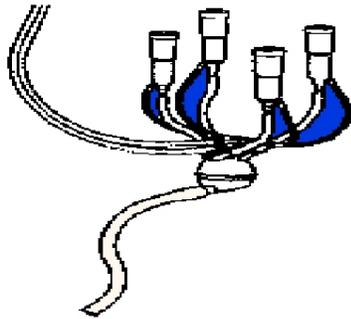


# MILKING EQUIPMENT INSTALLER MANUAL

**2014 REVISION**



**WISCONSIN DEPARTMENT OF AGRICULTURE,  
TRADE AND CONSUMER PROTECTION**



# **MILKING EQUIPMENT INSTALLER MANUAL**

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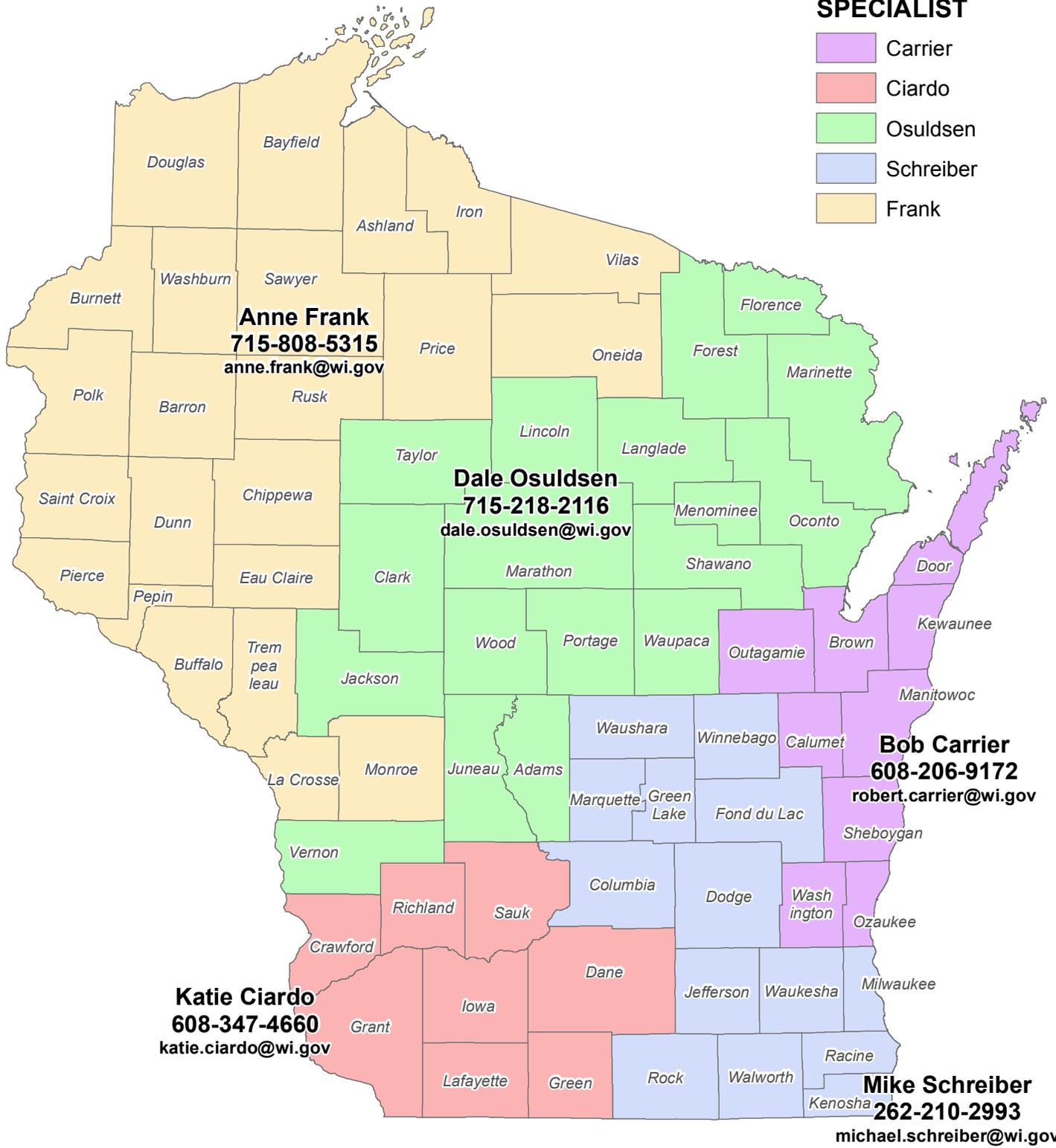
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# Division of Food Safety

