



**A Preliminary  
Review of  
Dairy Licensing,  
Inspection and  
Regulatory  
Oversight in  
Tennessee**

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## **A Preliminary Review of Dairy Licensing, Inspection and Regulatory Oversight in Tennessee**

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## Introduction

In order to provide consistently safe and high-quality products to consumers, the Tennessee Department of Agriculture (TDA), Food and Dairy Section of the Consumer and Industry Services Division, is responsible for oversight of dairy products. Their oversight includes the inspection of dairy farms, dairy plants, milk transport trucks, dairy and trade product distributors, and milk samplers in the state. The standards and guidelines used in the dairy inspection process in the state are derived from the Grade "A" Pasteurized Milk Ordinance (PMO). The PMO is a document from the U.S. Department of Health and Human Services, Public Health, and the Food and Drug Administration that defines practices, milk handling, sanitation and standards for the pasteurization of Grade A milk products.

Additional information can be found in the 2015 revision of the Grade "A" Pasteurized Milk Ordinance, which is available at the International Dairy Foods Association website, [www.idfa.org/docs/default-source/news-files/2013-pmo-final.pdf?sfvrsn=0](http://www.idfa.org/docs/default-source/news-files/2013-pmo-final.pdf?sfvrsn=0), or in PDF format from the authors. It is important to note according to the 2015 PMO, a dairy facility must have a written recall plan, an allergen control program, an environmental sampling program and supplier verification.

Each state government is responsible for regulating the dairy industry within their respective state, and most all states have guidelines meeting or exceeding those defined in the PMO. Milk shipped across state lines must follow the regulations stated in the PMO.

It is important for those considering getting into any part of the dairy industry to understand that milk is among the most highly regulated food commodities. Aimed primarily at ensuring a safe product, regulatory oversight includes permitting, inspection, sampling/testing and sanitation at the farm, on raw milk transport vessels, at the processing plant, and through the distribution chain to either retail outlets or directly to the consumer. One of the best ways to prepare

to navigate the dairy regulations is to start by developing a business plan — a set of written plans to describe what will be done and how it will be done. If processing is a part of the business plan, then the written plan should include details on the source of milk, transportation, processing, products, equipment, storage and packaging. It is highly recommended that anyone considering starting a dairy farm or a dairy processing facility in Tennessee contact the TDA, Consumer and Industry Services Division, early in the business planning process. Making this contact early will help develop positive relations for regulatory oversight and will help to avoid possible miscommunications as the project matures. In addition, TDA requires those planning to start a dairy farm or a dairy processing facility to submit construction plans in advance of permitting.





## License and Inspection

All dairy farms and dairy processors must obtain a license from TDA prior to operating a dairy barn or producing dairy products for sale. It is suggested that those interested in milking cows or other species or in processing milk for sale contact the TDA, Food and Dairy Section of the Consumer and Industry Services Division in Nashville, to communicate construction, remodeling and/or equipment plans. A written description and/or a sketch plan is required.

Once a dairy plant is inspected and licensed, TDA conducts routine inspections. Dairy products, water sources (from a private well or a spring) and the raw milk supply are routinely sampled by TDA and must meet minimum standards. Dairy plants must meet various construction standards and ongoing operation standards and sanitation requirements related to:

- Construction of floors
- Construction of walls and ceilings
- Construction and repair of containers and equipment
- Doors and windows
- Lighting and ventilation
- Separation of various processing activities (pasteurizing, cooling, reconstitution, condensing, drying and packaging)
- Toilet-sewage disposal
- Water supply
- Hand-washing facilities
- General plant cleanliness
- Sanitary piping
- Cleaning and sanitizing of containers and equipment
- Storage of utensils, materials, containers and equipment
- Protection from contamination
- Pasteurizing and aseptic processing (including times and temperatures for pasteurization)
- Cooling of milk and milk products
- Bottling and packaging (including container filling)

- Capping, sealing and container closure
- Cleanliness of personnel
- Vehicles
- Milk plant surroundings
- Chemical, bacterial, butterfat and temperature standards

Additional details for dairy product manufacturers is available online from the U.S. Food and Drug Administration in a document titled, "Guide to Inspections of Dairy Product Manufacturers" ([www.fda.gov/ICECI/Inspections/InspectionGuides/ucm074974.htm](http://www.fda.gov/ICECI/Inspections/InspectionGuides/ucm074974.htm)).

Specific license, permit and registration requirements for dairy farms and dairy processing operations in Tennessee are listed below along with contact information at TDA:

## Dairy Farms

A copy of TDA's "Recommendations and Specifications for Construction of Grade A Dairies" is available in Appendix A. Additional details for "Grade A Goat Dairies," revised in 1981, is available in Appendix B. Specific questions and inquiries for Grade A and Grade B dairy farms, including new operations, existing operations and those changing ownership or location, please contact Bill Thompson, dairy administrator with the Tennessee Department of Agriculture: [bill.e.thompson@TN.gov](mailto:bill.e.thompson@TN.gov) or 615-837-5534.

