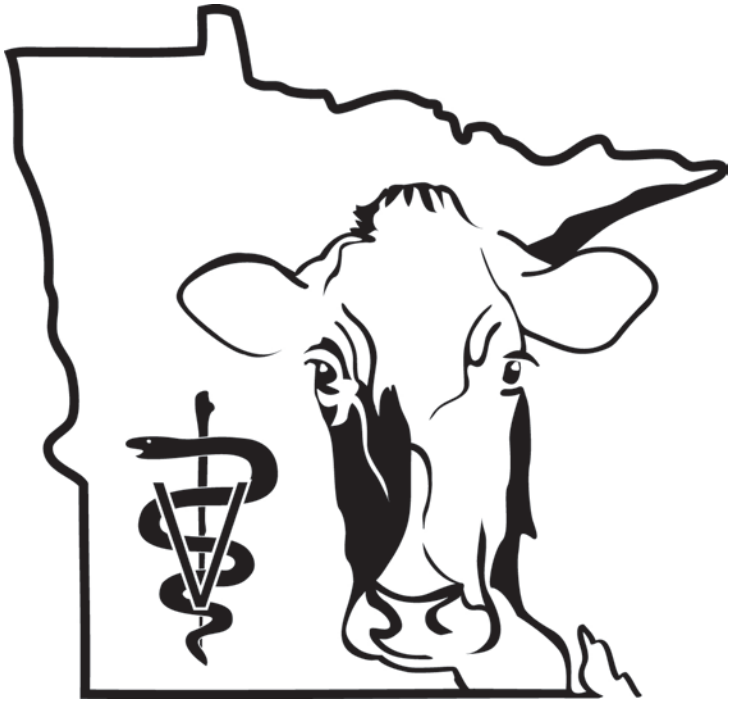
THIS ARTICLE IS SPONSORED BY THE
MINNESOTA DAIRY HEALTH CONFERENCE.

UNIVERSITY OF MINNESOTA

College of Veterinary Medicine

VETERINARY CONTINUING EDUCATION



ST. PAUL, MINNESOTA
UNITED STATES OF MINNESOTA

Farm-to-Table Food Safety: Milk Regulations in Minnesota

Nicole Neeser, DVM, MPH
Minnesota Department of Agriculture
Dairy, Meat, Poultry and Egg Inspection Program Manager

Ensuring the safety of food produced on Minnesota dairy farms is one of the Minnesota Department of Agriculture (MDA)'s primary responsibilities. Milk is a significant source of nutrients necessary for proper health; however, it can also serve as a vehicle for disease transmission. For this reason, milk safety programs have been at the forefront of food safety efforts. From the farm, where the dairy inspectors perform their routine inspections, to the grocery store, where the food inspectors are reviewing cooler holding temperatures and product handling procedures, MDA is intricately involved in every step of the production process. On the farm level, some of these regulations impact dairy veterinarians. By understanding the regulatory process, dairy veterinarians can help their clients conform to milk quality and veterinary drug labeling requirements. These and other regulations and standards help the dairy industry produce some of the safest food products in today's marketplace.

In Minnesota, dairy farms can produce milk at two levels: Grade A and Manufacturing Grade (also called Grade B). Each level has standards that farmers must meet in order to sell milk for human consumption. For Grade A, the requirements are explicitly outlined in the Pasteurized Milk Ordinance (PMO). Minnesota adopts this document directly through our State law (MN Statutes 32.394). This document can be seen at: http://vm.cfsan.fda.gov/~ear/p-nci.html. The first PMO, which is published by the United States Public Health Service and the Food and Drug Administration, was adopted in 1924 and is currently revised every two years. In this document, the *specific* requirements for farm conditions that may impact milk safety are explicitly outlined. For example, in Item 15r. Drug and Chemical Control, the Administrative Procedures specifically state that equipment used to administer drugs cannot be cleaned in the wash vats. Grade A farms are required to be inspected twice per year.

Manufacturing grade farms are required to meet the requirements as described in the USDA's Milk for Manufacturing Purposes and its Production and Processing Recommended Requirements. This document is also adopted directly by Minnesota through our State law (MN Statutues 32.415). These standards tend to more lenient than those in the PMO especially in terms of well and water requirements. Farms only need to be inspected once per year.