## Food & Dairy Specialist Areas

### SPECIALIST

- Carrier
- Ciardo
- Osuldsen
- Schreiber
- Frank



**Food Safety Supervisor - Technical:** Steve Stoner 715-577-8639 [steve.stoner@wi.gov](mailto:steve.stoner@wi.gov)

**General Technical Specialists E-mail:** [DATCPTechnicalSpecialists@wi.gov](mailto:DATCPTechnicalSpecialists@wi.gov)

## Contact List for Dairy Farm Equipment Installers

DATCP Division of Food Safety Statewide Equipment Approvals Statewide Policy Questions Copy of Milking Equipment Installer Manual	DATCP Division of Food Safety Central Office PO Box 8911 Madison WI 53708-8911 608-224-4700
DATCP Division of Food Safety Dairy Records Office	DATCP Division of Food Safety 718 W Clairemont Ave Suite 128, Eau Claire WI 54701 715-839-3844
DATCP Division of Food Safety Plan Review Equipment Review Policy Questions	See the Food and Dairy Specialist map
Septic Systems	Wisconsin Department of Safety and Professional Services Division of Safety and Buildings 608-266-3151 or <a href="mailto:DspsSbPIbgTech@wi.gov">DspsSbPIbgTech@wi.gov</a> <a href="#">Private Onsite Wastewater Treatment Systems Program</a> <a href="#">Plumbing Program</a>
Plumbing and Cross Connections	
ASABE Standards <ul style="list-style-type: none"> <li>• ANSI/ASABE AD5707:2007</li> <li>• ANSI/ASABE AD6690:2007</li> <li>• ANSI/ASABE AD20966:2007</li> </ul>	American Society of Agricultural Biological Engineers 2950 Niles Rd St Joseph MI 49805 269-429-0300 or 800-606-2304 Email: <a href="mailto:hq@asabe.org">hq@asabe.org</a> Web site: <a href="http://www.asabe.org">www.asabe.org</a>
3-A Standards and Accepted Practices  3-A Accepted Practices for the Design, Fabrication, and Installation of Milking and Milk Handling Equipment No. 606-05	6888 Elm Street, Suite 2D McLean VA 22101 703-790-0295 Fax: 703-761-6284 Email: <a href="mailto:3-ainfo@3-a.org">3-ainfo@3-a.org</a> Web site: <a href="http://www.3-a.org">www.3-a.org</a>
Helpful guidelines on milking parlors, milk pre-coolers, water heater sizing, etc	The Dairy Practices Council 19 Titus Court Richboro, PA 18954 Tel/Fax 215-355-5133 Email: <a href="mailto:dairypc@dairypc.org">dairypc@dairypc.org</a> Web site: <a href="http://www.dairypc.org">www.dairypc.org</a> *Also check with your county UW Extension Agricultural Agent
Training in milking system design, sizing and testing	University of Wisconsin CALs Outreach Office 1450 Linden Drive Madison, WI 53706 608-262-1251 Email: <a href="mailto:info@cals.wisc.edu">info@cals.wisc.edu</a> Web site: <a href="http://www.cals.wisc.edu">www.cals.wisc.edu</a>



Wisconsin Department of Agriculture, Trade and Consumer Protection  
*Division of Food Safety*  
PO Box 8911, Madison, WI 53708-8911  
Phone: (608) 224-4682 Fax (608) 224-4710

## Wisconsin Requirements for Milking Equipment Plans

*Sec. 93.06 (1w) Wis. Stats. Sec. ATCP 60.10(6)(a) Wis. Admin. Code*

All applications for Milking Equipment Installations must include a plan. Plans must be submitted to DATCP – Division of Food Safety and be reviewed prior to installation. All installations, modifications or replacements shall meet applicable requirements.

### Plans that require a \$25.00 fee:

- Pipeline System Installation (new or used systems)
- Pipeline System or Component Modifications

If the modification or replacement changes any of the following:

- Size of milking line or main vacuum line
  - Length of milking line
  - Size of number of receiver jar inlets
  - Number of pipeline slopes
  - Number of milker units
  - Number of milker units per milk line slope
  - CFM of vacuum needed
  - Size of vacuum pump if CFM is less than previously installed
- Bulk Tank Installation (new or used tanks)
  - Milk Pre-cooling Equipment Installations (new or used)
  - Direct Tanker Milking Operations
  - Milk House, new or modifications
  - Milking Parlors, new or modifications
  - Water Systems, new or updated systems for milk house and parlor.



Wisconsin Department of Agriculture, Trade and Consumer Protection  
Division of Food Safety

## Application for Milk Handling Equipment and Facility Construction

**Mail To:** WDATCP 718 W Clairemont Ave Ste 128, Eau Claire WI 54701

**Make Checks Payable To:** WDATCP

- Wisconsin regulations requires the installer, on behalf of the producer, to submit this application and (2 copies) of the drawing/plans for review prior to installation of a bulk tank or milking and milk handling system OR construction of, or modification to, a milkhouse, milking parlor or dairy farm water system.
- Only plans that are complete and legible will be reviewed.
- The fee of \$25 must accompany this form or plans will be returned.
- The review of your plan and /or application is based on Wisconsin regulations and standards in effect at this time.
- Modification of this installation may be required at some future date as regulations and standards are updated.

### MILKING ANIMAL

<input type="checkbox"/> COW	<input type="checkbox"/> GOAT	<input type="checkbox"/> SHEEP	<input type="checkbox"/> OTHER :
------------------------------	-------------------------------	--------------------------------	----------------------------------

### EQUIPMENT INSTALLATION

<input type="checkbox"/> NEW	<input type="checkbox"/> MODIFICATION
------------------------------	---------------------------------------

### TYPE OF EQUIPMENT

<input type="checkbox"/> BULK TANK	<input type="checkbox"/> PRECOOLER
<input type="checkbox"/> PIPELINE MILKER	<input type="checkbox"/> SILO
<input type="checkbox"/> DIRECT TANKER (Requires Supplementary Application)	
<input type="checkbox"/> ROBOTIC MILKING SYSTEM (AMI) (Requires Supplementary Application)	
<input type="checkbox"/> Other – explain	

**NOTE:** Immediately **after** installing or modifying any system listed above, the installer shall provide to the milk producer and the department a copy of the signed Certification of Installation Completion which certifies compliance with the construction standards of ATCP 60, Wisconsin Administrative Code.

### FACILITY CONSTRUCTION

<input type="checkbox"/> NEW	<input type="checkbox"/> MODIFICATION
------------------------------	---------------------------------------

### TYPE OF FACILITY

<input type="checkbox"/> STANCHION BARN	<input type="checkbox"/> MILKING PARLOR
<input type="checkbox"/> SWING PARLOR	<input type="checkbox"/> FLAT BARN PARLOR
<input type="checkbox"/> OPEN AIR PARLOR	<input type="checkbox"/> MILKHOUSE
<input type="checkbox"/> WATER SUPPLY SYSTEM	

**Please Print Clearly and Check Spelling**

### INSTALLER INFORMATION

LEGAL NAME OF APPLICANT	PHONE	
APPLICANT EMAIL ADDRESS		
MAILING ADDRESS STREET		
CITY	STATE	ZIP

INSTALLER'S SIGNATURE

DATE

### DAIRY PLANT INFORMATION

DAIRY PLANT NAME		
PLANT LOCATION	PLANT NO.	PATRON NO.

