUCK

a) Who Is Responsible?

A bright, clean tank truck, both inside and out, is essential for the sanitary handling of milk. It also sends a clear message to the public about the industry's commitment to quality.

The processor that receives the milk is responsible to provide facilities, equipment and supplies necessary to clean and sanitize the tanker, but the final responsibility lies with the TMR. The sanitary condition of the bulk milk truck, milk contact equipment and other facilities and tools used by milk haulers are subject to inspection. The processor or receiver may on occasion provide plant workers to do the washing. Always check to be sure the tank is clean, both inside and out. Unsatisfactory conditions can jeopardize a TMR's license, and more importantly, the quality and safety of the milk.

b) Washing the Bulk Milk Truck Tank

The following is the recommended procedure to ensure a complete and successful wash cycle.

- Immediately after unloading, clean the tank thoroughly, including all milk contact surfaces such as the pump, hose and fittings.
- Rinse (35°– 43°C) until the water runs clear.
- Wash with a good alkaline cleaner suitable for the water supply. Use the right amount of detergent and follow the recommendations on the label for time and temperature. If no recommendations are present, the general rule of thumb is 10 to 15 minutes at a start temperature of 74°C.
- Rinse with an acid rinse following manufacturer's recommendations. (Usually a pH of 3 and a temperature of 35° – 43°C.) see "Appendix B" on page 25 for complete cleaning and trouble shooting guide.
- Automatic circulation cleaning systems are handy but never fool proof. Always check them periodically to ensure they are cleaning properly.

Make sure the:

 - ports are open on the spray head.
 - spray floods all surfaces.
 - system cycles correctly every time.
- Recommended amounts of water, detergent, wash and rinse times and temperatures are followed. If none are given, run the wash cycle for 10 minutes at 74°C and 5 minutes for the rinse cycle at 43°C.
- Tank must be adequately vented to prevent collapse (in the event of a sudden temperature change). To avoid a collapsed tank, the manhole must be open when pumping off and whenever washing the tank. In addition, never spray cold water into a tank immediately after the wash cycle. If either event occurs, the tank will collapse due to the creation of a vacuum.
- Parts requiring hand wash are in fact washed.
- Exception to Washing: If additional loads are to be collected immediately after the first load is emptied, and is within an 8 hour period, washing up can wait until the final load has been emptied. However, the tank truck must be cleaned and sanitized at least every 24 hours. Pumps and hoses must be rinsed after every delivery.

c) Sanitizing the Bulk Milk Tank

It is required that the bulk milk tank be sanitized before use.

- All milk contact surfaces must be exposed to the sanitizing solution. The easiest way to sanitize is by using a circulation cleaning system which sanitizes as the final treatment.
- Sanitizing immediately prior to departure to minimize corrosion and maximize effectiveness.
- Chlorine (sodium hypochlorite) is an example of a commonly used sanitizing agent. Chlorine concentration should be at 200 ppm. Follow label directions concerning concentration, but if in doubt, consult the dairy plant supervisor. Fogging the tank with a sanitizer is satisfactory if the pump and hose are sanitized also. To sanitize the pump and hose after fogging, add a few gallons of sanitizer solution through the manhole, pump it out of the tank, and drain the pump and hose. A simpler method is to spray an excess of sanitizer into the tank and drain through the pump and hose.

2. EQUIPMENT ON THE TANK TRUCK

a) Sample Box

The sample box is used to carry the milk samples from the farm to the processor or lab. The sample box may be a sealed compartment built right into the truck pump compartment or frame or it may be an ice cooler carried in the cab of the truck. The sample box must:

- be kept clean and in good repair to prevent any damage to the samples during transport.
- be insulated and remain cool (1° – 4°C).
- always have adequate ice in summer and winter. "Adequate ice" may include crushed ice, ice chips or small ice cubes. Do NOT use snow, ice chunks and block ice. Jagged pieces of ice may puncture bags and block ice has insufficient surface area to maintain required temperatures.
- have a certain amount of water in the box to keep the sample container in good contact with the ice and water. The tops of the sample container however, must never go under the water otherwise contamination will result.

b) "Tools of the Trade"

To carry out the task, the following tools must be taken with you into the milk house:

- milk receipt pad and pen.
- thermometer in Celsius. (**Do not** use glass mercury thermometers).
- watch
- sample bags or vials.
- water proof marking pen.
- paper towels.

All utensils and equipment used in the production, cooling, handling, storing or conveying of milk must be of a type and material equivalent to 3A Standards. In BC, they must also conform to the British Columbia Standards for the Design, Fabrication and Installation of Milk Handling Equipment. Copies of both can be obtained through the BCMAFF, Health Management and Regulation office (see Appendix A).

Other tools that should be kept on hand in the truck:

- container with fresh sterilizing solution (eg. 200 ppm chlorine).
- sample dipper.
- insulated sample container with lid, rack and crushed ice.
- electrical cord or remote control for P.T.O.
- milk hose long enough to meet all milk house conditions.
- hose inlet adapter to meet larger farm tank outlet sizes.
- tools and wrenches.

A tank truck permit must be kept either in the truck or at the trucking company office. Your TMR license must be kept with you at all times.

Satisfactory Appearance and Cleanliness

1. APPEARANCE

As a TMR, you are working for the food industry and handling a food product. You should drive a clean truck and wear clean clothes! You set a good example when you look clean and neat. More importantly, your cleanliness will reduce the risk of contamination. This helps to create a good image for the industry and establishes confidence in you as the type of person who is qualified to sample and collect perishable food products.

2. WASH HANDS WHENEVER NECESSARY

As a handler of food, your cleanliness is essential to avoid contamination of the milk and/or milk sample. Remember, pasteurization is not 100% and all precautions to ensure a clean product is critical. To reduce the risk of contamination:

- wash your hands prior to grading, measuring and sampling milk and after you have handled the milk hose.
- if the hand grips on the ladder, tank lid or any area you have to touch is dirty, your hands will be contaminated no matter how often you wash. Notify the producer and/or supervisor about this condition.
- every milk house must be equipped with hot and cold running water. Use it whenever necessary to maintain cleanliness.

Farm Holding Tanks

Immediately after unloading, always rinse the tank thoroughly – including all parts with milk contact surfaces such as the pump, hose and fittings. Rinsing the tank will make it easier to clean, especially if the dairy producer is delayed as he/she may well be on busy summer days.

Use the following procedure to rinse farm holding tanks.