Milk manufacturing plants, including milk receiving stations, transfer stations, and processing plants, must follow standards similar to farms. Milk for use as fluid milk and other Grade A products like yogurt must be from Grade A farms. Milk for cheese, ice cream or other manufactured products can be from either Grade A or Grade B farms. The vast majority of farms in the State (89%, 4541 out of 5127 total farms; MDA statistics through March 2007) are Grade A. Milk from Grade B farms can only be used for non-Grade A products.

As a part of the Grade A and manufacturing standards, farms must also meet milk quality standards. Table 1 illustrates these standards:

Table 1. Milk quality standards in Minnesota.

Quality Standard	Grade A Farm	Manufacturing Grade Farm
Bacteria	100,000	500,000
Somatic Cell Count	750,000	750,000
Antibiotics	None	None
Temperature (within 2 hours after milking)	45° F	45° F

These are the minimum standards that are required by law. Some dairy plants actually enforce stricter standards than these. For instance, many fluid milk plants will only take milk from farms averaging under a certain somatic cell count or the milk must be no higher than 41 °F when it arrives at these plants.

Enforcement of these requirements is done in accordance with PMO requirements. Understanding this process can be a challenge. In Section 6, the PMO outlines a series of testing requirements and conditions by which a farm's milk quality is judged. To start, each farm is required to have an official quality test performed in four out of every six months. In practice, this results in monthly testing for official quality parameters.

In Minnesota, this testing is performed by certified testing laboratories. These may be independent laboratories, like Dairy Quality Control, Inc. (DQCI) or may be laboratories associated with the creameries that purchase or receive the milk. In either case, laboratory analysts are certified on a regular basis to ensure that they can properly perform the required tests.

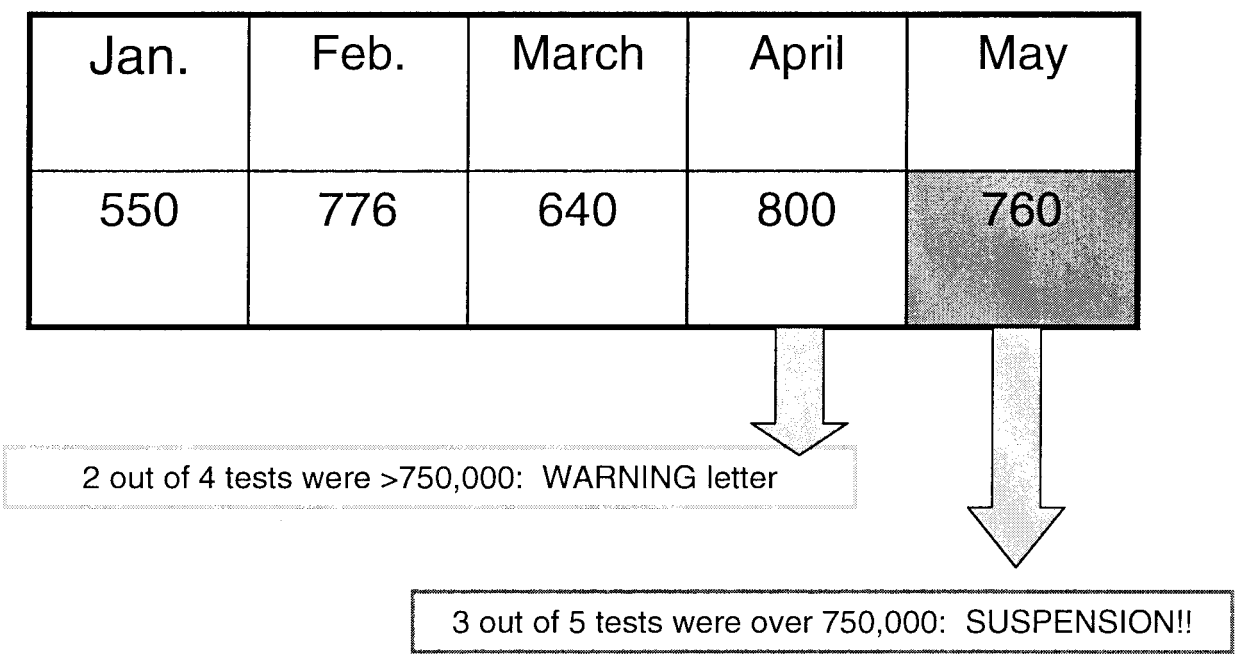
Each month, the laboratory must choose a day to run official quality tests for all of their farms. The laboratory chooses the date for this testing. After test results are known, they are then sent to the respective dairy inspector for each farm. The dairy inspector records them

into each farm's log and makes a determination on whether any regulatory action is necessary.

