National Dairy Code – Part I

PRODUCTION SECTOR INTERPRETATIVE GUIDELINES

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FIL-IDF Canada, Coordinating Committee on Dairy Regulatory Standards (CC DRS)

Introduction

The Canadian Food Inspection System (CFIS) was created in 1994 for the development of national food safety codes. This was a collaborative process between federal, provincial and territorial governments. The objectives of CFIS are to facilitate harmonization, streamline the inspection process, reduce pressures on industry and provide a system that is flexible, responsive and timely. Working committees have been established to develop model regulations and Codes. The National Dairy Code was completed by governments, industry and other dairy stakeholders in 1997 and has been amended six times as of September 2013. Regular review and revisions of the Code are proposed by an active dairy stakeholder committee to strive for continuous improvement as newer knowledge and technologies become available.

The National Dairy Code is a national, technical reference document that provides guidance to governing bodies, owners and employees to produce safe and suitable dairy products. It provides requirements for milk production and transportation as well as processing of dairy products to promote safe practices and sound management.

All government jurisdictions are encouraged to review and utilize the National Dairy Code as guidance in the development and revision of their applicable legislation. Since its inception, the Code has served as a national regulatory template for milk production requirements for foreign country audits as well as in Canada's equivalency discussions with the USA, the EU and other foreign country governments.

Short Title

1. This Document may be cited as the National Dairy Code - 1997, revised September 2013.

Interpretation

2. In this Code,

"automatic milking system (AMS)" is a milking system that does not require an individual to conduct the actual milking of the animals. Also known as a robotic milking system;

"bulk milk grader" means a person authorized by the Regulatory Authority to perform the duties of a bulk milk grader as described in this Code and who holds a Bulk Milk Grader's Permit, Certificate, or Licence;

"bulk milk grader's permit, certificate or licence" means a permit, certificate or licence issued by a Regulatory Authority for the performance of duties as a bulk milk grader as described in this Code;

"dairy animal" means cows, goats and sheep and such other species, as may be kept for the purposes of milking;

"dairy barn" means a barn in which feeding and holding areas are used in conjunction with a milking system (tie-stall, milking parlour or automatic milking system);

"dairy farm" means a farm where dairy animals are kept for milking and from which milk is marketed or sold for human consumption, and includes all buildings, yards and premises occupied or used in connection with the production of milk;

"dairy plant" means a premises, building or structure, where milk is received and/or dairy products are prepared;

"dairy plant process worker" means a person who engages in activities, duties and functions governed by Part II of this Code;

"free stall barn" means a building with alleyways and individual stalls where dairy animals are housed and have free access to stalls;

"inhibitor" means any substance, other than a bacterial culture, that does not occur naturally in milk and inhibits the growth of bacteria in milk;

"loose housing barn" means a structure with a minimum of three walls and a roof that contains no stalls;

"milk" means a normal lacteal secretion free of colostrum obtained from the mammary gland of a dairy animal;

"milk house" means a building or structure where

a) milk is cooled and/or stored; and
b) milking equipment is cleaned, sanitized, and stored;

"milk marketing agency" means a provincial or territorial agency or other such organization or entity, as is defined by the legislation applicable in each province or territory, that has the legislative authority with respect to the marketing of milk;

"milk parlour" means an enclosed area or structure where milking occurs but where no animals are housed;

"milking area" means a segregated area within a dairy barn where animals are milked;

"producer" means a person who markets or sells milk that has been produced by a herd of dairy animals owned or controlled by the producer;

"raw milk" means milk that has not been heated beyond 40°C or undergone any treatment that has an equivalent effect;

"Regulatory Authority" means an organization or a government, minister or authority, of the federal, provincial or territorial government that is responsible for the administration and enforcement of regulations related to the contents of this Code;

"sale" includes trade, or barter;

"transfer depot" means a building or shelter where milk is transferred from one transport vehicle to another or from one vehicle to a silo;

"transport vehicle" means a vehicle used for the transport of milk and includes a bulk milk truck.

Application

3. This Code applies to all dairy farms, dairy plants, dairy process workers, producers and their personnel, bulk milk graders, and owners and operators of transport vehicles.

PART I

REQUIREMENTS FOR PREMISES AND EQUIPMENT

Construction, Arrangement and Operation of Production Establishments

4. The areas and yards surrounding a dairy barn and milk house shall be:
   a) configured and maintained in a manner that will not contribute to contamination of milk;
   b) kept free of refuse and animal and vegetable wastes; and
   c) well drained.

Interpretative Guideline

The location of buildings and other activities [loading of milk, size of bulk tank truck, traffic patterns (people and vehicles) manure storage, sewage and waste water disposal, etc.] should be considered and arranged in a manner that does not contribute to the contamination of milk. Potential contamination risks can be minimized by ensuring:

- *adequate drainage around buildings, particularly milk loading and transfer areas, to minimize tracking of water and wet soil from location to location. Stagnant water, which serves as a potential breeding ground for bacteria and insects, should also be minimized;*
- *regular removal and control of all debris, refuse and unwanted plant growth to eliminate potential bacterial, insect and rodent breeding grounds and prevent undesirable odours;*
- *location of outside manure storage and waste disposal discharge is approximately 30 m or more from the milk house;*
- *the area surrounding the dairy barn and milk house is kept clean, tidy and as dry as possible.*

5. In order to permit passage by a transport vehicle, the driveway to a milk house shall be maintained by the producer so that it is:
   a) accessible in all weather conditions; and
   b) free of animals, animal waste, locked gates and other obstacles.

Interpretative Guideline

The bulk tank truck should have easy access to the milk house under conditions which minimize contamination of the truck and the bulk milk grader. This is important as the vehicle and personnel travel from farm to farm. The area the truck and grader pass through and park at should be:

- *properly graded to ensure good drainage;*
- *free of silage run-off or other contaminants;*
- *in good repair, free of potholes and ruts;*
- *clean, tidy and odour free;*
- *accessible in all weather;*
- *free of animals and obstacles so as to permit easy access of the bulk tank truck to the hose port and milk house.*

Dairy Barn

6. A dairy barn shall be:
   a) provided with a water source having non-detectable levels of Escherichia coli bacteria per 100 ml. for milking operations; and
   b) constructed and ventilated so as to prevent water condensation and the accumulation of odours.

Interpretative Guideline

There must be a safe, sanitary, and adequate supply of water for use in milking operations.

In order to ensure that water contains no E. coli bacteria, water should be sampled and tested once a year, preferably during critical periods, i.e. after heavy rains, during wet season or dry season.

The water supply should be equipped with the means of preventing any back flow from the dairy barn to the milk parlour or milk house. In addition, the water source must be protected from potential sources of contamination, i.e.: surface water runoff, animal entry, etc.

Water supply should also be equipped with a mean of preventing freezing, if required.

Every dairy farm should have a dairy barn to provide an environment that is clean, dry and comfortable. Keeping milking cows clean and healthy helps to minimize bacterial contamination in raw milk. Factors to consider in maintaining a desirable environment are, type of housing, ventilation, stall design, type of bedding, bedding maintenance and stall base.

Air circulation and ventilation should be sufficient to minimize odours and to prevent condensation on walls and ceilings.

7.

7.1 A dairy barn shall be designed, and constructed in a manner that:
   a) permits the milking operations carried on therein to be performed under sanitary conditions;
   b) minimizes the contamination of milk;
   c) minimizes damage by dairy animals;
   d) minimizes the entrance, nesting and breeding of pests; and
   e) prevents injuries to dairy animals.

Interpretative Guideline

A dairy barn should be designed to provide an environment that is clean, dry, comfortable and safe for animals. Animal housing should be designed and maintained to ensure that the flanks and udders of milking animals can be kept clean and that a sanitary milking environment can be maintained to prevent contamination of the milk during milking operations. Factors to consider in maintaining a desirable environment are type of housing, air flow and ventilation (Section 6), traffic flow, stall design, feeding systems, type of bedding, bedding maintenance and manure handling.

It is difficult to completely prevent the entrance of birds, insects or rodents into the dairy barn. However actions must be taken by the producer to minimize the entrance of these pests. All openings such as chimneys and windows should be provided with bird mesh to prevent the entrance of birds or rodents. Near the dairy barn, the vegetation should be kept short to prevent harbourage by rodents which could enter the dairy barn. Around buildings, the drainage must be adequate to avoid the accumulation of stagnant water which would favour the proliferation of

insects. Debris and waste should not be allowed to accumulate around the dairy barn.

Animal housing and traffic areas should also be designed and maintained to prevent injury to animals. Considerations include proper stall design, adequate traction in traffic areas, and eliminating sharp edges or hazardous objects.