- Use lukewarm water (43° – 45°C) for the most effective rinsing. This temperature melts the milk fat and will make it easier to rinse away.
- Avoid rinsing with very hot water as it can actually bake on milk components.

- When finished rinsing be sure to close the water faucets at the hose mixing valve. Do not shut the water off at the hose nozzle. If the mixing valve faucets are left open, hot water can move through into cold water lines thus wasting quantities of heated water and may result in improper cleaning of the milking equipment.
- If lukewarm water is not available use cold water, but notify the producer and/or supervisor.
- The dairy producer is entirely responsible for washing the farm holding tank. If he/she asks you to turn on an automatic washer, it is suggested that you cooperate with them. However, it is strongly recommended that you do not fill jars with cleaners or acids as mistakes can happen. Such mistakes can seriously impact food safety and equipment. If an automatic washer is turned on immediately, rinsing the tank may not be necessary, unless requested to do so by the dairy producer.
- If a hose and nozzle are absent and/or water pressure is inadequate notify the producer and/or supervisor.

Proper Procedures = Success

1. CHANGES IN SCHEDULE OR SPECIAL SAMPLING INSTRUCTIONS

Be alert. Although routines are common in this role, the following changes are examples of some things that may require the TMR to change schedule or routine:

- Instructions from the office related to staff or route changes.
- Potential producer suspensions or cancellations.

Always check:

- with your supervisor for those on your route in this situation,
- valid Certificate of Approval permit,
- valid Farm Holding Tank permit.

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- Milk not within the 1°to 4°C range. Due to a crisis on the farm or route changes the milk in the tank may not have had enough time to cool to the required temperature. Never pick up milk during milking or if it is not cooled within this range. Picking up milk during milking will prevent the equipment from getting washed. Picking up warm milk can impair the quality of all the milk on the truck (see “Appendix C” on page 28).

- Changes in sampling instructions. The laboratory may need some extra samples or may alter the time when they need them.

- Drastic changes in volumes (on farm). As it is prohibited for a producer to move or alter milk always check whenever drastic changes in volume occur. Notify the producer and your supervisor.

2. APPROPRIATE BEHAVIOUR ON THE FARM

Behaviour is a reflection of how well the job is done. Good behaviour on the job gives everyone confidence!

- Smoking or chewing gum is prohibited. Never smoke in the milk house. Milk is one food that readily absorbs odors, easily impairing its flavour. Leave your cigarette, cigar or pipe in the truck cab. Even better, don't smoke or chew gum, as it will impair your ability to grade the milk accurately.

- Do not gossip. It is bad practice to discuss other producers' personal or business problems with anyone. High bacteria counts, low butterfat tests, and the like should be kept confidential. Gossip can do a lot of damage.

- Damage. If you break a piece of equipment or property belonging to a producer, report the incident to your supervisor. Notify the producer immediately, particularly in the case of any damage to dairy equipment. It may play an important function in the operation of the dairy and could delay milking.

3. WHERE ARE THE PERMITS?

In BC, milk must not be removed from an unlicensed farm holding tank or dairy farm. Before any milk is picked up:

- ensure the following permits are posted:
 - Certificate of Approval and,
 - Farm Holding Tank permit.
- all permits must be posted in the milk house.
- check with your supervisor if permits are absent or you doubt their validity.

4. LOAD AND SAMPLE SECURITY

Your TMR's license makes you responsible for the proper collection and care of all milk samples as well as the security of the load. Always be alert as to the security of your truck whenever you leave it.

Milk samples are the basis of producer payment and penalties. It is very important that the samples be taken properly, cared for correctly, and never altered. It is unlikely that anyone would tamper with a sample but it has happened.

Keep your eye on the samples and keep them locked up when they are not under your observation. When a tanker of milk has to be left unattended for any period of time, the contents, including samples must be protected against vandalism and pranksters. This means that the hatches, doors and outlets must be locked, have security tags or the tanker be parked inside a locked building.

5. MILK PICK-UP PROCEDURE

a) Milk Odour and Appearance (Milk Grading)

The ability to detect off-flavours and describe them will ensure that only quality milk arrives at the processor. Milk grading involves both the senses of smell and sight. TMR's in BC are NOT required to taste milk, but are required to accurately detect any defective odours or appearances.

i) Odour Detection

The very first indicator of milk quality is how it smells. In order to be successful in detecting off odours the following precautions should be taken prior to grading milk.

- Avoid smoking.
- Avoid using odorous skin treatments.
- Avoid strong flavoured foods (e.g. candy, gum, spicy foods).
- Avoid grading immediately after a meal or when hungry.

Below is the best method for checking odours.

- Check for milk odours first thing upon arrival into the milk house, before your nose becomes contaminated with other odours that may be present in the area.

- Lift the cover on a small strainer hole if possible. Opening big covers will dissipate the odours too quickly. Put your nose right down in the opening to get away from the odours that may be in the milk house. This will allow you to concentrate on identifying any off odours in the milk. Odours gather under the tank lid, so the first sniff will usually be the strongest.
- Warming a small sample of milk under warm running water will usually bring out any odours. Place a small quantity in a sample vial/bag and warm if necessary before smelling the milk.

Never pick up milk if it smells sour or malty.

In milk silos odours can be checked by smelling the purged sample as soon as it is taken. Detecting odours may be troublesome, but it should be done every time without fail. Doing this task will greatly reduce the risk of rejected loads later.

- If in doubt about the odour but you think it is bad, do not pick up the milk
 - call your supervisor for advise.
 -
- Always notify the producer and/or supervisor about any milk off odours (for example, barny or feedy). Doing so will ensure it can be corrected before it becomes serious.

ii) Types of Odours and Abnormal Physical Defects

There are many causes and possible causes of milk defects. Adequate lighting is important for good visual inspection. In large tanks it may be necessary to use a small flashlight to judge the appearance accurately. If lighting is not adequate notify the producer and/or supervisor.

The following table outlines the common defects.

