

Study Guide
Industry Plant Sampler Training

Industry Plant Sampler Certification

- ❖ Why is proper sampling important?
 - ◆ Provide accurate samples for testing;
 - Drug Residues
 - Component Tests
 - Butterfat
 - Microbiological Tests – Standard Plate Count & Somatic Cell Count
 - ◆ Legal Reason

Only those individuals certified by the state dairy regulatory agency may collect samples for official regulatory purposes. The certification is based on the evaluation of the sampler's technique, attending a training session and passing a written test at the end of the training session.
- ❖ Members of the Indiana State Board of Animal Health, Dairy Division staff will conduct the evaluations.
- ❖ Frequency – Once every two years at minimum.
 - ◆ New personnel must be evaluated by BOAH staff prior to being allowed to obtain samples for regulatory purposes; this includes obtaining samples for drug residue testing.
- ❖ Criteria to be evaluated;
 - ◆ Personal Hygiene
 - Nails are clean and trimmed and hands must be washed prior to collecting the sample.
 - Outer garments are clean.
 - Hair restraint required, including properly worn beard-nets.
 - ◆ Sanitizer
 - An approved sanitizer must be provided to adequately sanitize the thermometer, collection device/dipper, and any other item that may come in contact with the milk.
 - The sanitizer must be the proper concentration.
 - The appropriate sanitizer test kit must be available to accurately determine the sanitizer concentration.
 - Sanitizer concentration is determined and recorded at least daily.
 - ◆ Sample Containers
 - Containers properly sterilized.
 - Adequate supply, properly stored and handled
 - Containers are legibly identified with:
 - ◆ Product name (if necessary)
 - ◆ Plant name or route & BTU
 - ◆ Date & Time of collection
 - ◆ Sample temperature
 - ◆ Sampler's ID
 - ◆ Sampling Instrument

- Sample dipper of proper design, construction, and repair
- Dipper is clean and sanitized.
- ◆ Thermometer
 - Thermometer is bi-metal stem thermometer and accurate to $\pm 1^{\circ}\text{F}$, marked in 2°F increments
 - Accuracy checked against a standard thermometer every 6 months with an accuracy of ± 1 division (2°F).
 - Thermometers not meeting the accuracy requirement must not be used.
 - The date checked and the accuracy record is maintained by the sample collector.
 - The thermometer and written record must be labeled in a manner that will allow an easy correlation between the thermometer and the written record.
 - Thermometer must be clean and sanitized prior to each use.

Collection Procedure

1. Label the sample container legibly with a waterproof pen, including all the required information.
2. Gather all the equipment needed; thermometer, dipper, sample containers, cooler or bucket. The thermometer and dipper must be sanitized and handled to avoid contamination.
3. Wash hands and dry completely.
4. Once the manhole is open, smell the milk to check for “off” odors (garlic/onion, chemical or rancid odors, etc.) then observe the milk for floating objects and color. Unacceptable milk must be rejected.
5. Milk must be agitated for at least 10 minutes by odor-free, pressurized, filtered air or an electric driven stirring or recirculation equipment. All agitation equipment must be sanitized before use.
6. Sample the milk by using the dipper which must extend into the milk at least 6-8 inches. Rinse the dipper at least twice in the milk to remove any traces of sanitizer.
7. Fill the container $\frac{3}{4}$ full while holding it away from the tanker lid opening. Obtain a representative sample by avoiding foam and extending the dipper well below the milk surface.
8. Place the filled sample container in a cooler with ice or ice packs and descend from the truck or sampling platform. The sample needs to go to the laboratory/testing area immediately.
9. If a truck sample isn’t going to be tested immediately, then a temperature control sample must also be obtained to ensure the sample is the correct temperature for testing.
10. Do not unload the tanker until testing is complete and the laboratory has released it. If there is any question do not begin to unload until the “all clear” has been communicated unmistakably.

The PMO requires every plant employee collecting samples of raw milk or milk products for regulatory purposes be certified by the state milk regulatory agency. They must also attend a sampler training class approved by the state milk regulatory agency. The PMO requires each Industry Plant Sampler to be evaluated at least once every twenty-four months. BOAH policy is to evaluate each Industry Plant Sampler once every twelve months.

Both raw and pasteurized milk are an excellent growth media for bacteria. To inhibit the growth of bacteria, both raw and pasteurized milk are required to be stored and transported at temperatures of 45°F or less. To insure the bacterial levels of the sample do not increase after the sample has been collected, the sample must also be stored and transported at 45°F or less. As a certified sampler it is your duty to accurately determine the temperature of the milk prior to sampling and to insure the sample is maintained at the proper temperature in transit to the lab. In order to do this you must have a thermometer of known accuracy. The PMO requires these thermometers be graduated in 2°F increments and be accurate within $\pm 1^\circ\text{F}$. To insure that the thermometer remains accurate, it must be checked against a thermometer of known accuracy (an NIST thermometer or NIST traceable thermometer) at least once every six month with records maintained. The working thermometer must be labeled with the date it was checked and its' accuracy.

