National Dairy Regulation and Code

PRODUCTION SECTOR INTERPRETIVE GUIDELINES

amended November 2002

Canadian Food Inspection System Implementation Group

CFISIG

Short Title

1. This Document may be cited as the National Dairy Code, 1997.

Interpretation

2. In this Code,

"bulk milk grader" means a person who holds a Bulk Milk Grader's Permit;

"Bulk Milk Grader's Permit" means a permit issued by a Regulatory Agency for the grading of milk at the farm and transport level;

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

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

"dairy barn" means a building or structure that is used to house dairy animals on a dairy farm and includes

(i) a housing barn in which no milking occurs,
(ii) a milking barn in which feeding and holding areas are used in conjunction with a milking system;

"dairy plant" means a premises, building or structure, where milk is received and the processing of dairy products occurs;

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

"farm-separated cream" means the fatty liquid separated from milk on the farm;

"inhibitor"means any substance, other than a bacterial culture, that does not naturally occur naturally in milk and inhibits the growth of bacteria in milk[1];

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

"milk house" means a building or structure where

(a) milk or farm-separated cream is cooled or stored; or
(b) milking equipment is cleaned, sanitized, and stored;

"milk parlour" means a building, or structure, or a portion of building, or structure, where milking occurs but where no animals are housed;

[1]Once it is resolved whether the wording will be absence of inhibitors or absence of veterinary drugs, then this definition and other references to inhibitors should be changed accordingly.

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

"milk house" means a building or structure where
(a) milk or farm-separated cream is cooled or stored; or
(b) milking equipment is cleaned, sanitized, and stored;

"milk parlour" means a building, or structure, or a portion of building, or structure, where milking occurs but where no animals are housed;

"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 or farm-separated cream;

"pest" means any animal or arthropod that may contaminate raw milk or farm separated cream;

"producer" means a person who sells, or delivers for sale, milk or farm-separated cream that has been produced by a herd of dairy animals that they own or control;

"raw milk" means milk that has not been pasteurized;

"Regulatory Agency" 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 this Code;

"sale" includes trade, or barter;

"transport vehicle" means a vehicle used for the transport of milk, or farm-separated cream;

"transport vehicle depot" means a building or shelter where milk or farm separated cream is transferred from one transport vehicle to another.

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 1 Production and Transport

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 prevent contamination of milk and farm separated cream;
b) kept free of refuse and animal and vegetable wastes; and
c) well drained

Interpretive 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 to prevent contamination. Potential contamination risks can be minimized by ensuring:

- *adequate drainage around buildings, particularly milk loading and transfer area thereby eliminating stagnant water which serves as potential bacterial and insect breeding grounds and minimizing tracking of water and wet soil from location to location.*
- *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 should be at least 30 m from the milk house*
- *the area surrounding the dairy barn and milk house should be kept clean, tidy and as dry as possible.*

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

Interpretive 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 since 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*
- *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 Barns

6. A dairy barn shall be:
   a) kept clean
   b) maintained in good repair
   c) provided with a water source; and
   d) insulated and ventilated so as to prevent the accumulation of odours or water condensation

Interpretive Guideline

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.

Clean areas include the milking barn, stable and/or parlour. There should be no accumulation of leftover feed, bedding or manure that results in odour, pest, contamination, etc. problems. Fowl and animals, other than dairy animals (see Section 29 and 31 for clarification), are to be kept out of the dairy barn to help prevent disease transmission.

7. (1) A dairy barn shall be designed and constructed in a manner to:
   a) permit the operations carried on therein to be performed under sanitary conditions:
   b) prevent contamination of milk or farm separated cream; and
   c) prevent damage by dairy animals

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

7. (3) Subject to subsection (4), floors and alleyways of a dairy barn shall be:
   a) constructed of concrete or other impervious materials and in a manner to prevent random cracking;
   b) maintained in good repair

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

7. (5) For the purposes of subsection (4) the following definitions apply:
   a) "free stall barn" a building with alleyways and individual stalls where dairy animals are housed and have free access to stalls; and
   b) "loose housing barn" a structure with a minimum of three walls and a roof that contains no stalls.