Common Defects	Identify by	Possible Cause
Physical		
1. Floating butter fat particles. Particles may range in size from tiny fat globules on the surface of the milk with some clustering around the agitator shaft to the size of a pear.	<ul style="list-style-type: none"> • Sight • Temperature 	<p>Slow cooling and/or too much agitation while the milk is warm (15–20°C).</p> <p>Milk with any yellow churned particles should not be sampled for butterfat, however a sample should be taken and the condition reported to the producer and the processor immediately. If it is severe consult with your supervisor before accepting the load.</p>
2. Curdled or coagulated milk—the milk has a mottled, rough appearance. It will always have a sour odour.	<ul style="list-style-type: none"> • Sight • Smell • Temperature 	Un-refrigerated milk with a high bacteria count.
3. Color changes—e.g. pink milk. Pink milk is a very undesirable condition with the colour likely due to blood.	<ul style="list-style-type: none"> • Sight 	Internal bleeding of the udder—not uncommon in the milk of cows and heifers immediately after freshening or because of an injury to teats or udder.
4. Debris or foreign matter—dirt, hair, hay, vermin, flies, shavings, sawdust or other light air borne material.	<ul style="list-style-type: none"> • Sight 	Careless practices during milking or failing to keep tank lids closed.

Common Defects	Identify by	Possible Cause
Physical (cont'd)		
5. Frozen milk—the milk may appear slushy or areas of tank (walls and floors) may show ice build up. Milk extensively frozen cannot be fairly sampled for fat content.	<ul style="list-style-type: none"> • Sight • Temperature 	A thermostat or compressor problem.
Chemical		
1. Rancidity—a sharp unclean flavour with lingering after taste (will smell/taste like rancid walnuts or blue cheese).	<ul style="list-style-type: none"> • Smell 	Over agitation or foaming in milk, milk from mastitic or late lactating cows.
2. Oxidized—metallic or cardboard like smell/flavour.	<ul style="list-style-type: none"> • Smell 	The interaction between fat and oxygen in the presence of metal ions (even worn stainless steel) or exposure to fluorescent light or sunlight. Can also be a nutrition problem.
3. Malty, acid sour smell and taste	<ul style="list-style-type: none"> • Smell • Temperature 	Bacterial activity as in the case of curdled milk. Poor cooling or entire milkings left uncooled.
Other defects		
1. Barny/Unclean	<ul style="list-style-type: none"> • Smell 	The Cow's Environment—dirty housing, silage, musty hay, manure, stagnant water, or dirty water bowls.
2. Feedy	<ul style="list-style-type: none"> • Smell 	The Cow's Food—stink weed, turnips, spuds, leeks, alfalfa, silage. Flavours from feeds appear in the milk of cows, when fed 2 1/2 hours of milking time.
3. Chemical	<ul style="list-style-type: none"> • Smell • Sometimes appearance 	Milk Storage—chemicals, petroleum, paint, insecticides, pesticides and disinfectants, all of which must not be stored in the milkhouse or milking environment.

b) Rejection of Abnormal Milk

The following steps should be taken after discussion with your supervisor, if it is decided that the milk is to be rejected.

- Leave the milk in the farm holding tank, when in your opinion, the milk is abnormal in odour, objectionable matter or physical defects of any kind, or is not consistent with good quality milk. This is done to avoid any contamination of the milk in the tank truck or to subsequent transfers of other milk into the tank truck.
- Issue a rejection slip in triplicate, stating on the slip the reasons for rejection. Leave a copy for the producer, give the second copy to the processor, and keep the third copy. All copies must be kept for at least 3 months for examination by the Regulatory Authority.
- Take milk sample(s) and read and record milk volume as usual.

6. MILK TEMPERATURE

a) Thermometer

Temperature is the next indicator of milk quality after appearance and smell. Too high a temperature (>4°C) and the load is very likely to be high in bacteria. Too low a temperature (<0°C) and the quality, shelf-life and flavour of the milk can be effected through the freezing process. Always carry an accurate pocket thermometer and check the milk temperature at every pick-up.

- Stainless steel thermometer with a dial is easiest to read, keep clean and carry with you.
- Glass and mercury thermometers are not foodsafe and must not be used in farm holding tanks. Breakage is a food safety risk and will cause the load to be rejected.
- Calibrate thermometers regularly by immersing the probe in crushed ice with a little water. After 5 minutes adjust the temperature to read 0°C.
- Do not rely on farm holding tank dials as they may not be accurate. Recording thermometers may be required (eg: milk silos). Check with the regulatory authority.

b) Milk between 0° and 4°C?

For best keeping quality, the milk should be kept between 0° and 4 °C without freezing. This temperature range permits delivery to the processor storage tank without impairing milk quality. To ensure a load is within this range do the following.

- Sanitize the thermometer before using and rinse after.
- Check the temperature of the milk with your own pocket thermometer at every pick-up.
- Do not use tank thermometers as an indication of accurate cooling. Quite often these are out of calibration and as a consequence may not reflect actual conditions.
- Record the exact temperature. Not to do this is a disservice to the dairy producer and the processor. The dairy producer may not be aware that his/her farm holding tank thermometer is not accurate and any delays could mean poor quality milk later.

Taking the Temperature in Milk Silos

Location of recording thermometers may vary. Every silo must be equipped with a 7 day recording thermometer accurate to within +/-1 degree Celsius.

- Record the reading at the time of pick-up.
- The temperature is verified using the milk taken from the spigot into the 1 litre container provided by the producer. This litre of milk is used for rinsing (purging) the spigot prior to taking the lab sample.
- Have a functional and legible recording chart.
- It is the responsibility of the producer to ensure that recording charts are kept current and readable. The absence of a temperature recording chart or an unreadable chart will automatically result in the milk being rejected.
- Charts are to be dated and retained by the producer for one (1) month for any referrals or trace backs in quality.

7. READING THE CALIBRATION

Reading the farm holding tank stick or rod is critical for accurate payment. Reading it wrong can mean a shortfall to either the producer or the processor. Both depend upon your care for their livelihood. If the calibration chart is ever missing, check:

- if the tank is permitted with a temporary permit, follow normal pick-up procedure except circle the measurement and any estimated volumes. Notify the processor.
- if the tank is NOT permitted, do NOT pick the milk up.

a) Reading the Stick Correctly

Normally the lines on the measuring stick are so close together that the milk will always appear to touch one of them. Read and record the line that the milk touches. If the milk does not touch a line use the following guidelines established by the National Bureau of Standards.

- When the milk line is close to, but not exactly on a line, read as if it were on the nearest line.
- When the milk line is exactly halfway between two lines, read to the nearest even number.

Compare this reading with the previous day' s reading. If it differs by more than 1 inch or 2 cm, re-read the stick. A remark on the receipt that milk volume is up or down is useful. If the volume changes drastically from the previous pick-up, note it and inform your supervisor. After a reading is taken, leave the stick out by resting it across the sink. Only if the dairy producer instructs you to do so, may you return the rod to its holder when the milk is pumped out.

b) Ensuring an Accurate Reading

To get an accurate and reliable reading note the following.

