

## Fact Sheet: Automatic Milking Systems

The Canadian Quality Milk (CQM) program is applicable to all types of dairy cattle farms; however, some additional information is required for Automatic Milking Systems (AMS). The following fact sheet explains how producers with AMS can meet CQM requirements. The CQM workbook questions not listed apply to AMS as written, and do not need any modification.

Please note that all CQM-required data must be easily accessible for validations.

### Definitions:

**Bulk tank:** primary refrigerated tank that receives and stores milk.

**Buffer tank:** refrigerated tank that receives and stores milk when the bulk tank is being emptied or washed and until it has collected a sufficient volume of milk to move back to bulk tank without freezing the milk.

**Storage tank:** non-refrigerated tank that receives and stores milk while the bulk tank is being emptied or washed and until it has collected a sufficient volume of milk to move back to bulk tank without freezing the milk.

### Question 30: Do you mark all treated cattle in the milking herd (e.g. leg bands)?

With AMS, an acceptable method of identifying treated animals is entering the treated animal into the computer system; however, you must enter livestock medicine treatments into the computer, **before** you treat the animal. Your Standard Operating Procedure (SOP) for treating animals must also reflect this procedure.

### Question 32: Have you established and implemented a Standard Operating Procedure for treating cattle? (Record 5)

Your SOP for treating cattle must state that you enter livestock medicine treatments into the computer **before** you treat the animal.

### Question 37: Have you established and implemented a Standard Operating Procedure for pre-milking? (Record 1)

Since AMS run continually, your pre-milking SOP becomes your robot maintenance SOP. See Question 57.

**Question 38: Have you established and implemented a Standard Operating Procedure for milking? (Record 2)**

See Question 57.

**Question 39: Do you ensure that all teats are cleaned, sanitized and dried (e.g. manure and teat dips removed) before milking?**

See Question 57.

**Question 40: Have you established and implemented a Standard Operating Procedure to minimize the risk of shipping abnormal milk? (Record 3)**

You have to demonstrate how you prevent other abnormal milk (e.g. mastitic milk, colostrum, bloody milk) from entering the bulk tank. You should check conductivity reports for animals with abnormal milk. If any animals are identified as having abnormal milk, you should manually check her milk and keep it out of the bulk tank.

**Question 41: Have you established and implemented a Standard Operating Procedure to minimize the risk of shipping milk from treated cattle? (Record 3)**

Your SOP must either have clear directions describing how staff should enter data in the computer to keep treated milk out of the bulk tank and how staff can access treated cattle information should they need to confirm treatments, or state that a trained person must always be available.

**Question 47: Is the bulk tank temperature recorded and checked after every milking? (Record 12)**

Time temperature recorders are mandatory for AMS (both for the main bulk tank and the buffer tank), unless your AMS has alarms for milk temperature. If it does, the alarms must meet the CQM alarm parameters, and alarm events must be logged in the deviation and corrective action record (Record 17 in the Workbook). If milk is stored in the buffer tank or storage tank for more than 2 hours, the buffer tank or storage tank must have a time temperature recorder as well. Manual temperature recording is not effective or practical for AMS. If your time temperature recorder does not have alarms, you must check the recorder a minimum of twice a day, with at least 8 hours between each check, and record the temperatures.

If you do not want to record data manually; the AMS or TTR must have the features outlined below:

**Please note:** Thermometers must be accurate within  $\pm 1^{\circ}\text{C}$ . This variation also applies to the temperatures listed below.

## Milk Temperature

- a) For the bulk tank, the TTR or AMS must have:
- At least one year of alarm log easily accessible and available.
  - An accurate, operating temperature probe to measure the temperature of the milk in the bulk tank.
  - Alarms set to the following parameters:
    - Not alarm when bulk tank is empty or washing or just filling with the 1<sup>st</sup> milk.
    - Alarm if the temperature is not between 1°C to 4°C within 2 hours from the start of milk harvest (i.e. from the moment milk is diverted to the buffer or storage tank). If equipment is capable of detecting fractions of a degree, alarms may be set to a lower limit above 0°C to avoid nuisance alarms. Please note: the 2 hour delay includes the time that milk is in the buffer or storage tank.
    - Be able to set blend temperature alarms (i.e. after 2-hour delay from first milk harvest).
    - Alarm if the blend temperature ever goes above 4°C for longer than 15 consecutive minutes.
- b) If milk is in the buffer or storage tank for longer than 2 hours, the additional TTR or AMS must have the ability to perform the same functions listed for the bulk tank in section 1(a), except that all references to “bulk tank” should read “buffer or storage tank”.

**Question 52 Do you regularly inspect and record the cleanliness of milking equipment (e.g. receiver jar and bulk milk tank) (minimum acceptable frequency is monthly, weekly is recommended)? (Record 13)**

See Question 57.

**Question 53: Do you check and record the temperature of the pre-rinse water (weekly) or wash water (monthly)? (Record 13)**

A time temperature recorder is recommended but you also can check and record the temperature manually. You have to be able to demonstrate to a validator how you take the temperature of either the pre-rinse or wash water.

If you do not want to record data manually; the AMS or TTR must have the features outlined below:

**Please note:** Thermometers must be accurate within  $\pm 1^\circ\text{C}$ . This variation also applies to the temperatures listed below.