7.2 A dairy barn shall be constructed of materials that

a) are durable;
b) will permit the effective cleaning of all interior surfaces; and
c) are free of any toxic or noxious substances.

Interpretative Guideline

Construction materials used for the dairy barn floors, platforms, gutters, walls, mangers, should be hard and impervious to permit effective cleaning. Such surfaces could include, tile, concrete, plaster, fiberglass, brick, vinyl, aluminum siding, painted wood or other suitable impervious material. Construction materials such as concrete or aluminum siding can be kept clean more easily than wood or similar porous material. Construction materials should also be strong and durable to prevent damage by dairy animals. Treated wood can be toxic to animals if animals are allowed contact with it either through the skin or ingestion. Animal contact with toxic materials can also result in contamination of milk produced by the animals. Avoid the use of treated wood or other noxious substances in areas where animals are housed or can access it, and where animal feed is stored. Do not use bedding made from treated wood.

Slatted floors should not be used in cases where milking is conducted in an open parlour (milking area). Slatted floors covering manure storage pits may permit strong odours to persist which can affect the organoleptic characters of the milk, particularly when ventilation is not adequate.

7.3 Subject to subsection (4), floors and alleyways of a dairy barn shall be:

a) constructed of concrete or other impervious materials; and
b) maintained in good repair and free of standing water.

7.4 Subsection (3) does not apply to bedded areas of loose housing barns or stalls in a free stall barn.

Interpretative Guideline

Floors and alleyways of a dairy barn should be constructed of concrete or other durable, impervious material to allow proper cleaning. To prevent animal injury floor finishes should provide a firm, non-slip (i.e. grooved) under footing. Flooring should be maintained in good repair, free of cracks and standing water.

Note - this requirement does not apply to stalls in a free stall barn or bedded areas of loose housing barns. See section 23.

8.

8.1 A dairy barn shall

a) have walls that are hard, cleanable, and light-coloured;
b) if required, have stall platforms, gutters, floors, mangers and alleyways made of concrete or other impervious material and be constructed in a manner to prevent random cracking;
c) have ceilings that are hard, cleanable, and light-coloured;
d) subject to section 23(2), have manure removed from alleyways and gutters on a regular basis such that dairy animals remain clean; and
e) if required, have stalls designed and maintained such that dairy animals are kept clean, dry and comfortable;

8.2 A milking barn shall

a) be provided with light that is shielded so as to prevent breaking glass from falling into open milk containers; and
b) be illuminated in a manner that permits the person conducting the milking operation to
    i. assess the cleanliness of the animals and udders, and condition of the milk while milking; and
    ii. perform milking operations in a sanitary manner.

Interpretative Guideline

Sanitary conditions are required to prevent contamination of the milk. Construction materials such as concrete or other impervious material can be kept clean more easily than wood or similar material. This will assist to ensure cows flanks and udders will be clean. Interior surfaces should be smooth, properly finished and maintained. Such surfaces could include painted wood, tile, concrete, plaster, brick, vinyl or aluminum siding or other suitable impervious material.

Measures to minimize dust and extraneous material from contaminating the milk should be practised, such as regular maintenance, including cleaning lines and sweeping cobwebs, etc. Tight fitting ceilings help prevent dust and debris from falling into the milking area.

Adequate light is needed to carry out operations within the facility and to ensure proper visual examination for cleanliness.

Lights in barns need to be shielded in cases where milk is held in open containers (i.e. pails and step savers).

There should be no accumulation of leftover feed, bedding or manure that results in odour, pest, contamination problems, etc.

Milking Parlour

9.

9.1 A milking parlour shall:

a) be equipped with or have ready access to a pressurized hot and cold running water system having non-detectable levels of Escherichia coli bacteria per 100 ml. and that is protected from any source of contamination for the water that comes in contact with milk equipment;
b) be equipped with pipes, hoses and nozzles that are installed and arranged in a manner that permits cleaning of the parlour and equipment;
c) if necessary, be equipped with a ventilation system to eliminate condensation and odours that may affect the organoleptic characteristics of the milk;
d) if necessary be equipped with a heating system to prevent freezing;
e) be illuminated in a manner that permits the person conducting the milking operation to:
    i. assess the cleanliness of the animals and udders, and condition of the milk while milking; and
    ii. perform milking operations in a sanitary manner;
f) have walls and ceilings that are:
    i. covered with hard, smooth, washable, light-coloured, waterproof material; and
    ii. free of indentations, loose scale, pitting and cracks;

g) have the lower portion of the walls, above floor level, constructed of concrete or other impervious material;
h) be kept free of animals other than those of the dairy animal species kept for the purposes of milking; and
i) be kept free of animals except during milking times.

Interpretative Guideline

The water used in the parlour for washing and/or sanitizing internal and external surfaces of the milking equipment or any water that may come in contact with this equipment must have non detectable levels of Escherichia coli bacteria per 100 ml. to reduce the risk of contamination of the milk. There should be adequate hoses and nozzles to allow for cleaning of the entire parlour, holding area and equipment. Proper water temperatures for the cleaning of equipment must be maintained. Ventilation should also be installed to prevent condensation and strong odours which may affect the smell or taste of the milk.

The lighting in the parlour must be adequate enough to allow for proper operation and cleaning of the milking equipment. Also, it will permit ideal conditions for inspection of animals, milking equipment, and the milk during milk harvest.

Depending on parlour and barn design, all walls and ceilings that are part of, or directly adjacent to, the milking operation must be covered with a material that will permit cleaning and maintenance of a sanitary environment. Its light colour will allow for increased lighting and show that surfaces are clean when dirt is removed. Surfaces that consist of bare wood, flaking paint and disrepair are not permitted.

The bottom portion of any parlour walls must be constructed of concrete or other durable, waterproof material. The purpose is to make cleaning more effective and to reduce possible water damage over time.

No other animals are permitted in the milking area except for those dairy animals being milked. Other animals may contaminate the environment or the milk being harvested.

9.2 Doors, windows and all openings leading to the outside must be designed and maintained to minimize the entry of insects, birds, rodents or other pests.

Interpretative Guideline

Barns which have a parlour design consisting of a closed–in, separate room for milking, must have all openings leading to the outside designed to minimize the entry of insects, birds, rodents and other animals and other pests. Entry of these pests in a parlour puts them in close proximity to the milking equipment and ultimately the milk. Doors and windows can be kept closed and other openings (including windows and chimneys) can be screened. Ventilation should also aid in minimizing the entry of insects, odours and dust particles, where possible.

9.3 The floor, ramps and platforms of a milking parlour shall
a) be constructed of concrete or other impervious material;
b) be free of cracks and crevices;
c) be constructed to allow effective cleaning; and
d) have covered drains, equipped with traps, that are sloped so as to flow into a wastewater drainage system.

Interpretative Guideline

Any floors, ramps, platforms and alleys associated with the milking parlour must be constructed of

concrete or other durable, waterproof material. This material makes cleaning easier and will allow for proper drainage when constructed properly. Drains should be covered to prevent splashing and equipped with traps to prevent odours and gases from entering the parlour. Drains should also empty into an approved wastewater drainage system.

9.4 A milking area must meet the requirements of item 9 (1) a), b), c), d), e), h), i) and 9 (3) a), b), c), d) and if applicable, the requirements of paragraph 9 (2).

An automatic milking system may only be installed in premises that meet the requirements of 9 (1) a), b), c), d), e), f), h).

The milking area and the automatic milking system premises must be separated from the rest of the dairy barn by a holding area with a clean floor free from accumulation of manure.

Interpretative Guideline

The term 'milking area' applies to the designated area used for milking which is not configured as a parlour with walls and a ceiling, yet remains separated from the housing area and milk house. Milking areas should follow the same general requirements defined in sections 9(1), 9(3), and in some cases, 9(2), however milking areas are not required to have walls or ceilings as stated in subsections 9(1) (f) and (g).

Similarly, where an automated milking system (AMS) is installed, this set up should follow the same requirements defined in sections 9(1).

The milking area and AMS set up should be separated from the animal housing area with floors that can be cleaned regularly to ensure manure does not accumulate. This will ensure that animals entering these areas are not tracking manure into the milking stations thus keeping them cleaner and minimizing odours.

Milk House

10.

10.1 A producer shall have a milk house used exclusively for

a) cooling and storing milk; and
b) cleaning, sanitizing, storing materials and equipment used in the production and handling of milk.

10.2 A milk house shall

a) be fitted with solid, self-closing, tight-fitting doors that are kept closed when not in use where the milk house enters directly into a milking barn or housing area;
b) be located, constructed and maintained so as to prevent any objectionable odours from entering the milk house; and
c) be accessible from an exterior entry point that does not require travel through animal traffic areas.