## Dairy Processing

Appendix C contains additional information that is provided by the TDA in response to new inquiries for dairy manufacturing in the state. Various licenses are required for trucks distributing dairy products, dairy testers and dairy plants. Labels must be registered for all dairy products. Bill Thompson, dairy administrator with the TDA, is the contact for specific licenses and registration of the following:

- Dairy/Frozen Dessert Distributors — In- and out-of-state companies must license trucks for distributing their products in Tennessee.
- Dairy Testers — All testers of milk in Tennessee plants must be licensed.
- Dairy Plant License — All Tennessee dairy plants must have an annual license.
- Frozen Dessert License — All Tennessee plants with frozen dessert products must have a license.
- Milk Samplers License — All milk samplers must have an annual license.

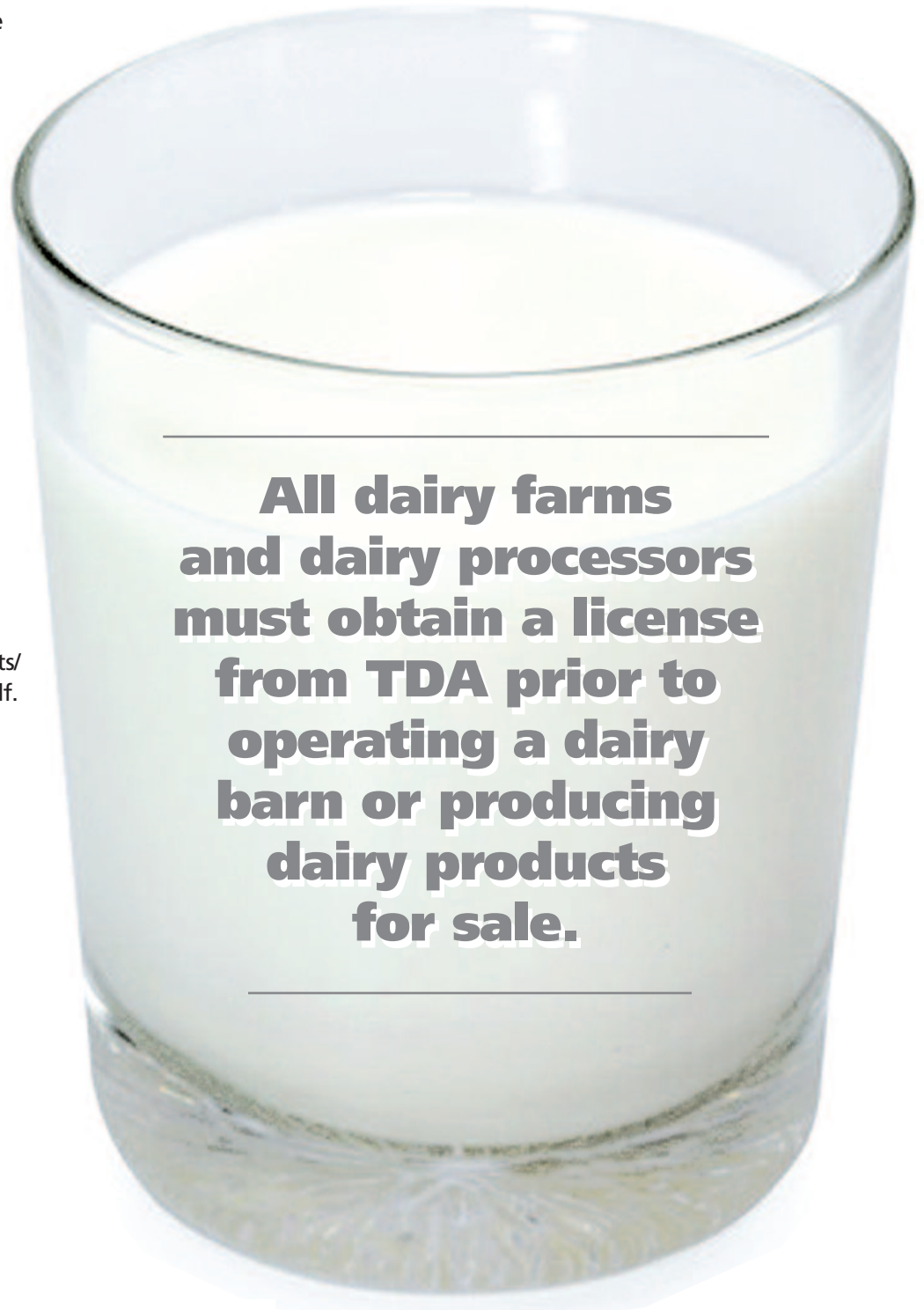
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## Preliminary Site-specific Considerations for Milk Processing/Manufacturing Facilities

The following is a preliminary list of site-specific considerations for milk processing/manufacturing facilities in Tennessee. This is not a complete and exhaustive list. It is intended to provide a starting place for more detailed investigation and considerations regarding the location of dairy processing facilities.

- Electricity supply
- Natural gas supply
- Municipal water supply or private water source
- Solid waste, liquid waste and waste water management
- Trucking/transportation access
- Proximity to milk supply
- Proximity to workplace (available labor)
- Local zoning codes
- Access to retail markets
- Market competition
- Tax implications (local tax incentives)
- Community acceptance/resistance
- Federal Milk Marketing Order compliance

Additional requirements for a new food manufacturing facility or warehouse are provided in Appendix D and available online at [www.tn.gov/assets/entities/agriculture/attachments/AgLicFD\\_MW\\_basic\\_requirements.pdf](http://www.tn.gov/assets/entities/agriculture/attachments/AgLicFD_MW_basic_requirements.pdf).