## Pre-Rinse or Wash Water Temperature

The TTR or AMS must have:

- At least one year of alarm log easily accessible and available.
- A temperature probe to measure the temperature of the pre-rinse water or wash water.
- Alarms set to the following parameters:
  - **Pre-rinse alarms** must be set to the following parameters:
    - Minimum of a weekly check.
    - Temperature probe must be in the fill sink or on the return wash line.
    - Temperature must be taken at the beginning or end of the cycle.
    - Alarm must be triggered if the temperature drops more than 5°C below the accepted range.

**OR**

- **Wash alarms** must be set to the following parameters:
  - Temperature can be taken at the beginning or end of the cycle.
  - TTRs usually check the wash temperature every wash, but the CQM requirement is a minimum of a monthly check.
  - Whether start or end temperature taken, the temperature must conform to the specifications on the cleaning and sanitizing chart as filled out by the equipment dealer.
  - Probe can be in either the fill sink or on the return wash line.
  - If using an alarm and measuring temperature at the beginning of the wash cycle, alarm must be triggered if the temperature drops more than 5°C below the accepted range.
  - If using an alarm and measuring temperature at the end of the wash cycle, alarm must be triggered if the temperature drops more than 10°C below the accepted range.

Note: the alarms for the wash water are intended to monitor the milking equipment, not the bulk tank.

### **Question 57: Have you established and implemented a Standard Operating Procedure for post-milking system cleaning? (Record 4)**

For an AMS, the post-milking SOP becomes your SOP for cleaning and maintaining an AMS.

### **Standard Operating Procedure for Cleaning and Maintaining an Automatic Milking System**

To ensure that milk is cooling properly and that the equipment is cleaned adequately, An Automatic Milking System cleaning SOP is an important part of your CQM program. The SOP must contain enough information to ensure that a relief farm worker can perform the steps.

The following are various elements that should be included in your AMS Cleaning SOP.

- √ **Describe how the robot is programmed to wash, sanitize and rinse.** For example, some robots are programmed to run a complete wash 3 times a day, to rinse the teat cups after every cow or every 10 cows are milked, and to rinse and sanitize if idle for more than 45 minutes and after every treated cow is milked.
- √ **Check the cleaning of the system once per day**
  - Check to ensure there were no cleaning or milk temperature alarms in both the main and buffer tank (time temperature recorders, etc.) or attention lists (slow cooling of milk, too long between washes, abnormal milk, etc.) or exception reports.
  - Check the inflations, sanitary trap and receiver jar.
  - Check the air bleeds on each quarter unit.
  - Check the level of the soaps and other chemicals used (e.g. teat spray) weekly.
- √ **Clean the outside of the AMS and surrounding area once per day;**
  - Scrub with soap and clean components of the milking system.
  - Clean the robot room floor daily.
  - Check and clean the laser periodically during the day while the robot is not in use.
- √ **Check and record the temperature of the pre-rinse water (weekly) or wash water (monthly)** (Record 13).
- √ **Check and record the cleanliness of milking equipment regularly** (e.g. receiver jar and bulk milk tank) (minimum acceptable frequency is monthly, weekly is recommended).
- √ **Change the filter**
  - Describe how to shut the system down and change the filter.
  - Change the filter at the start of washing at least twice per day.
  - Check the filter for signs of mastitis and other debris. If you identify a problem, ensure that you follow corrective actions.

√ **Check the buffer tank and main bulk tank**

- Post a milk pick-up/cleaning procedure for the milk truck drivers. The instructions should include how to switch diversion from the main tank to the buffer tank, how to start the wash for the main tank and how to start the cooler for the buffer tank.
- Inspect the main bulk tank whenever it is empty to make sure it is clean (drying the bulk tank milk contact surfaces may help you detect deficiencies in surface cleaning).
- Follow the same wash procedures for the buffer tank after milk transfer to the main tank, including sanitizing approximately prior to its use (if possible, check the main tank and the buffer tank when they are dry).
- Sanitize the buffer tank about half an hour before the milk truck arrives.

√ **Teat Cleaning**

- Observe teat cleaning and post spraying/dipping of one animal for each milking unit at least once a day.
- Check that roller brushes are clean.

Clean teats remain a concern with AMS. AMS are capable of cleaning, sanitizing and drying teats, but they may not do it well. Cattle in an AMS herd may be expected to be kept cleaner to reduce the incidence of dirty teats. The Hygiene Scoring Card in Chapter 1 of the Reference Manual shows you how to score the cleanliness of your cattle's udders.

**Question 62: Do you have a functioning safety switch in place to avoid accidental entry of wash water into the tank?**

An AMS does not have a safety switch but it must have a fail-safe system to keep antibiotic milk and wash water out of the tank. The device is also designed to err on the side of dumping clean milk if there is a malfunction.

**Question 74: Do you ensure that the Standard Operating Procedures, corrective action plans and records you have developed are available to and understood and followed and maintained by staff?**

Staff training is even more important for people working on a farm with an AMS than on a farm with a manual milking system. Staff training is essential to ensure that everyone working with the AMS understands how to keep the system working effectively and how to ensure that milk is kept as clean and safe as possible.