### PRODUCER INFORMATION

NAME	PHONE	
DBA/FARM NAME		
MAILING ADDRESS STREET		
CITY	STATE	ZIP
COUNTY NAME & #	TOWN NAME & #	SECTION #

PRODUCER'S SIGNATURE

DATE

### WDATCP USE ONLY

PAYMENT RECEIVED 7000-G3	
REVIEWER	DATE
REV COMMENTS	DATE STAMP

CONTINUE ON REVERSE SIDE

## INSTRUCTIONS

- Complete all blanks applicable to this installation
- This application must be accompanied by a detailed legible drawing of the milking system and water distribution system showing the following items, when present:

1. Bulk Milk Tank	5. Floor Drain	9. Receiver Group	13. Filter	17. Pressure Tank
2. Double Wash Vats	6. High Point	10. Weigh Jars	14. Vacuum Pump	18. Reclaimed Water Tank
3. CIP Pipeline Vat	7. Vacuum Test Port	11. Pipeline Inspection Port	15. Wash Flow	19. Backflow Prevention Device
4. Hand Wash Sink	8. Air Injector	12. Milk Precooler	16. Wash Manifold	20. Air Gap Connection

## FABRICATION OF MILKING SYSTEM

### A. MILKLINE

1. Material(s)	7. Percent slope	<input type="checkbox"/> .8% (1 inch/10 feet)
2. Diameter	<input type="checkbox"/> 1.0% (1¼ inch/10 feet)	<input type="checkbox"/> 1.2% (1½ inch/10 feet)
3. Length	<input type="checkbox"/> 1.5% (2 inch/10 feet)	<input type="checkbox"/> 2.0% (2½ inch/10 feet)
4. WELDED <input type="checkbox"/> GASKETED <input type="checkbox"/>	8. HIGH LINE <input type="checkbox"/> LOW LINE <input type="checkbox"/>	
5. Number of Units	9. Max. Height from <b>Cow Platform</b>	
6. Max. Units Per Slope	10. Units Washed in PARLOR <input type="checkbox"/> MILKHOUSE <input type="checkbox"/>	

### B. MILK RECEIVER

1. Number of Receiver Inlets	2. Size of Receiver Milk Inlet(s)	3. Size of Receiver Vacuum Inlet
4. Located in a Pit? YES <input type="checkbox"/> NO <input type="checkbox"/>	5. Located in a Mini-Milkhouse? YES <input type="checkbox"/> NO <input type="checkbox"/>	

### C. OTHER SYSTEM COMPONENTS WITH VACUUM REQUIREMENTS (FILL IN THOSE THAT APPLY)

ITEM	QUANTITY	ADDITIONAL VACUUM REQUIREMENTS

### D. VACUUM SYSTEM

1. Main Airline	Material:	Diameter:	Length:
2. Pulsator Line	Material:	Diameter:	Length:
3. Automatic Drains in Pulsator Lines: YES <input type="checkbox"/> NO <input type="checkbox"/>			
4. Vacuum Pump(s):	Brand:	Model(s):	Motor hp:
5. Total Vac Pump Capacity:	CFM/ASME at Normal Operating Level of:		In Hg
6. Vacuum Regulator:	Brand:	Model:	
7. Other (specify):			

### E. MILK COOLING AND STORAGE SYSTEM

1. Pre-Cooler	Plate <input type="checkbox"/> Tube <input type="checkbox"/> Other:
Number of sections in plate cooler: _____ Does each section freely drain? YES <input type="checkbox"/> NO <input type="checkbox"/>	
Coolant: Well water single use <input type="checkbox"/> Recirculated water <input type="checkbox"/> Recirculated glycol <input type="checkbox"/>	
Type of coolant preservative used: _____	
2. Bulk Milk Tank or silo	Brand _____ Model: _____ Capacity: _____ Date of Manufacture: _____
Bulk Milk Tank or silo	Brand _____ Model: _____ Capacity: _____ Date of Manufacture: _____
Bulk tank temperature recorder provided? (Required on tanks manufactured after 1/1/2000) Type: Chart: _____ Computer: _____	
3. Type of cleaning: MANUALLY CLEANED <input type="checkbox"/> CIP <input type="checkbox"/>	
4. Distances from bulk milk tank to walls, ceiling and equipment provided on plan? YES <input type="checkbox"/> NO <input type="checkbox"/>	
5. Direct Ship operations requires a supplemental application	

### F. WATER HEATING EQUIPMENT

1. Water heating system <b>adequate</b> for all milking: YES <input type="checkbox"/> NO <input type="checkbox"/>	Capacity: _____ Gallons
2. On Demand or continuous flow hot water systems. (Attach total hot water usage requirements and system capacity information)	

### G. PHYSICAL SEPARATION OF WASH SYSTEM LINES FROM:

1. Milking System During Milking: YES <input type="checkbox"/>	2. Milk Tank During Milk Storage: YES <input type="checkbox"/>
--	--

### H. FACILITY CONSTRUCTION FINISH SCHEDULES

1. Complete wall, floor, ceiling and lighting schedule provided for new facility construction or modification?: YES <input type="checkbox"/> NO <input type="checkbox"/>
2. Has a sanitary waste permit been applied for?: YES <input type="checkbox"/> NO <input type="checkbox"/>

## CERTIFICATION OF INSTALLATION COMPLETION

PRODUCER: Old McDonald  
McDonald's Farm  
2811 Agriculture Dr  
Madison, WI 53708

Date of application: 06/01/2014

File # 1234

PRODUCER SHALL POST IN MILK HOUSE FOR 12 MONTHS

I hereby certify that I have installed the equipment as described on this application and in compliance with Chapter ATCP 60, Wisconsin Administrative Code

Best Dairy Equipment, Inc.