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# Overview of Milk Movement and Storage from Farm to Processor

Milk must be obtained from the animal under sanitary conditions and cooled to 45 F or less within two hours of milking. On most dairy farms, milk is pumped into a bulk tank. Milk is then sampled from the bulk tank and pumped to a milk truck and trailer for transport by a handler/hauler. A milk hauler may obtain milk from more than one farm, so a truck-load of milk may contain milk from various farms when it is delivered to a processing plant. Before the load of milk is unloaded at the milk plant, it will be sampled and tested. If the milk tank is acceptable, it is pumped into the plant's holding tank for processing. Milk at the plant is stored at 45 F or less and is usually processed within 24 hours, but may be held for longer periods of time if appropriate conditions of the regulations are met.

## Additional Information

Additional information regarding the official Standards of Identity for various milk and cream, cheeses, related cheese products and frozen desserts is available in the Code of Federal Regulations (CFR) Title 21 Parts 131, 133 and 135 and on the FDA website at:

Part 131 — Milk and Cream

<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?CFRPart=131>

Part 133 — Cheeses and Related Cheese Products

<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRsearch.cfm?CFRPart=133>

Part 135 — Frozen Desserts

<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?CFRPart=135>



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**Milk at the plant is stored at 45 F or less and is usually processed within 24 hours...**

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## Appendix A

# Recommendations and Specifications for Construction of Grade A Dairies from the Tennessee Department of Agriculture

*"It is not the intent of the Tennessee Department of Agriculture to list each requirement or recommendation nor spell out in detail each requirement for Grade A facilities, but rather serve as a guide in planning the basic facilities for Grade A dairy. Recent trends in the dairy industry have made marketing of milk more difficult. Prospective dairy farmers should secure a market for their milk before making investments in a facility."  
-Tennessee Department of Agriculture"*

TENNESSEE DEPARTMENT OF AGRICULTURE  
FOOD AND DAIRY SECTION  
Phone#: 615-837-5193 Fax #: 615-837-5005

### RECOMMENDATIONS AND SPECIFICATIONS FOR CONSTRUCTION OF GRADE A DAIRIES

It is not the intent of the Tennessee Department of Agriculture to list each requirement or recommendation nor spell out in detail each requirement for Grade A facilities, but rather serve as a guide in planning the basic facilities for a Grade A dairy.

#### Plans:

Site selection to be approved by the Soil Conservation service prior to construction  
Local electrical inspector to be contacted prior to construction  
Properly prepared plans shall be submitted and approved by a representative of the Tennessee Department of Agriculture before construction work is begun.

#### Animal Health:

Tuberculosis and Brucellosis tests to conform to current U.S.D.A. regulations.

#### Private Water Supply:

1. Supply is not to be located closer than 100 feet to a privy, septic tank, manure pack, sewage pit or drain field. (unless geological & sanitary surveys show otherwise) and not closer than 50 feet to a livestock holding area.
2. Well: Casing shall extend 6 inches above concrete slab, a sanitary tight seal and screen vent, with concrete slab around the casing extending a minimum of 2 feet in all directions.
3. Springs: Spring shall be protected as per Appendix in P.M.O.
  - a) Screened overflow
  - b) Source and reservoir to be locked and sealed
  - c) Fence around spring
  - d) Surface water runoff to be diverted away from spring
  - e) Drop from overflow to drainage ditch

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4. Laboratory analysis negative for coliform organisms - current within 90 days - must be on file prior to start up.

Samples must be recollected every three years.

Negative water samples must be maintained at all times.

### **Municipal / Private Water Supply:**

1. Hot Water Supply: Adequate to maintain recommended cleaning temperatures throughout CIP wash cycle.  
Total hot water heater capacity recommended minimums: 80 gallons electric or 60 gallon gas. On Demand Tankless hot water heaters are acceptable.
2. All spigots with hoses attached shall have approved backflow preventers or pistol-grip nozzles or be stored so as to prevent possible back siphonage.
3. To protect the water supply, there should be no cross connection to a non-potable water supply.

### **Toilet Facility:**

1. Flush-type toilet conveniently located in or adjacent to dairy barn.
2. Toilet room to be fly-tight with screen windows and self-closing doors.
3. Toilet to be vented to outside atmosphere.
4. Septic tank and disposal field for wastes to be approved by Local Health Department.