- No foam must be at or around the stick. If there is, move it away with the stick. Foam will give a false high reading.
- Always read with a "hot" stick. The stick is heated with hot, running tap water and then wiped very thoroughly in the area to be read with a clean, soft, absorbent single service paper towel. Wipe the upper part of the stick to prevent water running onto the dried area. The stick is heated to melt the butterfat particles and to prevent the condensation of

moisture onto the stick. Unless the stick is heated and dried carefully, a false high reading is likely to result.

- The stick is properly seated. The measuring stick should be supported in a sturdy bracket. The stick should be seated fully in its support before raising. Unless it is seated completely, a false low reading will result. A very light tap before withdrawing is useful.
- Be alert to structural changes: anything unusual about the stick, its bracket and the placement or angle of the tank. Farm holding tanks for example, must be firmly fixed to a properly reinforced concrete floor to prevent any movement likely to interfere with the accuracy of measurement. Any indication that any of these have been tampered with must be reported immediately to your supervisor.
- Check that the serial number(s) on the stick and the Farm Holding Tank match the serial number(s) on the Farm Holding Tank Permit and calibration chart.
- If you do not get a straight, even line, once again rinse the stick in hot water; dry and reread. If the stick is not clean, is cool, and/or the milk surface is moving, the milk line will not follow a straight line across the stick.
- Good lighting is vital for an accurate reading. You may need to hold the stick so that the milk measuring point is at eye level as you read it. If there is not enough light notify your supervisor.
- Record results immediately on the receipt pad after reading the stick. To avoid error by forgetting the numbers, be sure to record the results of the stick readings as soon as you are finished. If ever in doubt about the quality of the reading, take a second reading. If it does not agree with the first, continue until you get two readings in sequence that are the same.

c) Reading Glass Tube Calibrations

In BC, all glass tube calibrations are banned from farm holding tanks. Glass tube calibrators however are still used on milk silos.

Glass tube calibration units are designed in such a way that the contents of the glass tube shall not re-enter the milk storage unit. The same care must be observed in taking accurate readings as is required on conventional tanks.

- The top of the sight tube must be open to the atmosphere. If the sight tube is not open a top line terminates in the milk or contains water it forms a lock, resulting in depressed milk readings.
- When the milk in the tank is still, open the valve to the sight glass and allow the milk to flow in slowly.
- There should be no foam in the tube. If a distinguishing line between the foam and milk is not visible, discard the contents of the tube and begin again.
- When the milk level is clearly established in the tube, move the level finder to the milk line. (In bright light a slightly curved like line called a meniscus will be seen). The reading must be taken at the **bottom** of the meniscus. Read directly across to the calibration reading.
- Double check and record the reading immediately. There is no way to check later.
- Discard the contents of the tube.
- Good lighting is critical for an accurate reading. Notify the producer and/or supervisor if there is insufficient light.

- If the tube is full of milk when you arrive, close the valve and disconnect the sight glass, allowing the contents of the tube to drain away. The tube should then be rinsed from the top and allowed to drain.
- To ensure an accurate reading the sight tube must be equipped with a positively attached pointer mounted on the opposite side of the plastic tube from the graduated rod in a manner which will not obscure the graduation marks on the calibration rod. The pointer must reach across the plastic tube and touch the “milled” increments on the calibration rod. All fittings on the sight tube shall be secured to prevent leaks. The sight tube must be welded to the unit and be reinforced so as to prevent “sagging” of the rod and sight tube holder. If any of this is not the case, notify your supervisor as an inaccurate reading is possible.
- Precautions to be noted:
 - the measurement will be seriously affected if there is not a free flow of air to the top of the sight glass.
 - never close the valve to the milk tank when taking a measurement, even if the tube or tank connection has a leak, as an inaccurate measurement will result. A poor connection should be reported to the producer so that it may be repaired. If it is not, notify your supervisor.

8. SAMPLING ACCURATELY

a) Agitating the Milk Ensures Accurate Samples

In order to achieve accurate and reliable samples the milk must first be adequately agitated for a minimum of 5 minutes for farm holding tanks and 10 minutes for milk silos. This time will seem long, therefore, use a watch and record the start time on the receipt pad. Do not guess. Failure to do so can dramatically effect the outcome of both producer payment and penalties.

The following are two possible sequences of events upon entry into the dairy depending upon whether or not the agitator is on. Both scenarios are acceptable.

- **Agitator ON upon entry.** In this situation, note the time on the receipt pad and ensure the agitator stays on for a full 5 minutes (10 minutes for silos). **Never** assume it has been running any longer than that. It may have only just come on! While you are waiting, grade the milk, place the hose near the tank (do not connect), label sample containers and take the temperature of the milk. Once the agitation time is complete take the sample(s). When the surface is calm, read the stick.
- **Agitator OFF upon entry.** In this situation, to ensure maximum efficiency of your time, first grade the milk and read the stick. Once these tasks are done switch on the agitator. While waiting, set up the hose (but do not attach), label sample containers and take the temperature of the milk. Once the agitation time is complete take the sample(s).

a) Identify Samples Properly

It is important to properly identify the sample(s). It is used to identify producer payment and milk quality. To do so requires a waterproof pen and printing that is very clear. Learn to make all letters and numbers sharp and distinctive.

- **NEVER** pre-label your sample container(s) in the milk house just prior to taking the sample.
- Attach labels, if provided at each farm for sample identification, **before** the milk sample is taken. If label is applied after the milk is in the container, condensation may form and the label and ink will not stick.
- Date all samples using a waterproof pen.

c) The Universal Sample

A simplified method of sample collecting is the "universal sample". One sterile container (either a plastic bag or vial) is used to hold a 100 ml sample. The sample is collected in a manner that ensures no bacteria are added. The sample is collected at each farm pick-up and used at the laboratory for all analyses such as fat, bacteria, odour, flavour, antibiotics, and others. To sample in this manner you will require:

- a 50 ml stainless steel dipper, provided at the farm or carried in a sanitizing solution on the truck.
- a 200 ppm chlorine sanitizing solution or equivalent to adequately sterilize the dipper.
- test strips to check the strength of the sanitizing solution.