Interpretive Guideline

The dairy barn must be of very sturdy construction using safe, strong building materials that can be easily cleaned.

8. A dairy milking barn shall:
   a) have walls that are hard, cleanable, and light coloured;
   b) 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) have manure gutters of sufficient size to contain manure accumulated between cleanings;
   e) have gradient in stalls that permit complete drainage;
   f) be provided with light that is shielded so as to prevent breaking glass from falling into open milk containers;
   g) be illuminated in a manner that permits the person conducting the milking operation to:
      i) see the udders of the dairy animals during milking and
      ii) perform milking operations in a sanitary manner;

   h) have, in the case where a liquid manure pit is located under or adjacent to a dairy housing barn, ventilation for the pit to ensure that the odours from the pit do not enter the barn, milk house or milking parlour.

Interpretive Guideline

Sanitary conditions are required to prevent contamination of the milk. Construction materials such as concrete or other impervious material for floors can be kept clean more easily than floors of 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. Air circulation and ventilation should be sufficient to minimize odours and to prevent condensation on walls and ceilings.

Milking Parlour

9. (1) A milking parlour shall:

a) be equipped with or have ready access to a pressurized hot and cold running potable water system that is protected from any source of contamination;
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) be equipped with a ventilation system to eliminate condensation and odours that may affect the organoleptic characteristics of the milk;
d) be equipped with a heating system to prevent freezing;
e) be illuminated in a manner that permits the person conducting the milking operation to:
    1. see the udders of the dairy animals during 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,
    ii free of indentations, loose scale, pitting and cracks;
g) have the lower 15 cm of the walls, above the 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

9. (2) The floor, ramps, and platforms of a milking parlour shall:

a) be constructed of concrete or other impervious material;
b) be maintained in good repair;
c) be free of indentations, cracks and crevices;
d) be rounded at the intersection with the walls; and,
e) have covered drains, equipped with traps, that are sloped so as to flow into a wastewater drainage system.

9. (3) Where a milking parlour is constructed as a part of a dairy housing barn, it shall be located so that all equipment can be kept clean and free of contamination including stable odours.

Interpretive Guideline

To prevent contamination of milk and to maintain a sanitary environment for milking, regular cleaning of the parlour is essential. To facilitate cleanliness the parlour floor is to be properly sloped and constructed of concrete or other impervious material and maintained in good repair. Grooved floor designs in good repair are acceptable. Interior surfaces that are painted, smooth and properly finished are also more easily kept clean. Parlour equipment should be constructed from impermeable material and kept clean. Measures to minimize dust and other material from contaminating the milk should be practised. Adequate lighting is required in order to visually examine cleanliness and milking procedures to ensure sanitary milk production.

When the milking operation is done in an open area in a dairy housing barn, which is the case with robotic milking, a waiting area with a properly sloped, easily cleanable concrete floor should exist. This area permits separation between the milking area and the housing barn.

There must be a safe, sanitary, and adequate supply of water for use in a milking parlour. 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 from the dairy barn to the milk parlour or milk house.

Milk Houses

10. (1) A producer shall have a milk house used exclusively for:
   a) cooling and storing milk or farm separated cream; and
   b) cleaning, sanitizing, storing materials and equipment used in the production and handling of milk or farm separated cream.

10. (2) A milk house, when attached to or part of a dairy housing barn or milk parlour, shall be:
   a) fitted with self-closing doors where the milk house enters directly into a milking barn;
   b) located, constructed and maintained so as to prevent any objectionable odours from entering the milk house directly from the milking parlour, barn or any other source; and
   c) accessible from an exterior entry point.

10. (3) The floors of a milk house shall:
   a) be constructed of washable, waterproof material and be rounded and sealed at the intersection with the walls;
   b) be free of indentations, cracks and 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 wall rising at least 15 cm above the floor.