### **Milk Room:**

1. Floor to be graded to drain (1/4" per foot recommended).
2. Floor drained to a 4" P-Trap drain with 4" piping of cast iron tile, PVC or its equivalent in plastic.
3. Floor drains from milkroom and milk parlor or barn should run to a distribution box or clean-out T just outside of building. No connection under the floor or milkroom and parlor drains.
4. Walls & ceilings to be masonry or equally durable, nonporous, non-corrosive, non-absorbent material that is light colored and easily cleanable.
5. Windows to be provided and sills to be sloped downward.
6. Adequate lighting shall be provided. No lighting directly above bulk tank opening unless properly shielded.
7. A dust proof and water resistant container must be provided for milk filter storage.
8. Milkroom to be fly tight. Doors to open outward and be self-closing. Solid self-closing door between milk room and milking parlor.
9. Two compartment stainless steel wash vat with hot and cold running water provided. When milking or washing equipment is permanently installed in one wash vat compartment, two additional wash vat compartments are required.
10. Lavatory with hot and cold running water equipped with soap and disposable sanitary hand towels.
11. Ceiling height not less than 8 feet.
12. A hose port shall be installed in the milkroom wall for transfer of milk from bulk tank to milk tanker.  
The hose port shall be fitted with a tight door which shall be kept closed except when in use.

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13. Concrete slab at least 32 sq. ft. provided outside milkroom and under hoseport.
  14. Mechanical ventilation I louvered exhaust fan to be installed.
  15. All-weather twist lock safety plug for bulk tank trucks located outside milkroom near hoseport. Switch for this plug must be located in milkroom for safety. {Must meet local and state electrical codes}

#### **Bulk Tank Installation:**

1. More than 36" from outlet valve of milk tank to wall or hose port.
2. At least 30" between tank, other milkroom equipment and vacant walls.
3. Not directly over a floor drain.
4. Lighting, vents or other lines not located over tank openings.
5. Outlet valve must be a minimum of 6'11" above floor.
6. Adequate space above tank provided for access to tank interior.
7. The measuring stick must be removable from the bulk tank.
8. Bulkhead tanks must be of approved design for through-the-wall-installation. The only permitted bulk tank openings outside the milkroom shall be properly protected agitator openings.
9. Bulk milk tanks manufactured after January 1, 2000, shall be equipped with a recording thermometer. Producer shall maintain recording chart records for a period of six months.

#### **Milk Parlor:**

1. Conventional barns to have ceiling height not less than 8 feet and 7 feet above cow ramps.
2. Floor drains to be 4" minimum.
3. Waste to be piped not less than 100 feet from barn, more when necessary due to local conditions.
4. Solid waste storage and manure handling facilities to be constructed and maintained according to PMO regulations.
5. Holding pen for cows - 15 sq. ft. per cow minimum. Holding pen to be constructed of concrete with minimum 8" curbing and sloped downward away from barn.
6. Adequate lighting shall be provided.
7. Walls & ceilings to be masonry or equally durable, non-porous, non-corrosive, non-absorbent material that is light colored and easily cleanable.
8. Stanchion is to be built of smooth substantial material and feed troughs built of concrete or equally impervious materials.
9. Mechanical ventilation may be required in lieu of windows. When installed, windows must be maintained in good repair.
10. At least one available spigot must be provided for hand washing with soap and sanitary disposable hand towels.

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11. An unapproved water supply can be installed in the milking parlor for the purpose of cleaning floors, walls and ceilings or watering animals. No cross connections are allowed to an approved water supply.
  12. Surroundings shall be maintained in a neat and clean condition, free of rodent harborages and breeding areas.
  13. No livestock traffic or livestock waste in tank truck access areas.
  14. Tank truck access areas shall be constructed of a minimum solid gravel surface and maintained properly.

TENNESSEE DEPARTMENT OF AGRICULTURE  
ELLINGTON AGRICULTURAL CENTER  
REGULATORY SERVICES, FOOD & DAIRY SECTION  
BOX 40627, MELROSE STATION  
NASHVILLE, TN 37204

2011 REVISION

RECOMMENDATIONS RELATING TO SPECIFICATIONS FOR MILKING SYSTEM  
INSTALLATIONS AND BULK MILK STORAGE FOR GRADE A DAIRIES

AU equipment shall meet the 3-A Standards.

1. Milk pipelines to be of approved material and self-draining.
2. Milk piping is to slope 1' to 8" of piping. If milk line is 2" or more in diameter or if CIP line is at least 1/2" smaller than the milk line, air injection must be provided. If DIP line is at least 1/2" smaller than the milk line, a tapered reducer must be used. Welded lines must have acceptable measures to allow visible inspection of all inner milk contact surfaces. Ferrule fittings must be faced off smoothly and squarely on all stainless steel lines.
3. A physical break is required between Milk and CIP circuits.
4. For adequate CIP cleaning and drainage, milk inlets in pipelines are to slope upward at a 45 degree angle unless equipped with automatic drain plugs.
  - 1-2 units per slope: 1.5"
  - 3-4 units per slope: 2"
  - 5-9 units per slope: 3"
5. Milk line sizing guide: (or per written manufacturer's recommendations)
6. Milk lift from cow platform to pipeline must not exceed 5 feet.
7. The minimum size for main vacuum supply pipelines of pipeline of milking systems, and the vacuum lines size between the milk receiver and vacuum supplier (pump) should be based on the following: (or per written manufacturer's recommendations)
  - 1-10 units      2" (I.D.)
  - 11-13 units    2.5" (1.0.)
  - 4 or more units 3" (1.0.)

8. The minimum size for vacuum pulsator lines of pipeline milking systems: (or per written manufacturer's recommendations)

1-14 Units	2" (I.D.)
15 or more	3" (I.D.)