Regulatory action is taken when farms are unable to meet somatic cell count or bacteria requirements. Note, that for SCC or bacteria, having one test outside the required minimum does not result in regulatory action or removing milk from sale. Also, farms are still allowed to sell milk with test results above these standards on samples tested other than the monthly official samples. Rather, a farm must have a SCC or bacteria count higher than the allowed minimum in the past two out of four months in order to have regulatory action taken.

If a farm reaches this point, the farm is sent a Warning Letter. A fifth official test is then run. If the results of that test are above the legal limit for the parameter in question, the farm is then given notice that they cannot sell milk ("Permit Suspension"). This notice is in effect until the farm is able to achieve a test result within the legal limit. The farm is then reinstated and allowed to sell milk on a probationary status. After this point, a series of testing is done to fully reinstate the farm to Grade A or Grade B and a farm inspection must be completed and passed with high results. Figure 1 illustrates the process of regulatory action options for a farm with milk quality issues.

Figure 1. Example of regulatory action taken for somatic cell count results.



For official monthly antibiotic testing, the process is different. Each positive test has consequences. Each producer has an antibiotic testing record with MDA. This record incorporates results from bulk milk tanker testing and official monthly producer tests. The consequences for a positive test are determined by the number of positive tests in the previous 12 month period. Consequences range from a visit from an inspector and completing a quality assurance program to a significant monetary penalty. Some farms have

two positive tests during a 12 month period and a few even have three. Having four positives in this time frame is rare.

Antibiotic residue testing is routinely performed on every tanker load of milk that arrives at a milk manufacturing plant, transfer station or receiving station. Laboratories in the plants are responsible for performing this testing and must be certified for using each test. At present, each tanker must be screened for 5 of the following drugs: penicillin, amoxicillin, ampicillin, ceftiofur, cephapirin, hetacillin, and cloxacillin. Our drugs may be tested for but testing is not required on a routine basis. Most commonly, these drugs would be tetracyclines and sulfonomides.

When a tanker tests positive for an antibiotic residue, the test is confirmed by rerunning the same test procedure. If this tests positive again, the laboratory must then take the samples collected from each farm at the time the milk was picked up and test them using the same test. The farm sample result that is positive indicates which farm is responsible for contaminating the load. The positive test result is documented and sent to MDA, where the positive result is added to the producer's record. After receiving notice of a positive test, MDA assigns an inspector to review the violation with the milk producer and determine a cause of the residue. In some cases, a cause is readily identified. However, in others the cause is not readily apparent and the offending drug or action may not be identified.

As a part of the effort to prevent veterinary drug residues, the PMO requires veterinary drugs to be stored and labeled appropriately. Veterinarians play an essential role in labeling drugs properly. Drugs must be labeled properly for inspectors to determine if they are being stored according to the PMO requirements. The requirements for drug labeling and storage are found under Item 15r of the PMO.

Proper drug storage involves a few different components. First, drugs must be properly stored by separating lactating cow drugs from non-lactating cow drugs. For example, a drug labeled for use in lactating cows can be stored on a different shelf from nonlactating cow drugs and satisfy this requirement provided that the shelves are labeled. Also, all drugs must be stored so that they cannot contaminate milk or milk product-contact surfaces of containers, utensils or equipment. For example, they cannot be stored on the bulk tank lid or in a wash vat.

Proper drug labeling involves providing drugs with appropriate labels, whether they are from the manufacturer or a veterinary prescription label. Drug labels must include the following information:

- Name and address of the manufacturer or distributor for OTC drugs
- Name and address of the veterinary practitioner dispensing the product for Rx and extralabel drugs

- Directions for use
- Prescribed withholding times
- Cautionary statements
- Active ingredients

Most of these requirements are consistent with State veterinary drug labeling laws and the Federal law, AMDUCA. It is important to remember that the producer can receive a debit or violation on inspection if the veterinarian has not labeled the drugs correctly. A veterinarian working with dairy farms must be familiar with the labeling requirements in order to provide labels which meet the PMO as well as State and Federal requirements.

In summary, the milk regulations are designed to provide a safe and wholesome milk supply. As a part of these regulations, routine testing and sampling is done to provide information on the quality and safety of the products being produced. Veterinarians can play an important role in helping their clients achieve the milk quality requirement, as well as prevent drug residues in milk. The regulations are very specific in many areas, but have worked well to improve the safety of milk over the years. As a result, milk products are some of the safest food products in the U.S.