10. (4)	A milk house shall:
a)	be equipped with a pressurized hot and cold running potable water system; i) with pipes, hoses and nozzles installed and arranged in a manner that permits cleaning of the parlour and equipment, and ii) that is protected from any source of contamination to the water
b)	be equipped with a ventilation system to eliminate condensation and odours that may affect the organoleptic characteristics of the milk;
c)	be properly insulated and heated to prevent freezing
d)	be lighted in a manner that permits milk or farm-separated cream handling operations, inspection, cleaning, and sanitizing of the premises and equipment
e)	be equipped with a dispenser containing individual towels;
f)	have walls and ceilings that are: i.) covered with hard, smooth, washable and waterproof material, and ii.) free of indentations, pitting and cracks; and
g)	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.

Interpretive Guideline

A suitable, separate place is required for the cooling, handling and storing of milk and for the washing, sanitizing and storage of milk utensils, in order to minimize contamination of the milk and/or utensils. Cleaning and sanitizing and other materials should be stored in a manner to prevent contamination of the milk. Proper construction and dedicated use permits easy cleaning and promotes cleanliness. 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 unacceptable odours. A separate exterior entry point provides a safeguard against the persons such as the bulk milk grader from having to enter the dairy barn to collect the milk.

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 such that there are no pools of standing water in the milk house and a minimum of 1/4" to the foot. The joints between floor and wall should be curved and impervious for easy cleaning and drainage. Drains are covered and trapped so waste water is disposed of in a sanitary manner.

Cleanliness in the milk house is essential to prevent contamination of milk and equipment. All surfaces must be designed to be readily cleanable. Painted wood or light coloured plaster surfaces, 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.

There must be a safe, sanitary, and adequate supply of water for use in a milking parlour. 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 supply 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 from the dairy barn to the milk parlour or milk house.

Hot and cold water, under pressure shall be available, in a supply adequate in quantity and temperature for the effective cleaning of all equipment, utensils and facilities.

Shatterproof covers or coating of lighting prevents broken glass from falling on equipment or contaminating milk.

11. (1)	A milk house shall contain:
a)	a dual compartment sink with a concave bottom, or a single compartment sink with a concave bottom for washing equipment and a separate sink for washing hands;
b)	the necessary materials for washing and drying the hands:
c)	a cupboard, stands or shelves of non-corrodible material located off the floor to hold the materials, and equipment used in the production and handling of milk or farm separated cream.
11. (2)	All sinks referred to in subsection (1) shall be drained by a pipe equipped with a trap connected to a wastewater drainage system.
11. (3)	Where a milk house is provided with a lavatory, the lavatory shall:
a)	not be open directly into the milk house working area; and
b)	be maintained in a clean and sanitary condition.

Interpretive 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 be to hand washing facilities.

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

To facilitate proper cleaning of the floor, items should be stored off the floor.

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. (1)	All cleaning materials, containers of detergents or sanitizers used in the production and handling of milk or farm separated cream, shall be stored in a milk house in a location and manner that will not contaminate the milk or farm separated cream.
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.
12. (3)	All veterinary drugs stored in a milk house, shall be kept in a cupboard or refrigerator in a manner that prevents contamination of the milk.

Interpretive 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.

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 an access controlled cupboard or container that is clean, dust free, cool and protected from light. It should be inaccessible by children, animals and insects.

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

13. (1)	A milk house shall be designed in a manner that:
a)	permits the installation of a bulk milk tanks having free space at each side and in front, behind, above and below to allow access for inspection, transfer, cleaning and sanitizing;
b)	the ceiling that is high enough to permit the inspection of the milk and complete vertical removal of the gauge or dipstick of the bulk milk tank.
13. (2)	A milk house shall be equipped with a hose port in one wall, in close proximity to the bulk milk tank outlet, with a self-closing cover, through which the hose connecting the milk transport truck to the milk tank may pass to permit collection.
13. (3)	There shall be
a)	a concrete or crushed stone apron 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 to keep the hose from the transport vehicle 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)	a window in the milk house that permits the bulk milk grader to observe the transfer pump compartment of the transport vehicles' tank from inside the milk house;
13. (4)	When located in a milk house, 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.