9. Vacuum regulators and pumps shall not be located in a feed room, attic or toilet room.

10. Vacuum gauges shall be located in the milkroom near the regulator and in the parlor near the farthest stall cock.

11. Vacuum lines and traps shall be maintained clean at all times.

12. There shall be no milk filters between the milk claw and the milk line or other areas where vacuum can be affected.

13. Vacuum pump sized to meet manufacturer's specifications and shall be located as near to the receiver as possible. The vacuum line in the milk barn shall be looped back to the reserve tank with no reduction in pipe size from vacuum tank to the loop.

14. Vacuum reserve tanks shall be maintained to meet manufacturer's specifications. The vacuum reserve shall be equal to 50% of the total required vacuum to effectively operate the system without causing damage to the cow's udder.

15. The lowest points of vacuum lines and vacuum traps shall be self-draining.

16. Minimum Vacuum Recommendations for Pipeline Milkers: (Or per written manufacturer's recommendations.)

<b>CFM Requirements</b>		
Component	(ASME) Standards	New Zealand Standards
Milker Unit	6.0	12.0
Releaser	5.0	10.0
Pulsator Line (per 10' of length)	1.0	2.0
Milk Meter	1.0	2.0
Couplings, per 20	1.0	2.0
Inlets, per 10	1.0	2.0
Reserve for Regulator	3.0	6.0

(The 50% reserve capacity recommended is included in the table)

It is recommended that there be a vacuum system for the pipeline milking system used only to operate the components of the system. A separate vacuum system should be provided to operate any other vacuum operated accessories such as gates, etc.

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# Appendix B

Grade A Goat Dairies  
Revised April 2014

TENNESSEE DEPARTMENT OF AGRICULTURE  
CONSUMER & INDUSTRY SERVICES FOOD AND DAIRY SECTION  
GRADE A GOAT DAIRIES

Revised April 2004

## Specifications for Milking System Installations

Sizes for Vacuum Lines for Pipeline Milkers			
1 through 4 units	1W' vacuum lines	1 through 3 units	1W' glass or stainless steel
5 through 7 units	1W' vacuum lines	4 through 6 units	2" glass or stainless steel
8 through 12 units	2" vacuum lines	7 through 10 units	2W' glass or stainless steel
All bucket milkers	1Y-t" vacuum line	10 through 12 units	3" glass or stainless steel

- A. Milk piping is to slope 1" to 8' of piping. If milk line is 3" or more in diameter, air injection must be provided to insure proper cleaning. If CIP line is 1/2 inch smaller than milk line, air injection must be provided and a tapered reducer used in the vertical position where connected. Welded lines must have inspection ports and/or other acceptable measures to allow visible inspection of all inner milk contact surfaces.
- B. For adequate CIP cleaning and drainage, milk inlets in pipelines are to slope upward at 45° angle unless equipped with automatic drain plugs.
- C. Milk lift from claw to pipeline not to be over 4 1/2'.
- D. Milk piping is to be all glass or all stainless steel from manifold to receiver jar or milk pump. Glass and stainless steel may be used when a connector can be installed to ensure complete drainage.
- E. The vacuum line between vacuum bulk milk tank and moisture trap is to be 1 1/2" stainless steel connected to stainless steel coupling (inlets) by snap-on fittings.
- F. The vacuum line between the milk receiver jug and vacuum supplier (pump) shall be a minimum of 1 1/2".
- G. The vacuum line between the receiver and moisture trap shall be at least the same size as the pipeline between units and receiver, or shall not be less than 2" on pipe lines 2" or more in diameter.
- H. Vacuum regulators and pumps shall not be located in a feed room or attic.
- I. A vacuum gauge shall be located in the milk house near the regulator and one in barn or parlor near the farthest stall cock where vacuum lines are of galvanized or P.V. schedule 40 or better.
- J. A vacuum regulator shall be located between the vacuum pump and first stall cock or crossover on pail systems and near the receiver on pipelines. On a split system one regulator shall be located between the vacuum pumps and first stall cock and one near the receiver jug. Other regulator arrangements are permissible where they meet the milking machine manufacturers council specifications.

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- K. There shall be one stall cock and one milk valve to every 2 stanchions in conventional barn.
  - L. Street ells and unnecessary bends shall be eliminated.
  - M. Vacuum reserve tanks shall be maintained to meet manufacturers' specifications. The vacuum reserve shall be equal to 50% of the total required vacuum to effectively operate the system without causing damage to the goat's udder.
  - N. There shall be no milk filters between the milker claw and the milk line.
  - O. The vacuum supplier (pump) shall be located as near to the receiver as possible and the vacuum line in the milk barn shall be looped back to the reserve tank or as near the tank as possible with no reduction in pipe size from vacuum tank to the loop. Care must be taken to prevent oil and dust fumes from vacuum pump exhaust being carried into milk room or barn.
  - P. Vacuum lines must be rigid and pitched 1/2" to 10 feet in direction of airflow. Automatic drains must be installed on all risers.
  - Q. Releasers are prohibited on future systems.
  - R. Vacuum fluctuation shall be no more than 3" of mercury at the claw.
  - S. Clearance space above receiver jar must permit removal of probes for cleaning and repair.