SIGNATURE OF EQUIPMENT INSTALLER OR REPRESENTATIVE:

DATE OF COMPLETION:

INSTALLER MUST SIGN THIS STATEMENT UPON  
COMPLETING INSTALLATION

MAIL A COPY  
TO THE PRODUCER

MAIL A COPY  
DATCP, DIVISION OF FOOD SAFETY,  
718 W Clairemont Ave., Ste 128, EAU CLAIRE WI 54701



## WISCONSIN C.I.P. MILKING SYSTEM REQUIREMENTS

Wisconsin Department of Agriculture,  
Trade and Consumer Protection  
Division of Food Safety

1. **Milkline Support:** Support the C.I.P. milking pipeline at least every 10 feet so the entire pipeline and fittings remain in constant alignment and position. Do not hang the pipeline from the ceiling, but supported on posts extending from the floor to the ceiling, on barn posts, or in the stanchion supports. Use pipeline supports of stainless steel or other hanger material designed to reduce the possibility of electrolytic action within the pipeline.
2. **Milkline Slope:** Slope the C.I.P. milking pipeline to be self-draining and have a continuous slope of at least one-inch per ten feet from a high point. The highest point of the milk pipeline shall not exceed seven feet above the cow platform. Provide pitch of at least 1/2 inch per ten feet on the vacuum lines in the direction of airflow.
3. **Stall Cocks:** Install stall cocks (milk inlet nipples) on the upper half of the line.
4. **Milk Pump:** Mount the milk pump for ease of maintenance and inspection. The department recommends weekly inspection of the milk pump.
5. **CIP Racks:** Ensure all clean-in-place racks and appurtenances are removable from the two-compartment wash sink to provide two unobstructed compartments for washing and rinsing of all other equipment or provide a third wash sink.
6. **Receiver Jar Pits:** Receiver jars installed in pits shall meet all general milkhouse construction requirements, and the following additional requirements.
  - Size the pit for adequate access for inspection of receiver jar components
  - Provide a method to prevent milkhouse floor wastes from entering the pit through the installation of a raised lip or concrete curbing.
  - Provide adequate lighting above the pit
  - Slope the pit floor to drain and effectively remove all liquid wastes to protect the receiver group. Removal of liquid waste via a sump is acceptable; do not connect the drain to a sanitary disposal system.
7. **Plumbing Code:** To prevent back-siphoning, the Wisconsin Plumbing Code requires that the water inlet of an automatic washer or water hose inlet terminate at least twice its inside diameter above the flood rim of the wash sink.
8. **Water Heating Capacity:** Water heating capacity shall be adequate for all milkhouse operations. The producer or installer shall determine the water heating capacity needed. Guidance for sizing water heating systems can be obtained from The Dairy Practices Council publication number 58; "Guidelines For Sizing Dairy Farm Water Heater Systems"<sup>1</sup> or from a milking equipment installer..
9. **Product Adulteration:** Prevent adulteration of the milk supply, with water or cleaning solutions or sanitizer during product storage and the cleaning, rinsing or sanitizing operations.
10. **Automatic drains:** Install automatic drains where needed to make all vacuum lines drain completely, i.e., at the bottom of all risers.
11. **Access for Inspection:** Provide a removable elbow on all welded lines to provide access for inspection. Install this elbow in the wash solution return line nearest the milk house.
12. **Sample Welds:** Good manufacturing practices recommend that a sample weld be made at the start of each day's welding and be available at the producer location for inspection. Satisfactory welds do not required grinding or polishing.
13. **Vacuum Sizing:** See the instructions on the back of this sheet for sizing the vacuum system, pulsator airline, main airline, and milkline. **Note:** The instructions are based on ASAE Standard S518. They are only recommendations and do not guarantee proper system sizing.

**3-A Accepted Practices, ASAE Standards, and DATCP recommend that the completed system be tested as described in ASAE Standard EP445 to verify proper performance.**

<sup>1</sup> Order From: The Dairy Practices Council  
51 E. Front Street, Suite 2  
Keyport, NJ 07735  
Telephone/Fax: (732) 203-1947  
Or online at [www.dairyipc.org](http://www.dairyipc.org).

# MILKING SYSTEM SIZING

## 1. VACUUM SYSTEM SIZING

### ASAE Standard S518, Annex A

- Allow 35 CFM for basic effective reserve
- Add 3 CFM for each milker unit
- Add 0.5 CFM for each milk meter (or manufacturer specification if different than 0.5 CFM)
- Add CFM for other vacuum equipment according to manufacturer specification
- Add CFM for cleaning if needed based on S518, Annex A3

## 2. PULSATOR AIRLINE SIZING

### ASAE Standard S518, Section 9

**Table 2 - Recommended minimum sizes for looped pulsator airlines**

Number of units	Pipe diameter <sup>1</sup>
1 to 14	50 mm (2 in.)
15 or more	75 mm (3 in.)

<sup>1</sup> metric = nominal ID. inch = US pipe size

## 3. MAIN AIRLINE SIZING

### ASAE Standard S518, Annex B

Vacuum pump capacity L/min free air	Approx. length of main airline (m of straight pipe)			
	5	15	20	25
1500	50 mm	75	75	75
2000	75	75	75	75
3000	75	75	75	100
4000	100	100	100	100
5500	100	100	100	100
7000	100	150	150	150
8500	150	150	150	150
10000	150	150	150	150

Vacuum pump capacity ft <sup>3</sup> /min free air	Approx. length of main airline (feet of straight pipe)						
	10	20	40	60	80	100	200
50	2 in.	2	3	3	3	3	3
70	3	3	3	3	3	3	3
100	3	3	3	3	4	4	4
150	4	4	4	4	4	4	4
200	4	4	4	4	4	4/6	6
250	4	4	6	6	6	6	6
300	6	6	6	6	6	6	6
400	6	8	6	6	6	6	6

NOTE - The main airline is defined as the pipeline between the vacuum pump and the sanitary trap near the receiver. These calculations are based on a maximum vacuum drop of 2 kPa (0.6 in. Hg) between the vacuum pump and receiver. The maximum air flowrate is normally from the vacuum regulator to the pump. Whenever additional air enters the milking clusters during milking, however, the maximum air flowrate is from the receiver to the vacuum pump.

These tables include an allowance for the equivalent length (m or feet of straight pipe) of one distribution tank, one sanitary trap and eight elbows. If the system includes more than eight elbows, then use the next pipe length column to the right for every three additional elbows. In systems with two receivers, the theoretical maximum air flowrate in the two separate airlines between the distribution tank and the sanitary traps may be halved. The size of these split lines can be reduced according to the values in the table corresponding to half the vacuum pump capacity.