Interpretive Guideline

The milk house structure and design and equipment arrangement should allow for proper function of equipment, adequate cleaning and visual examination and maintenance of the equipment and allow personnel to carry out various functions and duties within the milk house. Ceilings should be high enough to allow 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 will be by a hose which passes 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 and be easily accessible.

An easily cleaned, well drained exterior surface should be constructed and maintained at the area under and near the hose port 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 is often prone to oil leakage, gives off dust and other dirt and debris, occasionally fumes and often generates heat and creates 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. (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 capacity that is equivalent to a minimum of 2.5 days of milk production by the dairy animal herd during its peak production period;

c) be equipped with a dipstick or gauge or other measuring device authorized by the Regulatory Agency 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;

g) be suitable for cooling the milk and maintaining it at a temperature of between 1^0C and 4^0C;

h) be equipped with a thermometer in working order bearing graduations from at least 0^0C to 50^0C and showing the temperature of the milk contained in the tank to within 2^0C;

i) be equipped with an outlet cap;

14. (3) A bulk milk tank shall be
   a) emptied at least once every two days, unless approval for a longer period is granted by the Regulatory Agency; and
   b) cleaned and sanitized following each transfer of milk to the transport vehicle.

15. (1) The milk contained in the farm bulk milk tank shall be maintained at a temperature of between 1^0C and 4^0C until collection.

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 10^0C or less within 1 hour and to between 1^0C and 4^0C within two hours after milking and maintained at that temperature;
   b) the blend temperature, when subsequent milkings enter the tank, shall not rise above 10^0C and milk shall be cooled to between 1^0C and 4^0C within one hour after milking and maintained at that temperature.

Interpretive Guideline

Milk produced by healthy cows 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 4^0C elevates bacterial content and decreases shelf-life of finished products.

16. (1) A producer of farm-separated cream shall provide a cooling system capable of maintaining the farm-separated cream at a temperature necessary to achieve acidity levels set out in Table 1.

16. (2) A producer of farm separated cream is not required to have a bulk milk tank in a milk house.

Interpretive Guideline

Farm separated cream should be produced using equipment that is in good condition, good working order and is clean. To ensure acceptable acidity levels are maintained, farm separated cream from each milking should be cooled prior to mixing with previously cooled farm separated cream.

Equipment

17. All equipment that comes into contact with milk or farm separated cream shall
   a) be maintained in working order;
   b) be used only for the purposes of collecting, cooling, holding and transferring milk or farm-separated cream.
   c) have surfaces that come into contact with milk and farm separated cream 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 or farm-separated cream and which are manufactured in such a manner as not to affect them.

Interpretive Guideline

Milk equipment, containers and utensils without smooth, easily cleaned and accessible surfaces not made of durable, non-corrodible, non-toxic material are potentially ideal locations for bacterial accumulation and growth. Single service items such as filters must not be recycled and reused.

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, insoluble and will not release component chemicals or impart flavour or odour to the product. Materials should be inspected and replaced as required.

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 should be easily cleaned and able to be visually inspected. All outside surfaces of milk handling equipment should be kept clean.

Operations

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

Interpretive Guideline

Premises that are clean and in good repair minimize potential for contamination, and create a suitable working environment in handling a food product. The general state of premises is important as well in the maintenance of a credible image with respect to a safe, wholesome, natural food product.

19. Prior to milking a person who is conducting the milking operation shall;
    a) ensure that the sides, flanks and belly of the animal are free of dirt;
    b) discard the first stream of milk from each teat;
    c) clean and sanitize the teats and udder base and dry them with single service towels.

Interpretive 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.

20. (1) A person who is conducting a milking operation shall:
- a) wash their hands and dry them with single service towels to ensure that their hands are clean at all times during milking;
- b) not engage in milking with wet hands;
- c) have clean clothing;
- d) in a case where the person has an open lesion, wear a waterproof dressing that prevents contamination of the milk or farm separated cream.