10.3 The floors of a milk house shall

a) be constructed of washable, waterproof material and be sealed at the intersection with the walls
b) be free of indentations, cracks or crevices
c) be sloped to covered drains, equipped with traps, to ensure the drainage of wastewater;

d) have a wastewater drainage system; and
e) have a concrete or impervious curb rising above the floor.

10.4 A milk house shall
a) be equipped with a pressurized hot and cold running water system having nondetectable levels of Escherichia Coli bacteria per 100 ml.,
   i. with pipes, hoses and nozzles installed and arranged in a manner that permits cleaning and rinsing of the milk house floor, equipment, and bulk milk tank; and
   ii. that is protected from contamination to the water;
b) where necessary, be equipped with a ventilation system to eliminate condensation and odours that may affect the organoleptic characteristics of the milk;
c) where necessary, be properly heated to prevent freezing;
d) have sufficient lighting to permit milk handling operations, inspection, cleaning and sanitizing of the premises and equipment;
e) have walls and ceilings that are
   i. covered with hard, smooth, washable and waterproof material; and
   ii. free of indentations, pitting and cracks; and
f) be kept free of animals.

10.5 Lights in a milk house shall be protected by shatterproof covers or coatings.

10.6 All exterior doors, windows and openings of a milk house shall be closed or fitted with screens or other devices to prevent the entry of pests.

Interpretative Guideline

A suitable, separate room is required for the cooling, handling and storing of milk and for the cleaning, sanitizing and storage of milk utensils, in order to minimize contamination of the milk and/or utensils. Cleansers, sanitizers and other materials should be stored in a manner to prevent contamination of the milk. The milk house is to be used for no purpose other than those referred to in 10 (1) (a) and (b).

Openings between the milk house and the dairy barn or parlour must be equipped with solid, tight-fitting, self-closing doors to minimize entry of dust, insects, animals and objectionable odours. A separate exterior entry point to the milk house prevents persons such as the bulk milk grader from having to enter the milk house via an animal traffic area and therefore reduces the possibility of spreading biological hazards to the milk house and to other farms.

Floors are to be constructed of good quality concrete or equally impervious material such as tile or brick, laid with impervious material, free of breaks, depressions, cracks and surface peeling. The slope to the drain should be a minimum of 1/4" to the foot and such that there are no pools of standing water in the milk house. The joints between floor and wall should be curved and impervious for easy cleaning and drainage. Drains should be covered to prevent splashing and equipped with traps to prevent odours and gases from entering the milk house. Drains should also empty into an approved wastewater drainage system.

Cleanliness in the milk house is essential to prevent contamination of milk and equipment. All surfaces must be designed to be readily cleanable. Light coloured painted wood, sheet metal or vinyl siding, tile, block, brick, concrete or other impervious surfaces may be used.

Ventilation must be adequate to minimize odours and condensation on floors, walls, ceilings and milking utensils and equipment.

Heating systems, if installed, must not produce gases or fumes which may contaminate the milk.

The milk house must have a safe and pressurized supply of hot and cold water. Water used for milking equipment sanitation, regardless of source, should be tested annually for Escherichia coli bacteria. The water sample should be collected as close as possible to the point of use (i.e. from the tap in the milk house), not from the source (i.e. from a well). The water test results must be non-detectable for Escherichia coli bacteria per 100 ml. If the water is contaminated, the water should be re-sampled and/or treated until the water meets the standard.

The water supply must be protected from potential sources of contamination, i.e. surface water runoff, manure, etc. Use an anti-backflow device or air gap on hoses connected to milk house and barn water supply. If any hose connected to the milk house water system is used to fill pesticide sprayers or containers, the hose should have an anti-backflow device or air-gap to prevent back-siphoning; hence, contamination of the water.

Adequate lighting is required in order to permit inspection, cleaning and sanitizing of the room and equipment. Shatterproof covers or coating of lighting prevents broken glass from falling on equipment or contaminating milk.

Animals including cats and dogs are prohibited from the milk house.

11.

11.1 A milk house shall contain

a) a dual-compartment sink with a concave bottom, or a single compartment sink with concave bottom for washing equipment, and a separate sink for washing hands;
b) the necessary materials for sanitary washing and drying of the hands; and
c) a cupboard, stands or shelves of non-corrodible material located off the floor to store the materials, and equipment used in the production and handling of milk.

11.2 All sinks referred to in subsection (1) shall be equipped with a trapped drain connected to a wastewater drainage system.

11.3 Where a milk house is provided with a washroom, the washroom shall be located and maintained so that it does not constitute a source of contamination for the milk or equipment.

Interpretative Guideline

Sink compartments should be of sufficient size to accommodate the largest utensil or container used. The clean-in-place sink for a pipeline system may be accepted as one part of the two compartment sink. Utensil and equipment wash sinks are not considered to be hand washing facilities.

A separate compartment or sink with appropriate hand soap and single service paper towels (or other sanitary means) to wash and dry hands is required to minimize contamination of the milk, milk sample and equipment from on-farm and off-farm personnel. All sinks shall drain through a pipe equipped with a trap connected to a waste water drainage system and shall not empty onto the milk house floor.

To facilitate proper cleaning of the floor, materials should be stored off the floor in a cupboard, or on shelves made of non-corrodible materials. Only materials indicated in section 12 may be stored in the milk house.

Lavatories should be located and maintained so as not to constitute a source of contamination to the milk or equipment. A lavatory that does not open directly into the milk house helps

prevent pathogenic organisms from body wastes of persons from contaminating the milk house. The lavatory should contain a hand washing facility.

The toilet should be connected to a separate and approved sewage disposal system and should be constructed and operated in accordance with local requirements. All doors to the lavatory should be tight-fitting and self-closing. All other openings in the lavatory should be screened.

12.

12.1 All cleaning materials, used in the production and handling of milk, shall be stored in a location and manner that will not contaminate the milk.

12.2 No pesticides, or other toxic products, other than those that are directly related to the operation of a milk house, shall be stored in a milk house. Those pesticides and toxic products shall be stored and used in a manner that will not contaminate the milk.

12.3 All veterinary drugs stored in a milk house, shall be kept in a closed cupboard or refrigerator in a manner that prevents contamination of the milk.

Interpretative Guideline

Steps must be taken to minimize the potential of contamination of the milk supply, therefore proper storage of items necessary to the milking operations and those items over which close control is to be maintained must be properly stored.

Cleansers, sanitizers and other materials must be stored in a manner to prevent contamination of the milk.

Drugs, medicinal products and chemicals must be clearly labelled and stored in a manner such that contamination of the milk or milk contact surfaces is not possible. Drugs must be stored according to label directions and refrigerated if necessary. An appropriate storage area is access-controlled, clean, dust-free, cool and protected from light. It should be inaccessible by children, animals and insects.

Drugs that are used to treat non-lactating animals should not be stored in the milk house.

13.

13.1 A milk house shall be designed in a manner that

a) permits the installation of a bulk milk tank having free space around it to allow for the required operations such as inspection, transfer of milk and cleaning;
b) the ceiling is high enough to permit the inspection and sampling of the milk as well as the reading and complete removal of the gauge or dipstick of the bulk milk tank.

13.2 In cases where milk is shipped from the bulk milk tank, a milk house shall be equipped with a hose port that is keep closed when not in use, located in a wall close to the bulk tank outlet through which the hose connecting the bulk milk truck to the bulk milk tank may pass to permit collection.

13.3 There shall be

a) a hard surface outside the milk house and directly below the hose port, that is connected to the main entrance of the milk house by a sidewalk constructed of hard material, that is large enough and adequately maintained to keep the hose from the bulk milk truck clean;
b) a grounded exterior electrical outlet adjacent to the hose port and controlled by a bipolar switch located on the interior wall of the milk house in a location accessible to the bulk milk grader;

c) in cases where milk is shipped from the bulk milk tank, a window in the milk house that permits the bulk milk grader to observe the transfer pump compartment of the bulk milk truck from inside the milk house.

13.4 The refrigeration compressor, vacuum pump of the milking system, water heater and the water pump, shall be installed and operated in a manner that does not contaminate the milk.

Interpretative Guideline

The milk house structure, design and equipment arrangement should allow for proper functioning, adequate cleaning, visual examination and maintenance of the equipment. It should also allow personnel to carry out various functions and duties within the milk house. Ceilings should be high enough to allow the complete opening of manhole covers of bulk tanks for visual inspection of the milk and interior of the bulk tank, ease of procurement of a representative sample as well as complete removal of the dipstick for reading, manual cleaning and inspection.