## 4. MILKLINE SIZING

### ASAE Standard S518, Annex C

#### Design guidelines and recommendations for maximum number of units per milkline slope to assume stratified flow

- These guidelines are based on the fastest-milking 5% of cows in the US and France, i.e. mean peak milking rate of 5.5 L/min (12 lb/min) per cow.
- Steady air admission within the range 10 to 20 L/min (0.35 to 0.7 ft<sup>3</sup>/min) per unit through claw air vents and air leaks is assumed in the calculations.
- The guidelines assume that the cross-sectional area of the milkline(s) is not substantially reduced by fittings.
- A slope of 0.8% is equivalent to 8 mm drop per m of run (1 in. drop in 10 ft).
- A slope of 1.2% is equivalent to 12 mm drop per m of run (1.5 in. drop in 10 ft).

**Table C1 - Milking parlors: looped milkline with units attached simultaneously by careful operators. Transient air admission of 100 L/min (3.5 ft<sup>3</sup>/min) per milkline slope**

Nominal mi kline size	Maximum number of units per slope				
	0.8%	1.0%	1.2%	1.5%	2.0%
48 mm (2 in.)	2	3	3	4	5
60 mm (2.5 in.)	6	6	7	9	10
73 mm (3 in.)	11	13	14	16	19
98 mm (4 in.)	27	30	34	38	45

**Table C2 - milking parlors: looped milkline with units attached simultaneously by typical operators Transient air admission of 200 L/min (7 ft<sup>3</sup>/min) per milkline slope.**

nominal mi kline size	Maximum number of units per slope				
	0.8%	1.0%	1.2%	1.5%	2.0%
48 mm (2 in.)	1	1	2	2	3
60 mm (2.5 in.)	4	4	5	6	8
73 mm (3 in.)	9	10	12	13	16
98 mm (4 in.)	24	27	31	36	41

**Table C3 - Stanchion barns: looped milklines with units attached every 30 seconds per slope Transient air admission of 100 L/min (3.5 ft<sup>3</sup>/min) per milkline slope.**

Nominal mi kline size	Maximum number of units per slope			
	0.8%	1.0%	1.2%	1.5%
48 mm (2 in.)	2	3	3	4
60 mm (2.5 in.)	6	9	*(9)	*(9)
73 mm (3 in.)	*(9)	*(11)	*(13)	*(16)

NOTE - Asterisk indicates an unlimited number at units when they are attached at 30 s intervals. If more than one operator is attaching units on the same slope, the attachment rate may be quicker than one unit every 30 s. if so, then the guideline figures in table C1 could be used.

Wisconsin Department of Agriculture,  
Trade and Consumer Protection,  
2811 Agriculture Drive, Madison, WI 53718  
This institution is an equal opportunity provider.

# Sheep / Goat Milking System Sizing Guidelines

System	Cubic Feet Per Minute (CFM) (ASME)	Liters Per Minute (LPM)
<b>Bucket Systems : Base</b>	10	280
Per Milking Unit additional	2	56
Vacuum Dumping Station	5	140
<b>Pipeline Systems : Base</b>	25	700
Per Milking Unit Additional	2	56

Pipeline systems require more vacuum to wash than to milk under many circumstances given the reduced airflow per unit needs of the two (2) teatcup claws used in small ruminants. The following is a chart for the minimum airflow needed to wash different size milk lines.

### Minimum Vacuum for Cleaning\*

Line Size	CFM	LPM
1.5"	25	700
2.0"	40	1120
2.5"	60	1680

\* for each loop of pipeline, every additional loop will require approximately 50% more airflow

### Main Vacuum Line Sizing

Pump Capacity	Length of Main Airline	Size of Line Required
50 CFM	< 60 feet	2 inch
50 -125 CFM		3 inch
> 150 CFM		Check Manufacturer

### Pulsation Lines

2 inch line	Up to 35 units
3 inch line	36 or more units

### Best Guidance to Date: Field Studies Still On-Going Number of Milking Units per Line Slope Inches of Slope in 10'

Nominal Line Size	1" (.8%)		1.25" (1%)		1.5" (1.2%)		1.75" (1.5%)	
	Goats	Sheep	Goats	Sheep	Goats	Sheep	Goats	Sheep
<b>1.5"</b>	3	5	4	6	4	8	5	9
<b>2.0"</b>	6	10	8	12	10	16	12	16
<b>2.5"</b>	12	24	14	24	16	28	18	32



## WISCONSIN DAIRY FARM MILK PRE-COOLER REQUIREMENTS

Wisconsin Department of Agriculture,  
Trade and Consumer Protection  
Division of Food Safety

### ALL PRE-COOLERS-GENERAL REQUIREMENTS

1. A plan shall be submitted to and reviewed by DFS before installing a pre-cooler.
2. The installation shall comply with 3-A 606-05 and Ch. ATCP 60 Wisconsin Administrative Code.
3. Pre-coolers shall drain completely; provide automatic drains where needed. Multiple pass coolers shall be designed to allow drainage of all the passes that can trap water.
4. Make pre-coolers easy to access for inspection and cleaning. Provide any tools needed for disassembly near the cooler.
5. Single use cooling water sources shall comply with ATCP 60.08.
6. Recirculated coolant shall be tested and found safe every 6 months.
7. Glycol coolant shall be food grade.
8. Recirculated coolant systems shall protect the coolant from contamination.
9. Provide a sampling valve on recirculated cooling systems.
10. Provide a drip deflector on the swing pipe if it passes through the bulk tank cover.
11. Locate pre-coolers in a proper area, not in milking barns or animal housing areas. Acceptable locations include the milkhouse, milking parlor, or a mini-milkhouse. Installation in a utility room may be accepted if the utility room meets the mini-milkhouse construction requirements (see *Wisconsin Requirements for Mini-Milkhouse/Pumphouse F-fd-35*).
12. For plumbing requirements, see next page.

### PLATE PRE-COOLERS-ADDITIONAL REQUIREMENTS

1. Plate pre-coolers shall comply with 3-A Standard 11-09.
2. Plate pre-coolers installed after November 1990 are required to have end plate bolt cutouts.
3. Mount plate pre-coolers a sufficient distance from the wall with unobstructed access to the moveable end plate.
4. Provide easy to disassemble connections on the end plates.
5. Plate pre-coolers shall allow opening to the width of one plate or 15 inches, whichever is less.
6. Ceiling mounted units shall be easy to take down for inspection.
7. Provide a milk filter between the receiver jar and pre-cooler. Change filters before milking and before CIP.
8. For plumbing requirements, see next page.