20. (2) No person, infected with or carrying any communicable disease that may be transmitted through the milk or farm separated cream, shall work in a capacity that involves the production, handling, storage or transportation of raw milk or farm separated cream.

Interpretive 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 or 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.

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

Interpretive Guideline

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

22. (1)	Subject to subsection 2, solid and liquid manure shall be removed daily from the dairy milking barn.
22. (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.
22. (3)	For the purposes of subsection (2), the definition of loose housing barn set out in subsection 7 (5) applies.

Interpretive 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.

23. The person who is conducting a milking operation shall, immediately after removing the milking machine, sanitize the teats with a teat dip solution approved for that purpose under the Food and Drugs Act (Canada).

Interpretive Guideline

Teat dipping is universally recognized as a method of preventing mastitis. It is useful in destroying bacteria living on teat skin.

24. Equipment that comes into contact with the milk during milking shall be:
    a) rinsed, washed, rinsed and drained within one hour after use;
    b) stored when not in use in a manner that prevents contamination; and
    c) sanitized and drained immediately before use.

Interpretive Guideline

Milk can not 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.

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 equipment manufacturer. Cleaning procedure should be designed to maximize cleaning efficacy with potable water supply and equipment design. The wash should be followed by a rinse to remove residues and prevent corrosion and equipment immediately allowed to drain 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 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 sanitiser 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.

25. A producer shall have posted procedures for the milking equipment sanitation program and ensure that they are followed.

Interpretive 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. Posting of the procedures in a key location is important to ensure that all personnel follow the prescribed procedure.

26. Detergents, sanitizers, pesticides and other pest control products shall comply with the requirements prescribed by of the Meat Inspection Act & Regulations (Canada) and the Pest Control Products Act (Canada), and any applicable provincial legislation.

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

28. 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.

Interpretive Guideline

Alternative temperatures may be considered for specialty type products where process steps are closely monitored and food safety assurances practices are adhered to (for example, raw milk cheese and manufacture of fresh cheese curd for immediate sale.)

Animal Health

29. A dairy barn shall not be used to house animals other than dairy animals being kept for the purposes of milking.

30. Animals whose milk is intended for human consumption shall be kept clean and free of diseases transmissible to humans by milk.

31. Where more than one dairy species is maintained in the same operation:
    a) dairy ewes shall be kept in separate buildings from other dairy species;
    b) dairy species other than dairy ewes may be kept in separate areas of the same building; and
    c) milking, collection, storage and transfer equipment shall be operated in a manner that prevents mixing of the milk between dairy animal species.

32. In dairy goat operations, all bucks shall be housed separately from the rest of the herd in order to prevent odour contamination of the milk.

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) and any applicable provincial legislation, may be administered to a dairy animal, as set out on the product label.

Interpretive Guideline

Off label usage of drugs must be under the supervision of or as prescribed by a veterinarian.

34. A producer shall identify treated animals and maintain a permanent written record of all veterinary drug use.

Interpretive Guideline

Producers should have in place a written procedure for the purchase, storage and use of all livestock medicines to prevent contamination of milk. All personnel should be well aware of and practice the written procedures. The National Livestock Identification Program requires dairy animals to be identified.

The procedures should include:

- *record of purchase, including where, when and what was purchased*
- *proper storage according to label directions and in a limited access area, ideally a locked storage facility*
- *appropriate record of treatments including who administered the treatment, name of livestock medicine administered and the withdrawal time, date and time of administration and amount used and to which cows*
- *method of identifying and or segregating the treated animals and procedures for milking treated animals and proper disposal of unacceptable milk (cow and bulk tank)*
- *written procedures in place for dry cow treatment and animal segregation and identification*
- *on farm testing procedures and procedures to follow when a deviation from the written procedures occurs. This may include names of contacts for testing (field service representatives, receiving processing plant) additional information if needed (veterinarian)*

35. In a dairy barn young dairy animals shall be kept in separate pens or box stalls when housed in the same facility as the milking herd.