The transfer of milk from a bulk tank to a milk transport vehicle by a hose shall pass through a hose port located in the milk house wall. The hose port should be kept closed except for when it is in use. It should be maintained in good repair, free of sharp edges that could damage hoses or injure personnel, and be easily accessible.

The area outside the milk house and adjacent to the hose port shall be easily cleaned, well drained and constructed and maintained to minimize contamination of the tank vehicle hose and personnel.

Appropriate electrical connections are required for the removal of the milk from the bulk tank and the safety of the bulk milk grader. The ability to observe the transport vehicle minimizes the potential for spillage of raw milk and other potential problems during the milk transfer operation.

These items [13. (4)], whenever possible, are to be located in a utility room, away from milk house functions. Such equipment may leak oil, give off dust, dirt, debris, and fumes and may generate heat and create ventilation difficulty in the milk house. This equipment increases the difficulty in maintaining a clean, tidy, well ventilated milk house. The utility room floor should have adequate drainage to a trapped and covered floor drain which may be connected to the milk house water waste drainage system.

14.

14.1 A bulk milk tank shall be installed in a milk house.

14.2 A bulk milk tank installed in a milk house shall

a) be used exclusively for the storage and cooling of milk;
b) have a sufficient capacity to hold the milk between pickups;
c) be equipped with a dipstick or gauge or other measuring device authorized by the Regulatory Authority to permit determination of the volume of milk contained in the tank on the basis of the calibration table bearing the same serial number as the dipstick or gauge and the tank;
d) have mechanical agitation capable of restoring uniformity of all milk constituents throughout the tank without splashing or churning of the milk;
e) not use air agitation;
f) be equipped with intermittent controlled agitation that provides a minimum of 5 minutes of agitation every hour or longer if necessary to keep the milk homogeneous;

g) be suitable for cooling the milk and maintaining it at a temperature greater than 0°C and less than or equal to 4°C;
h) be equipped with a thermometer in working order bearing graduations from at least 0°C to 50°C and showing the temperature of the milk contained in the tank to within 1°C;
i) be equipped with an outlet cap.

Interpretative Guideline

The bulk milk tank must meet certain requirements, which includes:

- *Be used exclusively for the storage and cooling of milk.*
- *Be equipped with mechanical agitation capable of restoring the uniformity of the milk, otherwise when left idle, cream will separate and rise to the surface. Since the milk grader must collect milk samples, whether for payment, microbiological or composition testing, it is important to ensure uniformity of the milk in the tank before collecting samples. In addition, proper agitation will prevent milk from freezing on the tank wall while the milk at the surface remains too warm. Air agitation devices are not allowed because they can lead to milk contamination.*
- *Be equipped with a dipstick or measuring tube designed to permit determination of the volume of milk contained in the tank. The dipstick must be properly seated in the holder to provide for an exact reading. When a measuring tube is used, it must be transparent and graduated to provide for an exact reading.*
- *In addition to the calibration of a bulk milk tank, the serial numbers on the tank, dipstick and calibration table must be identical to ensure accuracy of the measurement.*
- *The bulk milk tank should be of sufficient capacity to allow proper cooling, agitation and measurement of the milk produced by the dairy herd.*
- *Be capable of cooling and maintaining the milk between 0°C and 4°C throughout storage to maintain the quality and safety of the product.*
- *Be equipped with a thermometer bearing a graduation range of at least 0°C to 50°C that is accurate to 1 °C and positioned in such a way that it can be read easily.*
- *To protect the outlet valve from contamination, the outlet cap must be kept clean and in place.*

14.3 When any portion of a tank extends outside the milk house, the following are required:
a) The manhole, vent and outlet must be located inside the milk house;
b) The portion of the tank mounted outside the milk house must be in a clean, area, which will allow the tank to be maintained in a clean and sanitary manner, and will allow sanitary access to any external agitator mounts during service;
c) Access to all parts of the tank, except for the bulk-headed wall, must be maintained to allow inspection for cracks;
d) If a portion of the tank is outdoors it must be protected from animals and vehicles by design or barrier and the motors and agitator shafts must be properly protected with appropriate weatherproof installations;
e) (e) The tank leg supports must be sufficiently mounted to prevent torsion and cracking in the tank;
f) The tank must not be used for a wall or ceiling support;
g) The walls shall be tightly sealed with a gasket around the tank where the tank is bulk headed.

Interpretative Guideline

As farm sizes and milk production have grown, larger milk bulk tanks have become more common on dairy farms. Many modern milk house designs incorporate bulkhead installations of larger bulk tanks that extend through a wall. Bulk heading is done to provide a clean environment for bulk milk collection activities (milk house) and to provide separation from

other work activities that may at times generate contamination. A large part of the bulk tank, including the agitator motor, may be housed in a separate room that is also often used for cleaning milking equipment, storage of cleaners, and housing utilities such as water treatment systems, refrigeration compressors, vacuum pumps, water heaters and water pumps. The portion of the bulk tank that extends beyond the milk house shall not extend into an animal housing or milking area.

Upright milk silos shall also have access points such as manholes, vents and outlets located in the milk house. Vent outlets need to be screened and protected to prevent entry of pests or contaminants, yet also allow air flow.

14.4 A bulk milk tank shall be:

a) emptied at least once every two days for cow milk, unless approval for a longer period is granted by the Regulatory Authority; and
b) cleaned and sanitized following each complete transfer of milk to the bulk milk truck and at any other time that the tank is emptied.

Interpretative Guideline

Milk is usually picked up at the farm every two days, in order to optimize the quality and safety of the milk destined to processors. After the pickup, the tank must be thoroughly cleaned and sanitized to prevent any contamination of the subsequent milkings.

14.5 Milk from a dairy source, other than a cow may be stored in facilities other than a bulk milk tank provided that:

a) the facilities are accessible for inspection, handling, washing and sanitizing;
b) the facilities meet the standards established in sections 14(2) (a), (g) and (h); and
c) the storage facilities have been inspected and authorized by the Regulatory Authority.

Interpretative Guideline

If approved by the Regulatory Authority, milk from species other than cows may be stored in containers other than a bulk milk tank. Cooling facilities often consist of a tub with circulating cold water in which milk containers are placed. For sheep's milk, freezing can also be used.

Milk storage containers shall meet the requirements of section 17.(a) [used only for storing milk] and (c) ['food grade' surfaces]. Articles intended for single use shall only be used once. This would include bags, liners for pails, etc. Pails and lids must be thoroughly cleaned, sanitized and dried after emptying and before milking.

15.

15.1 The milk contained in the bulk milk tank or in other facilities shall be maintained at a temperature of greater than 0°C and less than or equal to 4°C until collection.

Interpretative Guideline

Milk produced by healthy animals under clean conditions usually contains relatively few bacteria immediately after milking. Bacteria may multiply to very high levels in a short period of time unless the milk is cooled quickly. When the milk is cooled quickly as required above, there is a much slower increase in the bacterial content of the milk.

Cooling helps to preserve freshness and delay spoilage. Milk held at temperatures above 4°C elevates bacterial content and decreases shelf-life of finished products.

15.2 The temperature prescribed for milk in subsection (1) shall be achieved in the following manner:

a) the first milking placed in the bulk milk tank shall be cooled to 10°C or less within one hour, and further cooled to a temperature of greater than 0°C and less than or equal to 4°C within two hours after the completion of milking;

b) when subsequent milkings enter the tank, the blend temperature shall not rise above 10°C and milk shall be cooled to a temperature greater than 0°C and less than or equal to 4°C within one hour after the completion of milking;

c) in the case of an AMS:

i. the temperature must be greater than 0°C and less than or equal 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). Please note: the 2-hour delay includes the time that milk is in the buffer or storage tank.

ii. the blend temperature must not ever go above 4°C for longer than 15 consecutive minutes.

Interpretative Guideline

Adequate milk cooling is addressed by putting in place time limits to reach specific temperatures. Milk cooling times are measured from the completion of milking.

In some cases, depending on the equipment and most notably with automatic milking systems (AMS), the milk may go through a buffer tank before reaching the cooling tank. In such cases, the 2-hour time limit provided for includes the period of time the milk remains in the buffer tank.

15.3 Alternative storage temperature regimes for raw milk used in the manufacture of specialty products may be approved where necessary, by the Regulatory Authority, as long as health and safety standards are maintained.

Interpretative Guideline

Alternative temperatures may be considered for specialty type products where process steps are closely monitored and food safety assurance practices are followed. For example, it may not be necessary to cool the milk to between 0°C and 4°C if it is going to be processed within an allowable timeframe.