### TUBE IN SHELL COOLERS- ADDITIONAL REQUIREMENTS

Tube in shell pre-coolers shall comply with 3-A Standard 12-07.  
For plumbing requirements, see next page.

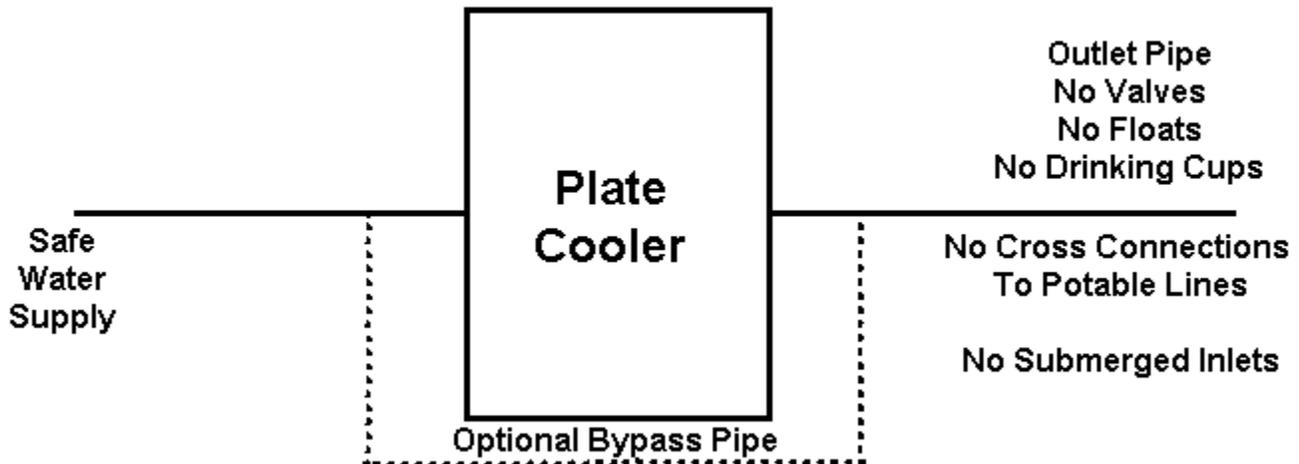
### CUBE TYPE COOLERS AND RECEIVER JAR COOLERS - ADDITIONAL REQUIREMENTS

For plumbing requirements, see next page.

### PLUMBING REQUIREMENTS FOR ALL PRE-COOLERS

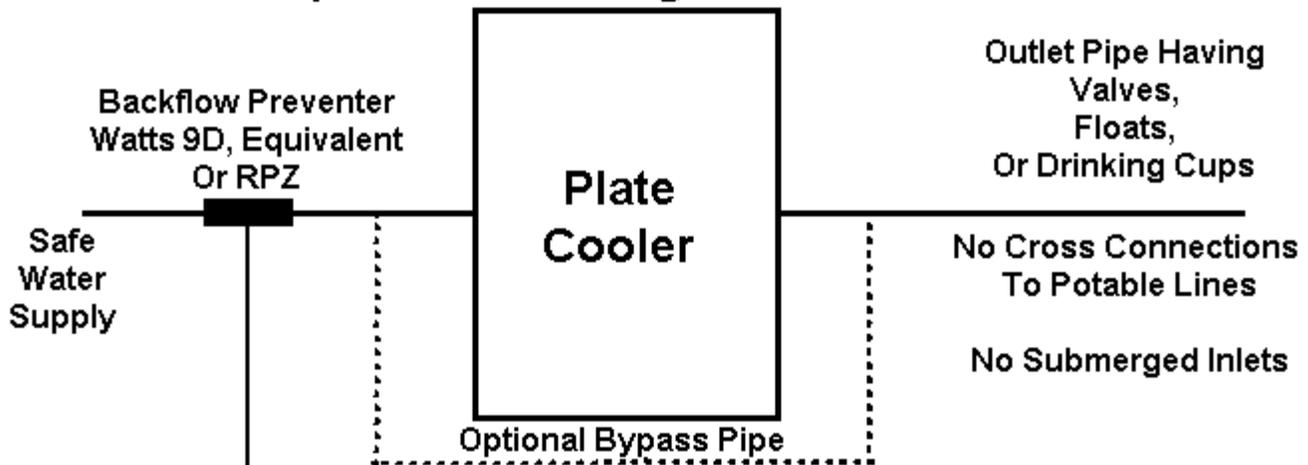
1. If there are no valves in the discharge line from the pre-cooler, back flow prevention is not required.
2. If there is a valve in the line downstream from the pre-cooler, back flow prevention is required on the water supply line.
3. The pre-cooler discharge line shall have no submerged inlets or cross connections to other water lines, regardless of any back flow prevention in the water supply line.

### Acceptable Plumbing-Outlet Line Not Under Pressure



Note: Valves may be located in the water supply and bypass lines

### Acceptable Plumbing-Outlet Pressurized



Note: Valves may be located in the water supply and bypass lines

## **WATER RECLAIMED FROM HEAT EXCHANGER PROCESSES**

Potable water utilized for heat exchange purposes in plate or other type heat exchangers or compressors on dairy farms may be salvaged for the milking operation if the following criteria are met. **Note:** Reclaimed water for milking operations is defined as any equipment or personnel cleaning operations, hot water production, CIP make-up, or any water use that may contact milking equipment. Submit a plan to DFS for review prior installing a reclaimed water system.