d) Ten Steps for Proper Sampling

- Identify the sample container(s) with waterproof markings and/or apply computer labels. Apply any labels/markings **before** sampling as the addition of cold milk will result in condensation on the outside of the container. This will cause markings to smudge and labels to fall off.
- Sanitize the sampling device (e.g. stainless steel dipper) if it has not already been sanitized.
- Avoid contact with the rim or inside of the container with your fingers, as this will contaminate the inside of the container and alter the results.
- Take the sample(s) only after milk has been mixed for 5 minutes for farm holding tanks and 10 minutes for milk silos (or longer if cream streaks are visible).
- Take the sample(s) from an area free from foam. (Never sample through foam).
- Rinse the sampling device in the milk 3 or 4 times prior to taking the sample, completely emptying the dipper after each rinse.
- Fill the container away from the tank opening. The container could be dropped into the milk.
- Fill the container two thirds full. Never fill the container completely—leave some space to permit mixing of the sample in the laboratory. In sample bags, allow for 3 or 4 turns of the twist tie for sealing the bag.
- Securely close the sample container and put on ice immediately.
- Rinse the sampling device with warm water before replacing it in the sanitizer. Milk left on the dipper will eventually build up in the solution, rendering it ineffective and potentially a source of contamination.

e) Sampling from Milk Silos

To take samples from a silo complete the following steps.

- **Agitate the milk for 10 minutes.**
- Sanitize the spigot and the measuring cup prior to sampling using the sanitizing spray bottle provided by the producer.

- A full sanitizer spray bottle will be provided by the producer. If it is empty do not refill from producers chemical supplies and do not take a sample. Notify producer and supervisor.
- Periodically check the concentration with a test strip to ensure adequate sanitizing strength (e.g. 200 ppm chlorine). Notify the producer if it is not.
- The producer shall provide a measuring cup, at least one [1] litre in size, to be used for purging and sampling milk. To sample the milk use the:
 - first purged litre of milk for taking temperature and odour identification.
 - second litre of milk for lab sample.

f) Samples Properly Stored

All samples must be stored in the sample box on an ice and water mixture immediately after sampling in order to ensure an accurate and reliable sample for payment and quality control. To be stored properly the samples must be:

- held upright using racks so that the tops are never allowed to be submerged below the water or ice level.
- kept on ice to keep the samples maintained at or below 4°C (but never frozen).
- kept in a durable, well insulated, water proof sample box to keep samples cool and clean.
- preferably equipped with a water leveling device.
- stored in chipped ice, crushed ice, or small cubes. Ice blocks and snow are not acceptable as they will not maintain temperature and can also damage and/or contaminate the containers.
- placed on ice immediately after sampling.

9. RECORD ALL INFORMATION PROMPTLY AND ACCURATELY

All the information on the receipt is important information to both the producer and the processor. It helps in the event of tracking back any residues, quality problems, farm holding tank rejections, producer payments and production problems.

Copies of the receipt must be made available to the producer, processor, and hauler; and must be kept for minimum of 3 months. Always fully complete the receipt. To be complete the receipt should have on it the following:

- farm/owner name of the milk.
- name of the dairy processor licensee purchasing the milk.
- both the stick reading and the conversion figure in litres of milk.
- milk temperature taken at time of pick-up.
- date and time of pick-up (specify am, pm).
- any other important information like odours, lighting problems, temperature deficiencies, etc.
- TMR'S **legible** signature. (An initial is insufficient).

10. MOVING THE MILK FROM THE FARM HOLDING TANK TO THE TRUCK

a) Connecting the Hose

The milk can be moved onto the truck once it has been graded, measured, and samples taken.

- Always use the hose port. Every milk house must be equipped with a hose port with a self closing door. Always use the hose port so that the milk house door can remain closed, keeping vermin and pets out while you are in the milk house. This also avoids any crimping, bending and/or puncturing of the hose that will both damage the hose and cause it to not clean properly.
- Keep the hose cap clean. The interior of the hose cap is a milk contact surface. It must be protected when the cap is removed from the hose in the milk house. A good way to do this is to place it on the upturned outlet cap.
- Keep the outlet valve capped when not in use. After the farm tank is cleaned and sanitized, it should be capped by the producer until the milk is pumped out. If the cap is missing or the valve is dirty, be sure to notify the producer and/or your supervisor.

b) Valves Open, Pumps Primed?

The inlet valve on the tank truck and the outlet valve on the farm bulk tank should be open before starting the pump. This is particularly important if the truck is equipped with a positive displacement pump with no safety bypass. If this type of pump is started when the farm tank valve is closed and the tank truck valve is open, the hose may collapse. If the farm tank valve is open and the tank truck valve is closed when the pump is started, a gasket or other weak place may burst because of excessive milk pressure.

Positive displacement pumps can lift milk 3 metres or more, a necessity whenever the level of the milk house is below the road. Centrifugal pumps are more common, less expensive, and easier to clean, but they do not have the lifting capability of positive displacement pumps. They are very satisfactory otherwise; however, they need to be primed with milk at the first stop. This means the first pick-up cannot be at a farm where the milk level in the farm tank is below the level of the pump on the truck.

During transit be sure that all valves are closed and manholes are securely fastened.

11. LAST CHECKS

Mistakes in the last stages of pick-up can occur and can greatly damage the equipment and/or milk quality. To be certain nothing can go wrong, check all of the following before you leave the premise.

- Agitator and refrigeration turned off. When the tank is empty, shut off the refrigeration by turning off the compressor on a direct expansion tank or the water circulation pump on an ice bank tank. The shut off switch is on the tank or a toggle or knife switch is on the milk house wall. If you initiate the wash cycle of the tank, this will be taken care of. Do not turn off the compressor on an ice bank tank!
- Pump turned off. The milk pump should be turned off as soon as all the milk is removed from the tank. Operating the pump when there is no milk to move, will incorporate excess air into the small quantity of milk remaining in the pump, thus increasing the likelihood of the development of a rancid flavour in the milk. At the same time, with electrical pumps, remember to turn the power off to the plug. It could prevent a nasty accident from occurring.
- Milk hose disconnected. Be sure to disconnect the milk hose before rinsing the farm bulk tank. If not, you can contaminate the milk in the truck.