## STANDARDS FOR NEW DAIRIES OR OLD DAIRIES BEING REMODELED

### Herd Health:

1. 1,500,000 or less Somatic Cell Count.

### Water Supply:

1. Negative laboratory analysis -current within 90 days.
2. Drilled or bored well cased to solid rock.
3. Four feet square concrete slab around casing that extends 6 inches above concrete slab and sealed tight. Concrete slab to be above ground and no well pits allowed.
4. New wells or altered supplies shall be disinfected by pouring liquid chlorine into well and pumping out through all cold water spigots.
5. Not to be located closer than 100 feet to a pit privy, manure pack or septic tank.
6. Shall be 100 feet from disposal field or cesspool.
7. Well house to have hinged door for access and inspection.
8. Well house to have drain at floor level terminating above the ground on outside.
9. All spigots with hoses shall have vacuum breakers. Pressure pumps to be properly protected with back siphonage protection devices.
10. Well must be fenced 50 feet in all directions from livestock traffic.

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### Toilet Facility:

1. Conveniently located flush-type toilet.
2. Toilet room to be fly-tight with screen windows and self-closing doors.
3. Toilet to be vented to outside atmosphere.
4. Septic tank and disposal field for wastes to be approved by local health department.

### Milk Room:

1. Floor to be sloped 1/4" per foot.
2. Floor drained to a 4" p-trap drain with 4" piping of cast iron tile, orange burg, P.V.C. or its equivalent in plastic.
3. Floor drains from milk room and milk parlor or barn should run to distribution box or clean out T just outside of building. No connection under floor building.
4. Walls to be masonry material or other impervious material.
5. Window and door light space equal to 15% of floor area. Door between parlor and milk room not included.
6. Ceiling height to be 8' from floor and painted light color.
7. Artificial light equivalent to 20 ft. candles.
8. Milk room to be fly-tight with doors opening outward and being self-closing. Office and utility doors must be self-closing. Door between milking parlor and milk room must be solid and self-closing and hinged to open into the milking parlor.
9. Total hot water heater capacity of 30 gallons - larger when necessary. Separate water heaters for goat preparation and equipment cleanup are suggested.
10. Bulk tank located to be:
  - a. 36" from outlet valve of milk tank to wall.
  - b. 30" between tank and other milk room equipment.
  - c. 30" between tank and vacant wall.
  - d. At least 6" above floor.
  - e. Not directly over a floor drain.
  - f. Not directly under a light fixture or ventilator unless properly protected.
  - g. Adequate space above bulk tank for dipstick removal.
11. Must have two-compartment wash vat plus means of storing milker units outside vat.

### Milk Parlor or Barn:

1. Conventional barns to have 4 square feet of window light space to every 60 square feet of floor area.
2. Parlor barns to have window light space equal to 15% of floor area. Artificial light and forced air ventilation can be used when installed properly.
3. Conventional barns to have a ceiling height of 8'.



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4. Parlor barns to have a ceiling height of 7' above ramp.
  5. Wastes to be piped 100' from barn, more when necessary.
  6. Artificial light in a conventional barn to be 100-watt bulb to every 3 stanchions.
  7. Holding pens shall be concrete and sloped to drain they shall be curbed and provide a 10 square feet area per goat. Walkways, where used, must be curbed.
  8. Walls to be masonry material or preferably ceramic tile. Masonry walls shall be painted with a light colored washable enamel or epoxy paint.
  9. Minimum width of pit in elevated parlors 5' 0".
  10. Ramp widths to meet equipment dealer's specifications.

#### Handwashing Facilities:

1. Milk rooms shall have a hand wash basin with hot and cold running water, soap, and individual sanitary towels.
2. Milk barns or parlors shall have a hand washbasin with running water, soap, and individual sanitary towels.

THE 2015 RECOMMENDATIONS OF THE GRADE A MILK ORDINANCE AND TENNESSEE DAIRY LAW REQUIRES THE EQUIPMENT DEALER TO SUBMIT PLANS AND SPECIFICATIONS OF THE SYSTEM TO BE INSTALLED TO THE TENNESSEE DEPARTMENT OF AGRICULTURE, REGULATORY SERVICES, FOOD & DAIRY SECTION, FOR REVIEW AND APPROVAL BEFORE INSTALLING MILKING SYSTEMS OR BULK TANK COOLERS. LOCAL INSPECTORS ARE TO WORK WITH AND APPROVE EACH INSTALLATION.

TENNESSEE DEPARTMENT OF AGRICULTURE  
REGULATORY SERVICES -FOOD & DAIRY SECTION  
ELLINGTON AGRICULTURAL CENTER  
BOX 40627, MELROSE STATION  
NASHVILLE, TENNESSEE 37204

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## Appendix C

### Information from the Tennessee Department of Agriculture for Potential Dairy Processing Manufacturers

To: Potential Dairy Products Manufactures  
RE: Dairy Products Manufacturing Facility

This information is provided to you as a result of your inquiry as to how to begin a dairy manufacturing facility in Tennessee. It is in no way intended to be the definitive guideline for such a facility, but only a resource for guidance down your road as you plan to construct or modify a location to initiate such an operation. Keep in mind there are many agencies, state and local, which may be involved in regulating aspects of such a business. A lot of research on your part will be required before you should even think about "breaking ground" and moving ahead with the project. It is not an insurmountable task, but one which must be taken with thorough research and planning.