- 1) The water shall be stored in a storage vessel properly constructed of such material that it will not contaminate the water supply and be designed to protect the water supply from possible contamination.
  - Acceptable materials include those normally found in water distribution systems that also allow the system to be effectively cleaned if contamination of the system occurs.
  - Protection of the water supply in the tank includes the use of tight fitting or overlapping covers, placement of the tank in an environment that will not affect the integrity of the tank and protects the water supply from any potential source of contamination.
  - The storage vessel shall be equipped with a drain and access point to allow for cleaning.
- 2) The outlet of the plate cooler is properly isolated from the storage tank and must not reconnect with the potable water distribution system.
- 3) No cross-connection shall exist between this supply and any unsafe or questionable water supply or any other source of contamination.
  - There are no submerged inlets through which this supply may be contaminated.
- 4) The water shall be of satisfactory organoleptic quality and shall have no off flavors or odors.
- 5) The water shall be bacteriologically safe per NR 809.30. Test results shall be kept at the farm for review.
  - The dairy plant operator shall collect and analyze the reclaimed water system prior to initial approval and semi-annually thereafter. See below for the testing criteria.
- 6) Approved chemicals, such as chlorine, with a suitable retention period, may be used to suppress the development of bacterial growth and prevent the development of tastes and odors.
  - When chemicals are added, a monitoring program for the added chemicals shall be maintained.
  - Additionally, the chemical addition process shall not add substances that will prove deleterious to the use of the water or contribute to product contamination.
- 7) If the water is to be used for the sanitizing of teats or equipment (backflush systems), approved sanitizers, such as iodine may be added by an automatic proportioning device located downstream from the storage vessel but prior to end-use application.
  - Suitable backflow protection will be required prior to the addition of chemical.

**OR**

Water obtained directly from the discharge of a raw milk heat exchanger during a milking may be used once to pre-rinse dairy equipment including lines, milking claw assemblies and milk receivers if all the following apply.

- Collect the water directly from the plate heat exchanger into the wash vat or utensil sink.
- There is no submerged inlet between the plate heat exchanger discharge and the wash vat or utensil sink
- Discharge the pre-rinse water to waste immediately following use.

## **WATER RECLAIMED FROM HEAT EXCHANGER PROCESSES FOR NON-POTABLE USE**

Water may be reclaimed from plate heat exchangers on dairy farms and used for parlor floor wash down, manure pan flushing, holding area flushing, cattle watering and other non-potable uses without further testing. The outlet of the heat exchanger must be protected from backflow and must not reconnect with the potable water distribution system.

## **Bacteriological Standards for Private Water Supplies, Recirculated Water, and Reclaimed Water**

**Application:** To private water, recirculated cooling water, reclaimed water in dairy farms.  
Frequency: Initially, after repair, modification or disinfection of a private water supply of dairy farms and every 2 years thereafter; and initially, following repair, modification or disinfection of recirculated cooling water and reclaimed water on dairy farms and semiannually thereafter.

**Criteria:**

- A MPN (Most Probable Number of coliform organisms) of less than 1.1 per 100 ml, when ten replicate tubes containing 10 ml, or when five replicate tubes containing 20 ml, are tested using the multiple tube fermentation technique.

OR

- A MPN (Most Probable Number of coliform organisms) of less than 1 per 100 ml by the membrane filter technique,

OR

- A MPN (Most Probable Number of coliform organisms) of less than 1.1 per 100 ml when using a MMO-MUG technique. Note: The MMO-MUG technique is not acceptable for recirculated cooling water).

**Apparatus, Method, and Procedure:** Tests performed shall conform to the current edition of Standard Methods for the Examination of Water and Wastewater or with FDA approved, EPA promulgated methods for the examination of water and wastewater.



## WISCONSIN REQUIREMENTS FOR LOCATING AIR INJECTORS

Wisconsin Department of Agriculture  
Trade and Consumer Protection  
Division of Food Safety

The location of any air injector(s) must be listed on the pipeline plan submitted for review. All air injectors used for milk handling systems shall be in compliance with the following requirements.

- 1) Air injectors shall be installed in the milkhouse or an approved clean-in-place parlor.
  - The installation of air injectors in a milking barn is not allowed.
  - Air injectors installed in the milking parlor shall be equipped with an acceptable filter.
  
- 2) Air injectors installed on a milk-line shall meet sanitary construction standards for product contact surfaces or shall be removed from the milk-line during milking. If the Air injectors are removed during milking:
  - Sanitary caps shall be installed on both the injector and pipeline ports during milking.
  - The caps shall be cleaned and stored in the milkhouse when not in use.
  
- 3) Air injectors shall be close-coupled to the milk-line.
  - The distance between the air injector valve seat and the side-wall of the milk-line should not exceed two times the diameter of the injector mounting port or 5 inches, whichever is less.
  
- 4) Air injectors that are not closed coupled to the milk-line may require a separate wash supply line or jumper hose to assist in cleaning the stand pipe or may require manual cleaning.
  - All supply lines or jumper hoses shall be physically separated from the milk-line during milking.
  - Any openings in the milk-line shall be properly protected using clean sanitary caps.
  - The jumper hoses or sanitary caps shall be cleaned and stored in the milkhouse when not in use.