Handling and Transport of Bulk Milk or Farm Separated Cream

36. Any person who performs the duties of a bulk milk grader under this Code shall have completed and passed a training course, approved by the Regulatory Agency, for the grading of milk.

Interpretive Guideline

A bulk milk grader occupies a unique position in the producer-processor and Regulatory Agencies relationship. He/she determines the volume, acquires representative samples and determines the acceptability of the product. He/she is a vital link in milk marketing and in milk quality control responsibilities.

It is required that bulk milk graders receive training in the proper execution of their duties as required by provincial regulations for on farm pick-up of raw milk and only after successful completion can the bulk milk grader perform the required duties.

37. A person who grades or collects milk, operates a transport vehicle 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 agency.

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.

Interpretive 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.

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 Agency; or
    b) the producer has been prohibited from shipping milk by the Regulatory Agency.

40. A bulk milk grader, when collecting milk at the farm, shall use the hose port and:
    a) ensure that their hands are clean before handling or touching equipment;
    b) accept or reject the milk contained in the bulk milk tank on the basis of its appearance, odour, temperature or other abnormalities;
    c) measure the volume of milk contained in the producers' bulk milk tank;
    d) draw a representative sample of milk
        i) by means of the mechanical sampler on the transport vehicle, or
        ii) directly from the producers' 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 Agency to assure uniform agitation of the milk.
    e) draw a sample of milk, on a monthly basis or as otherwise authorized by the Regulatory Agency, in an aseptic manner following agitation of the milk contained in the tank for 5 minutes or as long as necessary to assure homogeneity of the milk;

f)	maintain all samples at a temperature of between 1^0C and 4^0C and delivery to the responsible person at the processing plant or other agreed place;
g)	record on a collection report all information required by the processing plant, Regulatory Agency or milk marketing agency; and
h)	following transfer of the milk to the transport vehicle, disconnect the hose, and rinse the interior surfaces of the bulk milk tank with lukewarm water.

Interpretive Guideline

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

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

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 transport vehicle, have a detrimental effect on the milk in the transport vehicle or on subsequent transfers of milk;
e)	is otherwise not of good quality; or
f)	cannot be sampled.
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 Agency and as soon as possible thereafter, inform the appropriate Regulatory Agency or milk marketing agency of this action.

Interpretive Guideline

These are the criteria upon which milk is determined to be acceptable for processing or if the milk should be rejected and left in the bulk tank :

- *normal milk is odourless, mildly sweet in taste and ranges in colour from slightly bluish white to golden yellow in colour. An abnormal odour or colour indicates any number of quality and safety problems such as poor sanitary practices, inadequate cooling, microbial growth, improper feeding, milking and handling procedures or unhealthy animals. Therefore the milk must be carefully examined by sight and smell.*
- *objectionable matter or physical defects include: observing extraneous matter in the milk such as insects, dirt or foreign matter or evidence of churned fat, flakes or lumps in the milk such as ice or excessive amounts of foam floating on the milk surface.*

- *abnormal temperature [refer to Section 15. (2)]. The milk must be stored in the producer bulk tank between 1^0C and 4^0C. The milk, other than ewes milk, should not be frozen. Incorrect holding temperatures have a direct and significant effect on the quality and safety of the milk.*
- *can not procure a representative sample in the manner prescribed for any reason such as milk not accessible due to low volume or properly cleaned and sanitized sampling equipment not available or failure of proper agitation.*

Transport Vehicles

42. Transport vehicles shall be used exclusively for the transportation of milk, farm separated-cream or potable water unless otherwise authorized by the Regulatory Agency.

Interpretive Guideline

Exclusive transport vehicles are necessary due to the potential of cross contamination of products, this includes contamination of pasteurized milk products by the transport vehicle.

43. (1) On a transport vehicle, the inner wall of the tank, and any equipment that comes into contact with the milk, and any container used for the transportation of farm separated cream shall be:
   a) constructed of non-corrodible material, and manufactured in such a manner as not to affect milk or farm separated cream;
   b) smooth and free of cavities and loose particles;
   c) non-toxic and resistant to damage from cleansers and sanitizers.