The Department's role is monitoring compliance with the law and regulations of the FDA Pasteurized Milk Ordinance (i.e. PMO), the guiding document in Tennessee for the operation of a dairy farm and/or dairy processing facility. The Pasteurized Milk Ordinance is available on the web at [www.fdagov](http://www.fdagov).

It is your responsibility to be or become familiar with the requirements of this document. It covers all aspects of the processes, methods to be used, specifications for various pieces of equipment, methods of cleaning, temperature requirements, testing procedures, product quality bacteria standards, enforcement procedures when deviations are observed, and the whole realm of operations of a dairy plant. This should be your source document for developing your plans for the facility. At this point it is assumed you have some idea as to where the raw milk will come from, so discussion will be geared toward guidance for beginning a plant operation.

In recent years, the most requested assistance from the Department has been instating up a farm based dairy plant operation. Also, as you should note in the definitions included in the PMO, the milk of goats, sheep and water buffalo is included in the definition of dairy products.

The first consideration for locating the facility is water and waste disposal. An adequate supply of potable water must be available. The source must be approved by the Tennessee Department of Environment and Conservation. A public municipal supply is recommended, but a well on site is acceptable. Refer to guidance information in the PMO for the design and construction of a well, in addition to the TDE&C requirements. Contact phone number: (888) 891-8332.

The second is the method of waste disposal. A municipal sewer system may be available and is acceptable. Keep in mind, many local and/or municipal systems also have costs associated with the amount and type of waste going into the treatment facilities, so consideration must be given to this area because of the large volume of waste water and Biological Oxygen Demand (BOD) content generally discharged by a dairy processing plant.

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## Potential Dairy Products Manufactures

Next, consult with persons or companies familiar with the operations of dairy plants for Potential Dairy Products manufactures guidance. They can help you determine volume of product you may be producing, which will then assist you in determining the amount of space you will need to include for:

### Receiving areas

- Storage tanks for raw products
- Size and/or types of pasteurizing equipment to use
- Methods for cooling and storing pasteurized milk
- Capacity or size of refrigerated and/or frozen storage for finished products
- Space needed for storage of dry products and containers and closures
- Space needed for laboratory testing procedures

A major aspect of any dairy operation is proper cleaning and sanitizing of equipment. Most chemical manufacturers and/or suppliers will assist you in setting up complete systems to address your cleaning and sanitizing needs. Many things must be considered such as size of piping, flow rate of pumps, amounts and cost of chemicals needed, and again, disposal of waste discharge into the disposal system. Soil from dairy products requires the use of more specialized detergents and sanitizers due to the nature of the product, and knowledgeable guidance from a professional should always be sought.

If you intend to package your products in returnable containers, consideration must be given to proper washing and sanitizing of the containers. Lots of different and hazardous items get stuffed or poured into returnable containers by consumers after use. If you choose to use returnable containers, you must assure that any foreign or hazardous substance has been thoroughly and completely removed prior to filling.

If single service containers are to be used, the sources must be approved as required by the PMO. This is accomplished by inclusion as a container manufacturer on the Interstate Milk Shipper's List, with a current approval, as an approved source. Again, more information can be found on the FDA web site.

Ingredients used in the manufacture of dairy products are generally divided into two groups. The first group is actual dairy compounds (dry milk, milk solids, etc.) and these must come from approved IMS listed plants.

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The second group is the flavors, colors, binders, thickening agents, etc. For all ingredients of this type, you must obtain certificates of analysis or letters of certification from the manufacturer/supplier that the products are food grade and are approved as a food ingredient by FDA. This is generally referred to as in compliance with "21 CFR..." which means approved under Title 21 of the Code of Federal Regulations as a food ingredient.

As you proceed along your path of planning, you will have to decide how you are going to introduce the product into the sales container. Again, consultants and equipment dealers can assist you in determining your needs based on cost and volume. Once pasteurized, milk must be cooled immediately to below 45° F, held and packaged at no more than 45° F, so the method of cooling must be determine most often a plate exchanger. Plate exchangers do require a potable quality chilled water source, tested biannually for compliance, and utilizing approved chemicals.

Packaging machines must meet PMO standards with a 3A approval certificate. They are available in different styles and sizes and can be either new or used.

All piping used in the plant must be properly welded and sloped so no milk or cleaning solutions are left in the lines to sit when not in use. A welder proficient in dairy plant or major manufacturing work should always be consulted.

Containers to be filled must be more rigorously protected from contamination during storage, handling and the filling and capping process than any other food product. Since dairy is an ideal protein, nutritious food for humans, bacteria will grow rapidly if introduced into the product. Consult the PMO for guidance in the design and fabrication of conveyor lines, shields for fillers, and clean air requirements for air directed at or into food contact containers or surfaces.

Last, submit a detailed drawing to Tennessee Department of Agriculture Dairy division showing your facility as you have decided it should be with 3A standards compliance. Include equipment specifications, sample label of each product to be produced, building materials to be used, type of walls and floors, lighting drainage system (floor drains, trench drains), floor slope and flow diagram of product from raw to finish. Discuss areas surrounding facility, processing methods to be used, cleaning regimen procedures, location of sinks, COP vats and CIP systems.