- Replace hose cap. Do not touch the milk contact surfaces within the cap with your fingers. Keep this part of the cap clean as you screw the cap onto the hose end.
- Keep outside of hose clean. If necessary, rinse it off after the hose cap has been securely fastened. Keep the hose cap end off the ground when you pull it back through the hose port and hang it up on its rack in the hose compartment. The pad in front of the milk house must be clean and well drained. If not, ask the producer to have it cleaned. If nothing is done contact your supervisor.
- Check for sediment in farm holding tank. After the milk is removed from the tank and before you rinse it, examine the bottom of the tank, especially near the outlet for sediment. The presence of heavy foreign particles that have settled out of the milk and remain on the tank bottom could be a serious cleaning or milking procedure problem (see "Appendix C" on page 28). Notify the dairy producer of your observations and alert your supervisor.
- Rinse farm holding tank. Rinsing the tank will make cleaning of the tank easier to clean, especially if the dairy producer is delayed as he/she may well be on busy summer days. For more information on how to properly rinse the tank see "b) Washing the Bulk Milk Truck Tank" on page 3.
- The dairy producer is entirely responsible for the washing of the farm holding tank. If he/she asks you to turn on an automatic washer, it is suggested that you cooperate with him/her. It is strongly recommended that you do not fill jars with cleaners or acids. The dairy producer should do this. If an automatic washer is turned on immediately, you need not rinse the tank, unless requested to do so by the dairy producer.

12. EXCESS MILK, OVERFLOWING TANKS AND OTHER ODDITIES

These situations are serious and may severely impact food quality and safety. For more information on farm holding tank requirements see "Appendix D" on page 30. Following are examples of some situations that will need reporting and may result in rejection of the milk.

- Inadequate farm holding tank capacity. It should be noted on the receipt and reported to your supervisor.
- Milk stored in cans. Any milk in cans **must not** be picked up.
- Unlicensed farm holding tanks or dairy farms. Milk may only be stored and received from a licensed farm holding tank and certified dairy farm. Contact your supervisor before picking up the milk.
- Transfers of milk. Transfers, either in reality or on paper, from one producer or farm to another are **strictly prohibited.**
- Excess milk at time of pick-up. If at the last pick-up the truck tank cannot receive all the milk from the farm, you or another hauler must return to pick the remaining milk up on the **same day**. A very small quantity of old milk can spoil a whole tank load!

13. LEAVE MILK HOUSE NEAT

How you leave the dairy is a reflection of you, your company and the quality of the product you accept. Always take great care to ensure the following steps are taken as you leave the producer's premises.

- Flush away any milk spills. While you have the hose in your hand to rinse the tank also flush the milk rinsings down the drain. Milk remaining on the floor for a few hours will not only smell, but it will also sour and result in an etched groove in the concrete from just

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below the outlet valve of the bulk tank to the floor drain. (Milk from a leaky valve or acid cleaners are frequently the cause of this groove, as well).

- Hang up water hose. The dairy producer should be neat. Set a good example for him/her by hanging up the hose when you are finished.
- Close milk house door and hose port. This action prevents the entrance of pests, vermin and animals and the potential contamination of the milk house and its contents. The outside hose port cover should be self closing. If it is not, close it after removing the milk hose. All openings to the milk house must be kept closed or be effectively screened to minimize the entrance of flies, vermin or animals.
- Wind up any electric cable, milk and water hoses. All of these routine operations soon become automatic. It is unlikely that you will forget to hang up the milk hose, but drivers have pulled away from the milk house with the electric cable still connected. Check everything before you leave.
- Shut off the lights.
- Deliver any special messages.
- Remember dairy farms are family run businesses so watch for children and neglected toys in the driveway.

Appendix A

BC Ministry of Agriculture, Food and Fisheries Office Locations

Contact	Phone	Fax	Email
Health Management and Regulation (toll free ph: 1-877-877-2474)			
Dr. Merv Wetzstein Manager	(604) 556-3013	(604) 556-3015	merv.wetzstein@gems9.gov.bc.ca
Roger Pannett Inspector Fraser Valley	(604) 556-3017	(604) 556-3015	roger.pannett@gems8.gov.bc.ca
Debra Sand, Operations Coordinator	(604) 556-3014	(604) 556-3015	debra.sand@gems2.gov.bc.ca
Lynette Hare, Data Coordinator	(604) 556-3093	(604) 556-3015	lynette.hare@gems2.gov.bc.ca
Industry Competitiveness Branch			
Ron Barker, Dairy Industry Specialist	(604) 556-3087	(604) 556-3080	ron.barker@gems2.gov.bc.ca

Appendix B

Cleaning and Trouble Shooting Guide

Deposits on bulk tanks can be a frustrating problem for the dairy farmer. Causes for films and deposits are all partly due to poor procedures (improper cleaning, rinsing, etc.) or incompatible products. In mechanical cleaning, problems may also be due to malfunction of the system or lack of proper solution control. When you encounter any cleaning problem on farm, the following are some potential sources and solutions:

Cleaning and Trouble Shooting Guide

Film or Deposit	Description or Identification	Cause	Removal	Prevention
Mineral Calcium, Magnesium	White (water-stone) chalky to gray	<ol style="list-style-type: none"> 1. Improper rinsing 2. Drop-out of minerals from water supply 3. No acidified rinse 	Acid wash with hot water (double up on label rate)	<ol style="list-style-type: none"> 1. Use acid rinse regularly 2. Make sure that alkaline product used has good water conditioning properties 3. Use water softener
Iron	Brown to red	<ol style="list-style-type: none"> 1. Water supply 2. Aggressive supply iron from system components 3. No acidified rinse 	Acid wash with hot water	<ol style="list-style-type: none"> 1. Regular effective acid rinse 2. Water treatment 3. Proper selection of sanitizers
Silica	White to gray glazed appearance	<ol style="list-style-type: none"> 1. Use of mechanical cleaner for manual cleaning 2. Poor rinsing 3. Water supply 4. Failure to manually clean outside surface of equipment cleaned inside mechanically 5. Poorly formulated product 	Special acid wash (This is a very dangerous procedure and should only be attempted by thoroughly trained individuals)	<ol style="list-style-type: none"> 1. Complete post-rinse 2. Regular effective acid rinse 3. Water treatment 4. Manually clean outside surface of equipment cleaned inside mechanically. 5. Change to different product
Inking (blackening)	Black rubber parts	Reaction between chlorine or chlorinated compound and rubber	Acid wash with hot water. If not removed, replace	<ol style="list-style-type: none"> 1. Acid rinse 2. Proper dry storage.
Black	Black residue deposit	<ol style="list-style-type: none"> 1. Rubber migration 2. Contact of dissimilar materials 	Acid wash with hot water. If not removed, replace	<ol style="list-style-type: none"> 1. Acid rinse 2. Proper dry storage 3. Proper installation.