16. In addition to the cooling requirements specified in 15(1) and 15(2) sheep milk may be stored in frozen storage.

16.1 Milk that is to be frozen must be frozen within 72 hours and remain in a frozen state until received by processor.

16.2 Raw sheep milk must be cooled to 4°C or less before adding to a container of frozen milk.

16.3 Each container of milk must be uniquely identified and a record shall be kept by producer so that milking dates and producer can be traced to that container.

16.4 A daily record of freezer temperature shall be made.

16.5 Reusable milk storage containers must be thoroughly cleaned, sanitized and dried after emptying and before next use.

16.6 Articles intended for single use such as plastic bags and pail liners shall only be used once. Containers shall be stored such that the exteriors remain clean and free of contaminants.

16.7 The freezer unit must be equipped with an accurate temperature measuring device.

16.8 Freezers and storage racks shall be:

a) free of pits and corrosion; and
b) maintained in a sanitary condition while in use.

Interpretative Guideline

All sheep milk shall be cooled to between 0° and 4°C immediately after harvest as described in S. 15. (a) and (b). In most cases this is achieved by cooling the milk in a bulk tank or in cans or pails placed in a circulating cold water bath also known as a can cooler.

If freezing sheep milk, it should be placed in frozen storage within 72 hours after milk harvest. Only after the milk has been cooled to between 0° and 4°C may it be placed in frozen storage. In some cases this will first require transferring the milk to plastic bags or containers suitable for placement in frozen storage. It is permissible to top up partially full pails of frozen milk; however milk must first be cooled to between 0° and 4°C prior to addition to frozen milk.

Walk-in freezers with racks to separate and store milk containers are preferable to home-type freezers which have no air flow and take much longer to thoroughly freeze the milk.

Once frozen it is important that the milk remains frozen until ready to be processed. Sheep milk should be rapidly frozen and stored at -18°C or lower to prevent negative impacts on the quality and yield of finished products made from the milk. Studies have found that casein destabilization occurs in frozen sheep milk stored at improper temperatures for too long. Frozen sheep milk may be stored for up to 12 months at -27°C. If freezing sheep milk in a chest freezer, storage should be limited to a maximum of 3 months. Freezer temperatures should be monitored regularly to detect practices or equipment failures which could lead to product temperature fluctuations.

The interiors and exteriors of storage pails and lids shall be cleaned and dried immediately after emptying and before stacking. Stacking of wet pails is <u>not</u> acceptable. Empty containers and lids shall be stored and transported under sanitary conditions. All pails shall be sanitized immediately prior to use.

Freezer frost build-up should be kept to a minimum so as not to impede the function of the freezer. It is recommended that freezers be totally emptied, thawed and all interior surfaces cleaned as required.

Milk Handling Equipment

17. All equipment used for the purpose of collecting, cooling, holding, storing and transferring milk shall:

a) be used only for that purpose;
b) be maintained in working order; and
c) have surfaces that come into contact with milk which are:
    i. constructed of non-corrodible materials;
    ii. smooth and free of cavities, open seams and loose particles;
    iii. non-toxic and resistant to damage from cleansers and sanitizers;
    iv. unaffected by milk and which do not adversely affect the safety and quality of the milk.

Interpretative Guideline

Acceptable milk contact surface materials include stainless steel, any equally non-corrosive, non-toxic metal, shatter resistant glass, plastic or rubber like material. Plastic and rubber like material must be relatively inert, resistant to scratching or scoring, decomposition, crazing, chipping, and distortion under normal use. In addition, the material should be non-toxic, fat resistant, non-absorbent and insoluble and should not release component chemicals or impart flavour or odour to the product. Materials should be inspected and replaced as required.

Milk equipment, containers and utensils may support bacterial accumulation and growth unless they are smooth, easily cleaned, made of durable, non-corrodible and non-toxic material. All surfaces must be accessible for cleaning, maintenance and inspection. Single service items such as filters must only be used once.

Clean-in-place equipment is to be self-draining. Pipelines shall be sloped and gaskets, where present, will be in good condition and form a smooth, flush interior surface. All welded areas and joints shall be smooth, free of pits, cracks and other defects.

All milking equipment, bulk milk tanks and all other milk contact surfaces need to be easily cleaned and able to be visually inspected. All outside surfaces of milk handling equipment are to be kept clean.

HYGIENE DURING MILKING OPERATIONS

18. The premises, materials and equipment of the dairy barn, milking parlour and milkhouse shall be kept clean and maintained in good repair and operational condition.

Interpretative Guideline

The general state of premises is important for producing a safe, wholesome, natural food product as well as the maintenance of a credible image of the dairy industry. Premises that are clean and in good repair minimize potential for contamination, and create a suitable working environment in handling a food product. Potential contamination risks can be minimized by ensuring:

- *Contaminants such as dead stock, other animals, and accumulations of manure are kept separate from milking animals;*
- *The area is kept tidy and free of clutter and unnecessary items;*
- *Mangers, waterers and feed bunks are cleaned regularly to remove accumulations of old or decayed feed that may attract pests;*
- *Floors are regularly cleaned of accumulations;*
- *Dairy barn ceilings, walls, partitions, overhead structures and fixtures are cleaned, painted or whitewashed annually (or as required) to eliminate buildups of cobwebs, dust and fly specks.*

19.

19.1 A person who is conducting a milking operation shall:

a) ensure their hands are clean at all times by washing their hands and drying them with single service towels before the start of milking, and any time hands are soiled;
b) wear clean clothing;
c) in a case where the person has an open lesion wear a waterproof dressing that prevents contamination of the milk.

19.2 In the case of hand milking, a person shall not engage in wet hand milking.

19.3 No person, infected with or carrying any communicable disease that may be transmitted through the milk, shall work in a capacity that involves the production, handling, storage or transportation of raw milk.

Interpretative Guideline

Wearing rubber or latex gloves can minimize milk contamination and spread of microorganisms during milking. They are more easily cleaned and sanitized than bare hands.

Hands and rubber gloved hands should be washed with an appropriate cleaner and dried with a single service towel to prevent contamination immediately before milking, before performing any milk house function and immediately after interruption of these activities. Open lesions are a surface source of bacteria that must be properly contained with waterproof coverage.

Wet hand milking is prohibited as it is a ready source of contamination of the milk.

20.

20.1 Prior to milking, a person who is conducting the milking operation shall:

a) ensure that the sides, flanks, udder and belly of the animal are clean;
b) clean and sanitize the teats with a product approved for udder hygiene and dry them hygienically;
c) examine the first stream of milk from each teat and discard it in a manner that prevents contamination of the milking area;
d) discard any abnormal milk that is collected.

20.2 In cases where milking is performed by an automated milking system, the producer and/or operator must ensure that the animals are clean and that the system will:

a) clean and sanitize the teats and discard the first milk streams; and
b) detect and discard abnormal milk.

Interpretative Guideline

Cleanliness of the lactating animals is one of the most important factors affecting the bacterial content of the milk. Udders and teats are contact surfaces which may contaminate the raw milk supply. Environmental conditions such as stagnant water, mud, and manure are likely to contaminate udders and flanks of animals housed in or allowed access to these conditions. Udder hair may be clipped or flamed to facilitate udder cleanliness.

Forestripping stimulates milk let down, reduces bacteria and somatic cell counts (SCC) in milk by removing milk in the teats which contains higher levels of bacteria and somatic cells, and assists in the detection of mastitis. This stream of milk (first 2 or 3 strippings from each teat) should be properly discarded to avoid contamination (never strip onto milking stall bedding or the hands of the operator).

Udders and teats must be clean and dry before milking, any dirt or moisture present may contaminate the milk. Application of sanitizing solutions to the teats followed by thorough drying immediately prior to the time of milking will assist in the elimination of bacteria and is helpful in the control of mastitis. Teats should not be re-contaminated in any manner before attaching the milking cluster. Single use towels, or reusable laundered towels may be used.

Automated milking systems (AMSs) are capable of detecting abnormal milk using a variety of methods including photosensitivity (color of the milk), conductivity, heat and flow.

AMSs automatically clean teats before milking. Some AMSs do not sanitize teats before milking, so it is important for producers to ensure their animals are clean.

21. Immediately after milking each animal, teats shall be sanitized using a teat dip solution approved for that purpose under the *Food and Drugs Act and Regulations* (Canada).

Interpretative Guideline

Teat dipping is universally recognized as a method of preventing mastitis. It is useful in destroying bacteria living on teat skin. Teat dips approved by Health Canada are identified by a Drug Identification Number (DIN). They must be used according to label directions.

22. Bedding shall not be changed or disturbed while milking is performed in the dairy milking barn.

Interpretative Guideline

Minimizing the disturbance of the bedding reduces the likelihood of dust and extraneous material contaminating the milk.