Once the proposal has been reviewed and acted upon by the Department, and only then, do you want to actually start construction of your facility. We stand ready to assist and advise in any way we can, and will make on-site consultation visits during the construction phase to assure conformance with specifications provided, and hopefully, making any changes needed as the work progresses.

We look forward to assisting you in your endeavor, as you strive to ensure the safest, most wholesome product possible.

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## Appendix D

### General List of Requirements for Food Manufacturing/Warehousing from the Tennessee Department of Agriculture

#### TENNESSEE DEPARTMENT OF AGRICULTURE

JAI TEMPLETON COMMISSIONER  
CONSUMER & INDUSTRY SERVICES

#### MANUFACTURING/WAREHOUSING

The following list contains basic requirements for a plan review of a food manufacturer or food warehouse facility in Tennessee.

Refer to GMP Regulations as attached:

1. Walls, floors, equipment, and ceilings in food preparation, handling, storage, CIP & COP, and toilet rooms must be of a light color, smooth, nonabsorbent and easily cleanable. (If concrete floors are used, they must be sealed.)
2. All fixed equipment must be sealed to wall, unless sufficient space is provided for easy cleaning between, behind, and above each unit.
3. All wiring and plumbing must be installed in a way that does not obstruct or prevent cleaning (behind wall).
4. Floor mounted equipment, unless easily moveable, shall be sealed to the floor, or elevated to provide at least a (6) six-inch clearance between the floor and equipment.
5. Lights located over food preparation and food display facilities, and CIP & COP areas, must be shielded, coated or otherwise shatter resistant.
6. Each plant shall provide its employees with adequate, readily accessible toilet facilities. Compliance with this requirement may be accomplished by: (1) Maintaining the facilities in a sanitary manner. (2) Keeping the facilities in good repair at all times. (3) Providing self-closing doors. (4) Providing doors that do not open into areas where food is exposed to airborne contamination, except where alternate means have been taken to protect against such contamination (such as double doors or positive airflow systems.)
7. All outer doors and restroom doors must have self-closures.
8. A conveniently located hand wash sink must be provided in each food preparation area. Hand washing facilities shall also be located in or immediately adjacent to toilet rooms or their vestibules.
9. Plumbing shall be of adequate size and design, and adequately installed and maintained to properly convey sewage and liquid disposable waste from the plant, avoid constituting a source of contamination to food, water, supplies, or creating an unsanitary condition, and by providing adequate floor drainage.

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10. Provide that there is not backflow from, or cross connection between, piping systems that discharge wastewater or sewage and piping systems that carry water for food or food manufacturing. Except for properly trapped open sinks, there shall be no direct connection between the sewerage system and any drains originating from equipment in which food, equipment or utensils are placed.
  11. Provide an adequate and effective hood and exhaust system over all deep fat fryers, broilers, griddles, ranges, steam cookers and similar equipment which produce comparable amounts of steam, smoke, grease or heat; systems shall be installed and operated according to applicable laws.
  12. Dumpsters and outside storage areas must be located on smooth, nonabsorbent surfaces.
  13. All operations in the receiving, inspecting, transporting, segregating, preparing, manufacturing, packaging, and storage of food shall be conducted under such conditions and controls as are necessary to minimize the potential for the growth of microorganisms, or for the contamination of food. Appropriate quality control operations shall be employed to ensure that food is suitable for human consumption and that food-packaging materials are safe and suitable.
  14. When ice is used in contact with food, it shall be made from water that is safe and of adequate sanitary quality, and shall be used only if it has been manufactured in accordance with current good manufacturing practices.
  15. Potable water sufficient to meet all needs shall be provided from a source approved by the Tennessee Department of Conservation and Environment. An adequate safe water supply derived from: (A) a municipal service or (B) a private water supply deemed to be safe as determined by inspection and annual microbiological analysis for coliform conducted at a laboratory deemed acceptable by Tennessee Department of Agriculture. Current documentation of the laboratory analysis must be kept at the facility for review at the time of inspection.
  16. Sewage disposal shall be made into an adequate sewage system or disposed of through other adequate means. All sewage, including liquid waste, shall be disposed of by a public sewerage system or by a sewage disposal system approved by the Tennessee Department of Health and Environment.
  17. Equipment cleaning and sanitizing agents shall be adequate and safe under conditions of use. Any facility, procedure, or machine is acceptable for cleaning and sanitizing equipment and utensils if it is established that the facility, procedure, or machine will routinely render equipment clean and provide adequate cleaning and sanitizing treatment.
  18. Refrigerated, frozen and hot storage units shall be provided in such manner and of such capacity to assure the maintenance of potentially hazardous food at the required temperature during storage and display. Internal temperatures are: hot foods 135°F or above, cold foods 41°F or below, frozen foods 0° or below.
  19. Equipment, including ice makers and ice storage equipment, shall not be located under exposed or unprotected sewer lines, water lines that are leaking or on which condensed water has accumulated, open stair wells, or other sources of contamination.
  20. Facility must be free of pests. Individuals providing service must be licensed.





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Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.