Cleaning and Trouble Shooting Guide (Continued)

Film or Deposit	Description or Identification	Cause	Removal	Prevention
Wetting Agent	Blue	Poor, inadequate rinsing	Normal cleanup procedures	<ol style="list-style-type: none"> 1. Use proper product 2. Proper rinsing
Protein	Blue—rainbow hue, varnish like “apple sauce”	<ol style="list-style-type: none"> 1. Using non-chlorinated cleaner 2. Inadequate pre-rinse 3. Improper (sporadic or periodic) cleaning 4. Too hot pre-rinse 	Initial cleanup with equal parts of chlorine and a chlorinated alkaline detergent with hot water. (Double up on label usage rate)	<ol style="list-style-type: none"> 1. Use a chlorinated alkaline detergent 2. Proper cleaning with proper use dilution during each cleaning cycle. 3. Adequate pre-rinse with warm (35–43°C) water. 4. Rinse before milk film dries on equipment surfaces.
Milkstone or Water-stone	White to yellow	<ol style="list-style-type: none"> 1. Mineral from milk 2. Mineral from water 3. No acidified rinse 	<ol style="list-style-type: none"> 1. Initial clean-up with a chlorinated alkaline detergent with hot water. (Double-up on label usage rate) 2. Acid wash 	<ol style="list-style-type: none"> 1. Regular and proper cleaning procedures coupled with acidifier rinse. 2. Periodic acid wash in addition to the normal cleaning cycle.
Fat/Grease	Hanging water droplets with greasy (white) appearance Oil	<ol style="list-style-type: none"> 1. Improper pre-rinse (cold water) temperatures 2. Low final temperature during cleaning cycle 3. Improper detergent concentration 4. Regular use of acids during washing cycle 5. Pulsator oil on equipment surface 	Initial clean-up with a chlorinated alkaline detergent with hot water. (Double up on label usage rate)	<ol style="list-style-type: none"> 1. Regular and proper cleaning procedures coupled with acidified rinse 2. Use warm (35–43°C) pre-rinse water 3. Proper cleaning with proper use dilution during each cleaning cycle 4. Do not let wash water drop below 49°C.

Cleaning and Trouble Shooting Guide (Continued)

Film or Deposit	Description or Identification	Cause	Removal	Prevention
Factory soil	Grease, factory dirt-black deposit, rusting	Improper or no initial clean-up	Initial clean-up with equal parts of chlorine and a chlorinated alkaline detergent with hot water. (Double up on label rate)	Thorough cleaning before equipment is used initially
Corrosion	Rust, pitting	Iron, tramp metal particles, improper chemical usage	1. Acid wash and abrasive action. 2. Re-polishing (buffing) if advanced corrosion	Proper cleaning procedures and passivating rinse
Etching	Pitted and white discoloration "imbedded" in stainless steel surface	Improper use of chemicals Use of improper chemicals	Repolish	Proper cleaning procedures and passivating acid rinse
Plastics (in addition to above)				
Opaque	"Foggy", white not clear	Improper draining, moisture absorption	Exposure to heat and/or sunlight	1. Blower or dryer 2. Good drainage
Yellow	Yellow color	Old age, improper use of iodophors, hand soil stain	None	Proper product application
Brown, black	Brown discoloration	Rubber migration, carbon from dryer motors	Acidwash; if not removed, replace	1. Use acid rinse regularly 2. Proper filtration 3. Segregation of plastics and rubber
Red	Red color, stain	Serratia marcescens	None	Use proper cleaning procedures on regular basis
Pink, purple	Pink to purple color	Streptococcus rubriticuli	Strong alkaline wash	Use proper cleaning procedures on regular basis

*Source: The Professional's Approach to Quality Milk Production.
Dr. David Reid and Dr. Andy Johnson, 1993*

Appendix C

Bacteria that Affect Milk Quality and Safety

Bacteria are small microscopic one celled plants or animals found in abundance on earth. A few can move very short distances on their own but by far the majority are carried from place to place by birds, animals, humans, moving liquids and air currents. They can be both beneficial and destructive.

Different bacteria prefer different foods or food components. Since milk is an excellent food, the activities of certain types of bacteria both at the farm dairy and the processing plant are of great concern to all dairy producers. The milk receiver will hear names like:

- Psychrotrophs: Bacteria which are able to cope with and grow under cold conditions (0° – 20°C).
- Thermophiles: Organisms that grow and thrive in heat (37° – 90°C).
- Thermodurics (Mesophilic): Organisms which can withstand heat but prefer middling temperatures (25° – 40°C). (Milkstone build up on and in equipment provides an excellent haven for thermodurics).

All of these organisms are present in dirt, on unclean equipment, on unwashed hands, in untreated water supplies, filth, manure, bedding, feed, and hair. Cleanliness is essential in preventing bacterial contamination of milk. In British Columbia, the maximum bacteria colony count a producer is allowed in raw milk is 50,000 per ml. Continued violations of the maximum of 50,000 per ml results in cash fines and may eventually lead to suspension or cancellation of the Certificate of Approval. The milk receiver must not be responsible for high bacteria counts. By adopting good sanitary practices, when taking samples, this can be prevented from occurring. Samples must be properly marked, sealed and stored to prevent leakage, contamination or incubation.

Bacterial growth rate is determined by a time temperature relationship. At low temperatures (0° – 4 °C) growth is extremely slow. Cold temperatures do not destroy micro-organisms but inhibit their normal development. As temperature increases the time required for multiplication decreases until at 30°C it only requires 15 – 20 minutes for the total bacterial population to double. For example, *E. coli* doubles every 12 minutes in milk., i.e. 1 bacterium splitting per hour results in 4,096 bacteria in 24 hours. The following table illustrates how temperature can effect bacterial growth.

Temperature Affects Bacterial Growth

Temperature (°C)	0 hour	3 hours	9 hours	24 hours
15°	9,000	10,000	46,000	5,000,000
25°	9,000	18,000	1,000,000	57,000,000
35°	9,000	30,000	35,000,000	8,000,000,000

Contamination of raw milk is both internal and external. Good raw milk has 500 to 5,000 total micro-organisms per ml and less than 1 coliform per ml.

Appendix D

Farm Holding Tank Requirements

1. Temporary Permits

- Prior to tank calibration.
- Post calibration, but construction of premises (relating to a farm holding tank installation) incomplete (Original copy—posted in milk house).
- Until permanent permit can be laminated and posted.