23.

23.1 Subject to subsection (2) solid and liquid manure shall be removed daily from the dairy milking barn.

23.2 Manure may be permitted to accumulate in a loose housing barn provided there is sufficient bedding to ensure a clean, dry rest area for the dairy animals.

Interpretative Guideline

Daily, routine removal of manure reduces the chances of environmental contamination of the milk, helps to keep animals clean and disease-free, reduces breeding and harbouring locations for insects and vermin and promotes a general clean environment.

When a tie stall barn is used for housing only, the manure must be removed daily.

24. All milk shall be filtered prior to storage.

Interpretative Guideline

Foreign matter such as straw and flies may result in contamination of milk. Filters must be replaced after each milking. Filters must be stored and handled in a manner to prevent their contamination prior to use.

25. Where more than one dairy species are milked in the same operation, milking, collection, storage and transfer equipment shall be operated in a manner that prevents mixing of the milk between dairy animal species.

Interpretative Guideline

Milk from one species must not be mixed with milk from another species.

26. Equipment that comes into contact with the milk during milking shall:

a) be rinsed, washed, rinsed and drained within one hour after use;
b) when not in use, be stored in a manner that prevents contamination; and
c) be sanitized and drained immediately before use.

Interpretative Guideline

Milk cannot be kept clean or free of contamination if permitted to come into contact with unclean equipment and utensils. All milk contact surfaces of equipment and utensils must be properly cleaned, stored and sanitized prior to use.

Immediately following milking, all milk contact surfaces should be rinsed with warm water to

remove as much of the residual milk as possible and to prevent milk from drying on the milk contact surfaces. The rinse should be followed by a hot water wash using a procedure combination of time, temperature and solution strength as prescribed by the supplier of the equipment cleaning products. Cleaning procedures should be designed to maximize cleaning efficacy with acceptable water supply and equipment design. The wash should be followed by a rinse to remove residues and prevent corrosion. Equipment should be allowed to drain immediately after rinsing to prevent contamination.

Cleaning of equipment and utensils does not ensure the total removal or destruction of all bacteria that may have been present. Time between the final rinse, through storage to next use, allows residual bacteria to grow and contamination of the clean surfaces to occur. Storage facilities and location of the storage facility should be constructed and located to minimize the probability of post wash contamination. Contamination may be from the environment, such as the air, the storage facility (rack, shelf, hooks, etc.) or condensation that may form on the milk contact surface.

Proper sanitizing of all milk contact surfaces immediately prior to use is required to ensure residual microorganisms are destroyed. Milk contact surfaces can be sanitized by immersion in hot water at 77^0C for at least 5 minutes, or by immersion or circulation for 1 minute in a chemical sanitizer such as chlorine at an acceptable strength of 100-200 PPM. All surfaces must be completely wetted. Any other method demonstrated to be equally effective may be used.

In the case of automated milking systems (AMS), the following elements are needed in order to ensure that milking operations are performed under sanitary conditions.

- *Adequate design of the AMS for an easy and effective cleaning and sanitation process.*
- *The design of the system's components (receiving jars, tubes, brushes, hydraulic powered arms, etc.) shall be such that exposure to animal waste is limited.*
- *The AMS platform should be designed and maintained in order to avoid accumulation of animal waste and debris.*
- *In the case of mobile AMS, a designated area is required to conduct the cleaning and sanitation process. This area should be constructed of materials that are hard, and impervious. Such surfaces could include: tile, concrete, plaster, fiberglass, brick, vinyl, aluminum siding, painted wood or other suitable impervious material. This area must also have access to an acceptable supply of hot and cold water.*
- *When milking sick/suspect cows, milk contact surfaces shall be properly cleaned and rinsed to keep the milk separate from the milk of healthy cows.*

27. A producer shall have procedures for the milking equipment sanitation program accessible in the milk house and ensure that they are followed.

Interpretative Guideline

Accurate rinsing, washing and sanitizing instructions are essential for proper cleaning of equipment. These instructions are generally provided by the equipment and chemical suppliers. All personnel responsible for cleaning and sanitizing should know where the procedures are and follow them.

28. A person shall only use a cleaning agent, sanitizer or pesticide that meets the standards established by the Food and Drugs Act or the Pest Control Products Act or that is in the reference listing of accepted construction materials, packaging materials and non-food chemical products published by the CFIA and available through the Internet (http://www.inspection.gc.ca).

Interpretative Guideline

Use of unapproved, or approved chemicals in an inappropriate manner, may result in contamination of milk or damage to equipment.

29. All detergents, sanitizers, insecticides, pesticides and other pest control products shall be kept in their original labeled containers or kept in containers that are labeled to ensure easy identification of the type of products that they contain.

Interpretative Guideline

Use of substances stored in unlabelled containers may result in the chemical contamination of milk, ineffective cleaning or damage to equipment.

ANIMAL HEALTH REQUIREMENTS FOR RAW MILK PRODUCTION

30. A dairy barn shall be used only to house dairy animals being kept for the purposes of milking. Bovine, caprine and equine animals may be housed in the dairy barn provided they are housed in a separate area according to their species.

Interpretative Guideline

Other than dairy animals, all other animals including fowl are to be kept out of the dairy barn to help prevent disease transmission (see Section 30, 32 and 35 for clarification).

It is obvious that in a dairy barn, the presence of cats and dogs is, "inevitable". That is why the regulation "tolerates" these animals except during the milking period (when the milking is carried out in the barn).

Animals are to be segregated to prevent the spread of disease from one species to another.

31. No producer shall sell or offer for sale milk that is obtained from an animal that shows evidence or visible signs of disease transmissible to humans by milk or that adversely affects the quality or flavour of the milk.

Interpretative Guideline

Diseases such as mastitis can have an impact on the quality of the milk and infectious agents can contaminate milk directly (Staphylococcus, Brucella, Streptococcus, Salmonella, etc.). The effects of other diseases may be less direct (e.g. respiratory problems, infections of the locomotive or reproductive systems). Animals with a serious infectious disease such as salmonellosis and bovine viral diarrhea are at an increased risk for developing an environmental mastitis. Any disease requiring treatment with medicines for livestock increases the risk of contamination of the milk by drug residues.

Control and mitigation of zoonotic diseases should be discussed with the farm veterinarian. This should be done to minimize risk to people on the farm and to make appropriate decisions on the ability to return the cow to the milking herd.

Cattle with nonsalable milk should be identified (see article 34 for examples) and their milk should not enter the bulk tank.

32. Dairy ewes shall be kept in separate closed sections when other dairy species are maintained in the same operation.

Interpretative Guideline

A closed section is an area bounded by walls, ceiling, and door(s). This separation is intended to prevent the transmission of diseases (i.e. Malignant Catarrhal Fever (MCF)).

33. Only drugs or products approved for administration to dairy animals under the Food and Drugs Act (Canada), the Feeds Act (Canada), the Pest Control Products Act (Canada), the Canada Agricultural Products Act and any applicable provincial legislation, may be administered to a dairy animal. Medications, drugs and products must be administered as prescribed by a veterinarian or if the medication is authorized for sale without a prescription, it must be administered as directed by the manufacturer's instructions on the label.

Interpretative Guideline

Improper use of veterinary drugs, including insufficient withdrawal times, may result in chemical contamination of milk. Off label and extra label usage of drugs must be under the supervision of, or as prescribed by, a veterinarian.

34. A producer shall clearly identify treated dairy animals that require milk to be withheld and maintain a record of all veterinary drug use.

Interpretative Guideline

Producers need a system to identify cattle that have been treated with a medication that has a milk withdrawal period. Some examples of identification are: leg bands, coloured tape, stock markers, separate groups with no risk of mixing with non-treated groups, marking the animal and the milk or vacuum line in a tie-stall barn, and, for AMSs, enter the animal's ID into the computer system prior to it being treated.

Treated dry cows also need to be marked or separately managed.

Producers must keep treatment records for the use of all veterinary drugs, including usage on calves and heifers. Treatment records should include:

- *Identification of the animal treated*
- *The treatment used (including product, dosage and route of administration)*
- *Time and date of administration*
- *Any milk or meat withdrawals associated with the treatment*
- *Signature or initials of the person who administered the treatment*

35. Calves shall be kept in separate pens or box stalls when housed in the same facility as the milking herd.

Interpretative Guideline

This is to prevent the transmission of disease between cows and calves.

HANDLING AND TRANSPORT OF BULK MILK

36. Any person who performs the duties of a bulk milk grader under this Code shall have completed and passed a training program designed specifically for that purpose, and approved by the Regulatory Authority.