43. (2) The tank of a transport vehicle shall be:
   a) insulated in a manner such that the temperature of the milk cannot rise more than 2^0C in 24 hours; and
   b) equipped with sufficient number of spray balls to allow for proper cleaning.

43. (3) The tank and accessories of the transport vehicle shall be washed and sanitized at least once per day in a manner that prevents contamination of the milk, and if more than one load is collected in one day in a transport vehicle, the pump, hoses and fittings of the transport vehicle shall be washed between loads.

43 .(4) The outer wall of the tank of a transport vehicle shall be constructed of hard, smooth, non-corrodible, washable, waterproof material.

43. (5) A transport vehicle 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.

44. Containers used for the transportation of farm separated cream shall be washed and sanitized in a manner that prevents contamination of the farm separated cream.

Milk Transfer

45. Transport vehicle depots shall
    a) be constructed and maintained such that there is no risk of contamination to the milk during the transfer process;
    b) provide hot and cold potable water to permit the proper sanitizing of the transport vehicle and equipment;
    c) provide sanitary storage space for equipment used in the transfer of milk; and
    d) be maintained free of pests.

Interpretive Guideline

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

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

Milk Quality Standards

47. (1) Milk and farm separated cream shall comply with the maximum residue limits for veterinary drug residues as prescribed by the Food and Drugs Act and Regulations (Canada).

47. (2) Methods to determine compliance with subsection (1) shall be those recognized by Health Canada for the determination of veterinary drug residues in milk and farm separated cream.

48. All methods used for the analysis of milk for the purposes of this Code shall 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 approved by the International Dairy Federation or the National Liaison Group of Milk Product Quality, or any other method approved by the Regulatory Agency.

49. Milk shall not be sold that
    a) comes from an animal fifteen 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, coagulation, or other foreign particles;
    c) is watery;
    d) has odours that adversely affect its organoleptic characteristics;
    e) is contaminated by chemical, drug or any other foreign substance.

50. Raw milk, farm separated cream or a product produced from raw milk or farm separated cream may only be sold to a dairy plant or milk marketing agency.

51. (1) Milk samples taken from producers shall be tested as required by the Regulatory Agency to ensure compliance with this code.

51. (2)	Raw milk samples, obtained for the purposes of this Code, shall be tested in a laboratory designated by the Regulatory Agency.

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

Interpretive Guidelines

Producers must abide by the jurisdictional regulations in effect.

53. (1)	Milk or farm separated cream shall meet the standards set out in Table 1.
53. (2)	The standards set out in Table 1 must be met by a producer in order to sell or market milk or farm separated cream.

TABLE 1 - CHEMICAL AND MICROBIOLOGICAL STANDARDS FOR MILK AND FARM-SEPARATED CREAM

PRODUCT	PARAMETER	STANDARD
Raw Milk	Temperature	1^0 C to 4^0 C for milk contained in the bulk milk tank (subject to section 15.1 and 15.2).
	Total living mesophyllic aerobic bacteria count	Producer: maximum 50,000 total living mesophyllic aerobic bacteria per ml.
	Somatic cells	Cow's milk: maximum 500,000 somatic cells per ml. Goat's milk: maximum 1,500,000 somatic cells per ml.
	Veterinary Drug residues	1. Absence of inhibitors (veterinary drugs) as tested by official methods. 2. MRL's as prescribed by the Food and Drugs Act (Canada). Health Canada in consultation with the National Liaison Group on Milk Product Quality, will approve appropriate methods.
	Cryoscopy	Maximum: -0.525°H or (-0.507°C) for cow's milk.

PRODUCT	PARAMETER	STANDARD
Farm separated cream	Acidity	Unacceptable if greater than 0.60% lactic acid.
	Veterinary Drug residues	1. Absence of inhibitors (veterinary drugs) as tested by official methods. 2. MRL's as prescribed by the Food and Drugs Act (Canada). Health Canada, in consultation with the National Liaison Group on Milk Product Quality, will approve appropriate methods.
	Frequency of Testing	Every pickup.