2. Permanent Permits

This permit is issued on completion of tank calibration and construction requirements (white original and laminated—posted in milk house). In the case where a certificate of approval has been canceled, the farm holding tank permit may be removed from the milk house and destroyed. The Milk Board, hauling company and processor are notified by the Regulatory Authority.

3. Tank Requirements—Capacity

Size and Outlet Valve

- Tanks must conform to 3A Standards and the BC Standards for the Design, Fabrication, and Installation of Milk Handling Equipment in material, fabrication and operation.
- Tank capacity and capability should be such as to meet future demands, and of holding six (6) milkings when installed.
- Prior to installation and licensing, a tank having a rated capacity greater than 1,000 gallons must have a 50 mm outlet fitted with a 50 mm valve. All tanks new to the province must have a 50 mm outlet fitted with a 50 mm valve.

4. Refrigeration Capacity

The cooling system shall be capable of preventing the blend temperature of the milk in the tank from rising above 10°C at anytime during the second or subsequent milkings, and of attaining and holding the temperature between 0°C and 4°C within one hour of milking.

5. Measuring Rods

Tanks must be equipped with measuring rods graduated in thirty-seconds of inches or millimeters clearly milled or stamped. Rods with etched graduations and figures which are faint must be replaced or renewed. The serial number should correspond to that of the tank. If different, it should be noted on the Farm Holding Tank permit. The measuring rod shall be fixed in the rod holder or socket at the gauge point of the tank so that it hangs vertically.

6. Sight Glass Calibration

Only milk silos may have an exterior sight glass calibration. The measuring rod and sight glass must be immediately adjacent, the rod must be vertical and attached to the tank in such a manner that it cannot be depressed or raised in relation to the tank position. The slide must move freely for the entire length of the rod and be provided with a means to hold it firmly in place at the gauge reading.

7. Tank Drainage

All farm holding tanks must have a minimum slope of 2.75 cm per meter (2.75%) slope to the outlet. Manufacturers may require a greater slope, in which case, the manufacturer's requirements will be met.

8. Licensing Farm Holding Tanks For Other Than Normal Use

a) E.D. (Every Day) and E.O.D. (Every Other Day) Use

Farm holding tanks are manufactured to meet standards of cooling capacity for:

- every other day (E.O.D.) pick-up or 25% of capacity per milking, or,
- every day (E.D.) pick-up or 50% of capacity per milking.

A farm holding tank must meet the appropriate cooling capacities as determined in the 3A Sanitary Standards in order to issue a license for either EOD or ED pick up.

A temporary permit of not more than 3 months duration (unless otherwise specified) may be granted to use a farm holding tank for every day use after a temperature recording has been performed over a 48 hour period and the tank cooling capacity is found to be more than adequate for E.O.D. use.

Special circumstances as detailed below requiring other than E.D. or E.O.D. pick up must be detailed in a letter of understanding and agreed to by the producer, the receiving dairy manager, and approved by the area Inspector.

A farm holding tank utilized in this way must still function at a minimum of an E.O.D. capacity. No tank should be emptied less frequently than every fourth (4) day or twice per week (a 3-4 day split).

b) Special circumstances could include the following:

- Isolated dairy farms more than 300 km from the receiving plant.
- Insufficient supply of milk in tank to be measured at 4 milkings (this should be a short term measure only, maximum months).
- To accommodate plant processing weekend schedules, a 6 – 4 – 4 (Mon. Wed. Fri.) pick-up schedule may be an alternative.

9. Requirements for Two Farm Holding Tanks Per Milk House

Approval for more than one farm holding tank can only be considered when the smallest volume tank has the capacity to accommodate a minimum of 24 hours of production. Approval is also dependent upon the producer and the milk receiving firm signing a letter of understanding. The original copy of such a letter must be filed in the office of the BCMAFF Health Management and Regulation. The following is an example of a Letter of Understanding and provides some of the basic terms and conditions for two farm holding tanks per milk house.

SAMPLE LETTER OF UNDERSTANDING

Following are the terms and conditions under which installation of a second bulk tank will be permitted on the farm of:

Producer Name: _____ Producer Shipping No. _____

Address: _____

For delivery of milk to: _____

Receiving Firm: _____

Address: _____

A. Bulk Milk Holding Tanks

- All relevant requirements of the Milk Industry Act and pursuant regulations shall be adhered to.
- Both bulk tanks must conform to 3A Standards and shall be issued with a valid Farm Holding Tank Permit in accordance with the Milk Industry Standards Regulation.
- Bulk Tanks must be clearly identified Tank A and Tank B by affixing a large waterproof decal on the tank and must correspond to the calibration chart designated to that tank.
- Both bulk tanks must meet minimum cooling requirements for every day milk collection as defined in 3A Sanitary Standards for Farm Milk Cooling and Holding Tanks.
- A wall mounted board, clearly identified, shall be provided in the milk house for each tank. They shall be situated at least two meters apart and shall be in close proximity to the corresponding tank. On each of these boards shall be: a calibration chart, a Farm Holding Tank Permit, and a clip for milk receipt slips.

B. Volume Measure and Sampling

- To ensure an accurate sample, each bulk tank must have capacity for all milk produced in 24 hours, and volumes of milk directed to a tank must at all times be sufficient to permit proper tank function.
- Volume measurements will be performed on each tank and recorded separately. The TMR must not attempt to add volumes. Receipt slips for each tank will be identified by prefixing the producer number with A or B.
- Samples will be collected from each tank and identified by prefixing the producer number with A or B.
- The receiving dairy will record milk volumes separately for each tank.
- Butterfat analysis will be conducted on the separate representative samples with the test results applied to the actual volumes of milk collected from the corresponding tanks.

C. Quality Monitoring and Penalties

- Milk grading analysis will be conducted on a sample from each tank and where an infraction occurs from one or a combination of both tanks, the applicable penalty (SPC, inhibitors, SCC, and water) will apply to all milk produced that month.

D. General

- Changes to the terms and conditions of this document can occur only with written consent of the three signatories except when necessitated by changes in legislation.
- Violation of these terms by the producer will automatically require a return to conventional single tank milk collection arrangements. The attached signatures signify agreement with the terms and conditions of this letter of understanding.

_____ Producer	_____ Date
_____ Receiving Firm	_____ Date
_____ Inspector	_____ Date

cc: Regulatory Authority

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