Interpretative Guideline

A bulk milk grader occupies an important position in the producer-processor and Regulatory Authority relationship. He/she determines the volume, acquires representative samples and determines the acceptability of the product. He/she is an important link in milk marketing and

in milk quality control responsibilities.

It is required that bulk milk graders receive training and certification in the proper execution of their duties as required by provincial regulations and only after successful completion can the bulk milk grader perform the required duties.

37. A person who grades or collects milk, operates a bulk milk truck or bulk milk transfer depot, or performs other duties related to the grading, or transporting of milk must be authorized to do so by a Regulatory Authority.

Interpretative Guideline

Bulk milk graders must receive training and be certified as required by the appropriate Provincial Regulatory Authority prior to performing the dues of a bulk milk grader.

38. A bulk milk grader shall:
   a) wear clean clothing while performing any activities, duties or functions under this Code;
   b) wear a waterproof dressing over any open lesion that prevents contamination of the milk;
   c) not enter the animal housing areas.

Interpretative Guideline

By paying special attention to personal hygiene factors, the bulk milk grader may minimize the potential to contaminate milk or any equipment used in the handling of milk.

Bulk milk graders should not enter barns or any area where animals are housed to reduce the possibility of transferring contaminants or diseases from one farm to another.

39. A bulk milk grader shall not transfer milk from a bulk milk tank where:
   a) the milk in the tank has been placed under detention by the Regulatory Authority; or
   b) the producer has been prohibited from shipping milk by the Regulatory Authority.

Interpretative Guideline

Milk must not be picked up from a producer who has been prohibited to ship or from tanks which have been detained by the Regulatory Agency. Doing so will result in the contamination of a larger supply of co-mingled milk.

40. A bulk milk grader, when collecting milk from the bulk milk tank, shall:
   a) use the hose port;
   b) ensure that their hands are clean before handling or touching equipment;
   c) accept or reject the milk contained in the bulk milk tank on the basis of its appearance, odour, temperature or other abnormalities;
   d) measure the volume of milk contained in the producer's bulk milk tank;
   e) draw a representative sample of milk:
      i. by means of the mechanical sampler on the bulk milk truck; or
      ii. directly from the producer's bulk milk tank; using a pipette, sanitized dipper rinsed in the milk prior to sampling or other sanitary sampling device; following agitation of the milk contained in the tank for at least 5 minutes or as otherwise authorized by the Regulatory Authority to assure uniformity of the milk; or
      iii. as otherwise prescribed by the Regulatory Authority;

   f) draw a sample of milk, on a monthly basis or more often as prescribed by the Regulatory Authority, in an aseptic manner following agitation of the milk contained in the tank for 5 minutes or as long as is necessary to assure homogeneity of the milk;

g) maintain all samples at a temperature greater than 0°C and less than or equal to 4°C and deliver them to the responsible person at the processing plant or other designated area;
h) record on a collection report all information required by the processing plant, Regulatory Authority or milk marketing agency; and
i) following transfer of the milk to the bulk milk truck, disconnect the hose, and rinse the interior surfaces of the bulk milk tank with lukewarm or cold water.

Interpretative Guideline

Personal hygiene of the bulk milk grader is important so as to not contaminate the milk during the sampling and testing procedures. Clean hands prevent the contamination of sampling equipment and samples.

Bulk milk graders should be supplied with adequate equipment to carry out the above sampling testing and transfer functions including the following:

- *sampling instruments such as sample containers, sample pipettes, appropriate;*
- *sample carrying equipment to maintain required sample temperatures;*
- *calibrated thermometer to ensure accuracy;*
- *watch, to time the agitation of the milk in the bulk tank;*
- *required recording materials (pen, forms, tags, hand held computers, etc.) to record the required information for milk collection.*

The hose port must be used to pass the hose from the truck into the milk house. The hose is not to go through an open door. Doing so may allow the entrance of pests into the milk house.

Following sampling procedures is critical as the sample is the only representative sample of the milk once the tank has been co-mingled with milk on the truck.

For AMS the bulk milk grader needs to follow any additional instructions for milk collection to ensure that milk is not entering the bulk tank during pick-up.

41.

41.1 The bulk milk grader shall leave the milk in the bulk milk tank, where the milk in the tank:

a) is abnormal in odour;
b) contains objectionable matter or other physical defects or abnormality;
c) is abnormal in temperature;
d) would, if transferred to the bulk milk truck, have a detrimental effect on the milk in the bulk milk truck or on subsequent transfers of milk;
e) is otherwise not of good quality; or
f) cannot be sampled.

Interpretative Guideline

Bulk milk graders play an important role in preventing milk which does not meet regulatory standards from entering the milk distribution and processing systems. Accepting milk not meeting standards will result in the possible contamination of a larger supply of co-mingled milk. The bulk milk grader must also be able to obtain a representative sample of the milk prior to loading the milk onto the bulk milk truck. A representative sample is essential for determining the quality and safety of the individual producer's milk as well as determining the components for the basis of payment.

Normal milk is odourless, mildly sweet in taste, ranges from white to golden yellow in colour, and is free of all extraneous material. Criteria for which milk is determined to be

unacceptable for processing and should be rejected are:

- *colour: Abnormal colour indicates that the milk may contain contaminates such as blood or water. Higher milk fat may make the milk appear creamier in colour; however the milk may still be acceptable for pickup.*
- *odour: Milk that has an objectionable odour may be contaminated or may be starting to spoil. Objectionable odours may include malty, barny, silage, fruity, chemical.*
- *extraneous material: Milk must be rejected if extraneous matter such as insects, dirt, straw or foreign material is present in the milk. Milk must also be free of churned fat or butter balls, and lumps of ice.*
- *temperature: The milk must be stored in the producer's bulk tank greater than 0^oC and less than or equal to 4^oC. The milk must not be frozen. Incorrect holding temperatures have a direct and significant effect on the quality and safety of the milk.*
- *inability to collect a representative sample: If a representative sample cannot be collected in the manner prescribed for any reason the milk must be rejected (i.e. the milk is not accessible due to low volume, properly cleaned and sanitized sampling equipment is not available, or failure of the milk to be properly agitated).*

41.2 The bulk milk grader shall, following the taking of the action referred to in subsection (1), issue a written notice to the producer detailing the reason for the rejection, or any other information required by a Regulatory Authority and as soon as possible thereafter inform the appropriate Regulatory Authority or milk marketing agency of this action.

Interpretative Guideline

The producer should be advised of the defect that caused the milk to be rejected. For each rejection of milk the bulk milk grader should:

- *inform the producer of the rejection including the reason for the rejection. Written notice should be left for the producer in the form of a rejection tag, rejection form, or any other method prescribed by the Regulatory Authority.*
- *tag and /or identify the bulk tank of milk as prescribed by the Regulatory Authority.*
- *inform the Regulatory Authority or marketing agency of the rejection including:*
  - *the date;*
  - *volume of milk that was rejected;*
  - *identified reason(s) for rejection.*

41.3 Rejected milk as per section 41(1) must be identified such that it will not be used for human consumption.

Interpretative Guideline

Each Regulatory Authority will have different methods of identifying rejected milk. This may range from tagging the bulk tank to colouring the milk with an approved food dye. No one must pick up or deliver milk for processing for human consumption that has been rejected.

Transport Vehicles

42. Bulk milk trucks shall be used exclusively for the transportation of milk, dairy byproducts or potable water unless otherwise authorized by the Regulatory Authority.

Interpretative Guideline

Exclusive transport vehicles are necessary due to the potential of cross contamination of products. This includes contamination of milk or milk products by residues left in the

transport vehicle. Even when thoroughly cleaned, trucks previously transporting products such as orange juice or molasses may impart flavors and odours into subsequent loads.

43. A vehicle used to transport milk in containers must be equipped to protect the milk and the containers against any source of contamination. It must also be capable of preventing the temperature of milk from rising above 6°C until it is delivered to the dairy plant.

Interpretative Guideline

Vehicles used to transport containers of milk to processing facilities must be enclosed to protect the containers from environmental contaminants and the elements during transport.

Container storage areas of vehicles must be thoroughly cleaned before loading milk containers and any spills should be cleaned immediately after unloading containers.

No other products or items may be transported in the container storage area when it is being used to transport milk containers.

44.

44.1 Bulk milk trucks shall have milk contact surfaces that are

a) constructed of corrosion resistant materials;
b) smooth and free of cavities, open seams and loose particles;
c) non-toxic and resistant to damage from cleansers and sanitizers;
d) unaffected by milk and which do not adversely affect the quality of the milk;
e) readily cleanable.