When sampling milk or milk products one must take precautions to not contaminate the sample. Begin by having good personal hygiene. Poor personal hygiene can drastically increase the potential for contaminating the milk or the sample. Samplers should have their nails short and clean, no jewelry, no items in upper pockets, and must wear clean outer garments. Long hair should be restrained in a pony tail under a clean hair net plus beard restraints must be worn properly, covering all facial hair including mustaches. Hands need to be washed immediately prior to collecting the sample. Some plants require the samplers to wear latex or similar types of gloves. The use of gloves can decrease the probability of contaminating the milk or sample when used properly. However, the sampler must still wash their hands prior to putting on the gloves. Also, if any hole or tear develops in the glove or some activity is performed that may contaminate the gloves; the sampler must wash their hands and put on a new pair of gloves.

The sample collected as the official regulatory sample must be representative of all the milk or milk product stored in the vessel to be sampled. The contents of the vessel must be a homogenous mixture and you must not contaminate the sample or the contents of the vessel by the way you collect the sample. There are several things a sampler must do to decrease the likelihood of contaminating the sample or the contents of the vessel such as washing hands and wearing clean outer clothing.

The thermometer and dipper used to obtain the milk sample from a tanker or container must be cleaned and sanitized before use. Normally, the thermometer and dipper are stored in sanitizer solution between uses. Soils on the thermometer or dipper will decrease the effectiveness of the sanitizer so it's important to thoroughly clean equipment after use and before storing it in sanitizer. At the end of each day's use the thermometer, dipper and the holders for each must be adequately cleaned. At the beginning of each day the sanitizer solution must be checked using the appropriate test

method. Between uses, both the thermometer and dipper must be thoroughly rinsed with clean water and stored in clean sanitizer solution. While in storage the sanitizer solution should cover the thermometer stem up to the dial and the dipper to the hook end on the handle. During the day milk residue may accumulate in the sanitizer solution. When this occurs the holder must be emptied and refilled with clean sanitizer solution at the proper concentration.

For the sample to be representative of the product being sampled it must not be contaminated by any means including the sample container. If you are collecting samples that are to be used for microbiological testing the sample containers must be sterile. Single-service containers must come from the manufacturer sterile with the lids tightly closed. The sample containers must be stored to preclude contamination which normally means in a larger container with a lid. The sample containers, empty or filled must not be carried in pockets. This is where a personal size sample cooler can be useful to carry both the empty and full sample containers on and off the truck tanker.

Also for a sample to be representative of the product being sampled, it must be a homogenous mixture. That requires agitation which may be either of two common methods; mechanical or air. The variable in agitation is how long must the product be agitated to produce a homogenous mixture? The recommended method for determining the minimum agitation time is to take butterfat samples at intervals in different spots during the agitation process until the samples have essentially the same fat content. That would determine agitation time for that particular tank.

Before beginning agitation, the sampler must open the dome lid and smell and observe the milk or milk product. Off odors or obvious defects of the milk or milk products are reason for rejecting the load. Each receiving plant has their own guidelines for what is acceptable and what are grounds for rejection.

The thermometer, sample dipper, and sample containers must not be contaminated during the transport to the manhole on top of the truck tank. If the thermometer or sample dipper contacts anything re-sanitizing is in order prior to use.

To obtain the product temperature either probe the product in the tank with the thermometer or collect a separate temperature control. Before contacting the product surface the thermometer stem must have had the sanitizer drained thoroughly.

The dipper should be sized such that one full dipper will not collect an entire sample. When using the dipper, first drain all the sanitizer from the dipper, rinse the dipper in the product at least twice by lowering the dipper into the product, then removing the dipper and pouring out the product, then collect the product for the sample. The dipper should extend into the product six to eight inches. When transferring the product to the sample container;

- ✓ Don't touch the dipper to the edge of the container or steady the dipper against your finger.
- ✓ Don't "choke up" on the dipper handle to the extent that your hand is on the portion of the dipper that will be in the product next.

- ✓ Don't transfer the sample over the open manhole, instead swing to the side.
- ✓ Don't touch the inside of the container or the container lid with any object including your fingers or the dipper.

When the sample container has been filled the container must be securely closed and the container immediately stored in ice water or other refrigerant. This is where taking a small cooler onto the top of the truck tanker is handy.

Each filled container must be legibly marked with the product name, the source of the sample, the temperature of the sample, the date and time the sample was collected and the identity of the sampler. The sample must go to the lab immediately. Then rinse the thermometer and dipper with clean water until all visible residues are removed and then stored in a properly prepared sanitizer solution.

Close the lid on the tank and the dome should be lowered. Remove the baffle if necessary and install the vent filter.