Interpretative Guideline

Bulk milk trucks must be able to transport milk or milk products without contaminating or causing a deleterious effect on the milk or milk products.

The milk contact surfaces of the bulk milk truck include the interior of the bulk milk transportation tank, spray ball(s) including associated piping and fittings, milk pump, all milk lines and fittings, milk hose, breather, manhole cover, and all gaskets.

All milk contact surfaces shall be made of stainless steel, rubber or rubber like material, or plastic and the material must conform to the current 3A Sanitary Standards for Stainless Steel Automotive Transportation Tanks for Bulk Delivery and Farm Pickup Service (#05-15).

44.2 The tank of a transport vehicle shall be

a) constructed in a manner such that the temperature of the milk cannot rise more than 2°C in 24 hours; and
b) equipped and designed with sufficient number of spray balls to allow for proper cleaning.

Interpretative Guideline

Since bulk milk transportation tanks do not have cooling capabilities the tank must be designed and insulated to prevent the milk temperature increasing to raise in temperature more than 2°C in a 24-hour period.

Bulk milk transportation tanks are washed and sanitized using clean in place CIP systems. Spray balls distribute the water so that all milk contact surfaces within the tank are fully washed and sanitized during the various wash cycles. The spray balls are built into the tank during construction and there must be an adequate number of spray balls strategically located within the tank to accomplish proper cleaning.

45.

45.1 When in use, the tank and accessories of the bulk milk truck shall be washed and sanitized at least once per day in a manner that prevents contamination of the milk.

45.2 A bulk milk truck shall be equipped with a compartment to store hose, pump and any equipment used in the transfer of milk to protect them from any source of contamination.

Interpretative Guideline

Bulk tank trucks that are used on a routine daily basis for collecting and transporting milk must be washed and sanitized daily. Cleaning and sanitizing operations must include precautions that prevent the possibility of contaminating the milk with cleaning and sanitizing solutions. For example, CIP systems must not be connected to the bulk tank truck until all milk has been unloaded and receiving lines disconnected. Cleaning of truck exteriors and accessories (such as lid gaskets, breathers, hoses and mechanical samplers) should be conducted only after all milk has been unloaded to prevent milk contamination.

It is recommended that bulk tank trucks that have been out-of-service for more than 96 hours be re-washed and/or re-sanitized before use.

Milk Transfer

46. Transfer depots shall:

a) be constructed and maintained to prevent risk of contamination to the milk during the transfer process;
b) provide hot and cold pressurized water having non-detectable levels of Escherichia Coli bacteria per 100 ml. to permit the proper sanitizing of the bulk milk truck and equipment;
c) provide sanitary storage space for equipment used in the transfer of milk; and
d) be maintained free of pests.

Interpretative Guideline

A milk transfer depot should achieve the same levels of cleanliness and sanitation as a processing plant.

A milk transfer depot is a structure consisting of, at a minimum:

- *a roof to protect the tank contents during sampling and unloading (and to enable sampling, unloading and cleaning as necessary);*
- *a concrete or impervious surface sloped to a drain to control spillage, prevent pooling of liquids and to allow for their proper removal;*
- *the drain should be connected to the transfer depot's sewer system such that liquids (water, milk spills, cleaning solutions) are properly disposed of;*
- *a milk transfer depot may be attached to a licensed plant (i.e. similar to a receiving bay yet simpler structure requirements may be more appropriate for small operators).*

There must be a safe, sanitary, and adequate supply of water for use in milk transfer depots for the following tasks:

- *cleaning of the interior of the tanks used to transport milk (if required – some jurisdictions allow plants to make alternate arrangements for truck washing at other facilities);*
- *cleaning the interior of milk transport vehicles (if required);*
- *cleaning milk containers;*
- *cleaning up milk spills;*

- *cleaning milk receiving equipment;*
- *maintaining a clean receiving area.*

The water supply source should meet Health Canada's "Guidelines for Canadian Drinking Water Quality". These guidelines include standards for microbiological, chemical and physical contaminants. In addition, the water source must be protected from potential sources of contamination, i.e.: surface water runoff, animal entry, etc. The water supply should be equipped with the means of preventing any back flow.

Any equipment (such as pumps, hoses, piping) used in the transfer of milk from one container to another (such as bulk tank trucks, pails, totes) must be protected from contamination and stored in a clean area between uses.

47. Pesticides, sanitizers and any other products used in the operation of a transfer depot shall be used and stored in a manner that will not cause contamination of the milk or milk transfer equipment.

Interpretative Guideline

Only cleaning agents, sanitizers or pesticides that meet the standards established by the Food and Drugs Act or the Pest Control Products Act or that is in the reference listing of accepted construction materials, packaging materials and non-food chemical products published by the CFIA and available through the Internet (http://www.inspection.gc.ca) should be used.

48. Milk transfers shall only take place in an approved transfer depot or a dairy plant unless authorized by the Regulatory Authority.

Interpretative Guideline

When truck to truck transfers occur as part of a routine for processors to transfer milk between processors, jurisdictions, or provinces, the trucks must be parked within a processing receiving bay or transfer depot under a controlled, clean environment.

When processors or transport companies need to perform the truck to truck transfer as a temporary solution to operational constraints, the transport company must have approval from a regulatory authority. Other exceptions may be approved in rare cases when a tanker is disabled by either mechanical breakdown or highway accidents in which the milk on the tanker is still salvageable.

When truck to truck transfers occur, it must be done so that the milk is not contaminated.

49. Transfers of milk from one bulk milk truck to another shall be conducted using a hose connected to a truck valve at both ends.

Interpretative Guideline

In the event of truck to truck transfers, milk should not be pumped into a truck through any other area of the tanker such as manholes, wash lines, or any other opening except for the milk valve connections. Milk must be transferred through the milk transfer hose which is connected to the milk transfer connections on each truck.

CRITERIA FOR RAW MILK

50. Raw milk must meet the standards set out in Table 1.

51. Only approved validated methods which conform to the handling, procedural, and quality control parameters described in the most recently published "Standard Methods for the Examination of Dairy Products" approved by the American Public Health Association, the "Official Methods of Analysis of the Association of Official Analytical Chemists", any method recognized by the International Dairy Federation/International Standards Organization (ISO), or any other method approved by the Regulatory Authority shall be used for the analysis of milk.

Interpretative Guideline

Where available, only approved internationally validated methods are used. However, where such methods do not exist, methods developed and approved by the Regulatory Authority may be used.

52. Milk shall not be sold that

a) comes from an animal 15 days prior to and 3 days after parturition, or such longer period that is necessary to assure that the milk is free of colostrum;
b) contains blood or other foreign particles;
c) is watery or coagulated;
d) has odours that adversely affect its organoleptic characteristics;
e) is contaminated by chemical, toxin, drug or any other foreign substance.

Interpretative Guideline

Milk that contains a high level of immunoglobulin, such as colostrum, must not be sold for human consumption. Milk must also be free of contaminants and be free of organoleptic defects. The quality of the finished dairy product directly relates to the quality of the raw milk that is received by the dairy processing plant.

National and international trade is dependent on the safety and quality of the finished product.

53.

53.1 Milk samples taken from producers shall be tested as required by the Regulatory Authority to ensure compliance with this Code.

53.2 Raw milk samples, obtained for the purposes of this Code, shall be tested using recognized methods in an accredited laboratory as designated by the Regulatory Authority.

Interpretative Guideline

An accredited lab is demonstrated to consistently provide reliable test results based on a process requiring continual review and audits by an independent accrediting body and through the use of officially recognized methods.

54. A producer whose milk has been found to contain veterinary drug residues or inhibitory substance residues is not permitted to sell or supply milk until a subsequent bulk milk sample taken from the farm bulk milk tank tests negative.

TABLE 1 - CHEMICAL AND MICROBIOLOGICAL STANDARDS FOR RAW MILK

Parameter	Standard
Temperature	Greater than 0°C and less than or equal to 4°C for milk contained in the bulk milk tank (subject to sections 15.1 and 15.2).
Bacteria count	Maximum 50,000 cfu per ml. total living mesophilic aerobic bacteria per ml. or 121,000 Individual Bacterial Count per ml. (i.e. Bactoscan®) for cow's milk.
Somatic cells	Cow's milk: maximum 400,000 somatic cells per ml. Goat's milk: maximum 1,500,000 somatic cells per ml.
Veterinary drug residues	Negative for the presence of veterinary drug residues and inhibitory substance residues as tested by an approved screening method or testing below the MRL by an approved quantitative method.
Cryoscopy	Maximum: -0.525°Hortvet or (-0.507°C) for cow's milk. Maximum: -0.564°Hortvet or (-0.545°C) for goat's milk.

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