If you have any questions please contact your area Food and Dairy Specialist



# WISCONSIN MILKHOUSE CONSTRUCTION REQUIREMENTS

Ref: Chapter ATCP 60, Wisconsin Administrative Code

1. Floors shall be of concrete or other equally impervious materials and be sloped for proper drainage to a floor drain (¼ inch per foot slope is recommended).
2. Floor drains shall not be under the bulk tank and shall be readily accessible. Floor drains shall be trapped if connected to a sanitary sewer system.
3. Milkhouse drain and CIP pre-rinse water must be piped into a waste handling system and may not run through gutters in the barn or parlor areas. Properly treated wash and rinse waters from CIP systems may be used for floor rinsing of parlors. Please contact the Department for more information about the use of reclaimed water on farms.
4. Waste from toilets and showers must be disposed of in a sanitary sewer system or by other methods that comply with ATCP 60.14(6).
5. Plumbing in the milk house should meet the requirements of the state Plumbing Code. Cleaning solutions should be discharged directly into the waste system and not across concrete floors. There shall be no cross-connections or submerged inlets.
6. All milk house doors shall be self closing and tight fitting. If the milk house opens directly into the barn, the door shall be solid. Screen doors on outside openings shall open outward.
7. Adequate ventilation shall be provided to prevent excessive odors and visible condensation on any milkhouse surfaces. Ventilators shall not be located directly above bulk tank openings. Windows shall be effectively screened. Air supplied to the milkhouse must be from outdoors or from other rooms that are clean and free of odors. Vents located between the milkhouse and the parlor, barn, or cattle housing areas shall be provided with a fan that exhausts the milkhouse air and vent louvers that close tightly after the fan stops. Forced air heating systems shall not blow air from milking or animal housing areas into the milkhouse.
8. There shall be at least 30 foot-candles of illumination in all working areas of the milkhouse. Artificial lights located over a bulk tank shall be shatterproof, or effectively shielded to protect milk from contamination from broken glass.
9. Adequate clearance shall be maintained on the top along the sides of the bulk tank. Clearances of 24 inches on the top and milk outlet side and 18 inches on all other sides are recommended.
10. A hose port is required if a bulk tank is used and shall be installed in an outside wall at least six inches above the floor. A paved surface of concrete or other cleanable material shall be installed adjacent to the outside wall under the hose port. The minimum size of the paved surface is 4 ft. by 4 ft.
11. The milkhouse walls and ceiling shall be constructed and finished so that they are impervious to water, light colored and easily washable.
12. The milkhouse shall be large enough to accommodate all necessary equipment.
13. A milkhouse shall be equipped with a fixed handwashing facility which is separate from the wash and rinse vat. The handwashing facility shall be served by potable hot and cold running water from a faucet or faucets located directly over the facility. Water shall enter and leave the handwashing facility by means which preclude splash. Single service sanitary towels and soap shall be available at all times for use at the handwashing facility. A handwashing facility may be located in a room immediately adjacent to the milkhouse, provided that it is readily accessible from the milkhouse.
14. DNR administrative code NR 812 specifies safe distances between the well and possible sources of contamination. NR 812 applies to all private water wells in Wisconsin including dairy farms.
15. A two compartment wash vat is required. It shall be supplied with potable hot and cold running water from a faucet located directly over the wash vats. A CIP wash vat can be used to meet the requirement for one of these vats as long as it has no brackets that would restrict its use. The milking units must be stored properly while the CIP vat is being used for the manual cleaning of equipment.
16. Water heating capacity shall be adequate for all milkhouse operations. The producer or installer shall determine the water heating capacity needed. Guidance for sizing water heating systems can be obtained from The Dairy Practices Council publication number 58; "Guidelines For Sizing Dairy Farm Water Heater Systems"<sup>1</sup> or from a milking equipment installer.

<sup>1</sup> Order From: The Dairy Practices Council, 51 E. Front Street, Suite 2, Keyport, NJ 07735, Telephone/Fax: (732) 203-1947 or online at [www.dairypc.org](http://www.dairypc.org).



## WISCONSIN REQUIREMENTS FOR BULK TANK INSTALLATION

Wisconsin Department of Agriculture  
Trade and Consumer Protection  
Division of Food Safety

### ATCP 60.10 Milking and milk handling systems

- (6) REVIEW OF PLANS.
- (a) Before installing, reconstructing or extensively altering a bulk tank, milking system, milk handling system, milk house, milking parlor, or dairy farm water supply system, the installer shall on behalf of the milk producer submit plans to the department for review. The department may charge a fee under s. 93.06 (1w), Stats., to cover its cost of providing the review service. The department shall return the plans together with any comments or objectives within 14 days after the plans are received by the department. No review is required for a portable transfer receptacle or its appurtenances.
  - (b) No manufacturer or distributor of milking or milk handling systems may sell, or distribute for sale in this state, any portion of a milking or milk handling system unless specifications or prototype equipment are first reviewed by the department. Within 30 days after specifications or prototype equipment are received by the department, the department shall return them with any comments or objections. The department may require field testing of the equipment prior to sale if the department finds that field testing is necessary to determine whether the requirements of this section are met. Field testing shall be conducted under conditions prescribed by the department.
  - (c) Plans and specifications submitted under this subsection shall be sufficiently detailed to permit reasonable review by the department within the time periods specified under this subsection.
- (7) CERTIFICATION OF COMPLIANCE BY INSTALLER. A person who installs, reconstructs or extensively alters a bulk tank, milking system, milk handling system, milk house, milking parlor, or dairy farm water supply system shall certify to the owner of the system that the system has been installed or modified in compliance with this section, and incompliance with the plans filed with the department under sub. (6)(a). The installer, immediately after installing or modifying the systems, shall provide to the milk producer and the department a signed written statement certifying compliance. The milk producer shall post a copy of the certificate in the milk house for at least 12 months.

### ATCP 60.11 Bulk tanks and bulk transport containers.

- (1) BULK TANK LOCATION. If a bulk tank is used to receive, cool or store milk on a dairy farm, the bulk tank shall be installed in the milkhouse. A bulk tank may be installed so that a portion of the bulk tank protrudes through the wall of a milkhouse, provided that all bulk tank openings are located inside the milkhouse. Agitator seals, other than weatherproof agitator seals approved in writing by the department, shall be located inside the milkhouse. Adequate clearance shall be maintained on the top and all side of a bulk tank to permit effective cleaning, sanitizing and maintenance of the bulk tank. No bulk tank opening may be located directly under a ventilator. No bulk tank may be located directly over a floor drain.
- Note: Clearance of at least 24 inches on the top and the milk outlet side of the bulk tank, and 18 inches on all other sides of the bulk tank, are adequate to comply with this subsection. No clearance is required for that portion of a bulk tank which protrudes through the wall of a milkhouse.

(2) BULK TANK CONSTRUCTION.

- (a) The lining and milk contact surfaces of a bulk tank shall be constructed of stainless steel or other materials which are equally smooth, nontoxic, stable, non-absorbent, corrosion resistant, and capable of withstanding cleaning and sanitizing treatment. Milk contact surfaces shall be readily accessible for inspection.
- (b) A bulk tank shall be self-draining. Openings shall be equipped with self-draining covers. Opening and covers shall be contracted and installed to prevent drainage into milk, or onto milk contact surfaces.
- (c) A bulk tank shall be equipped with all of the following
  - 1. An indicating thermometer that has a range of at least 32°F to 80°F.
  - 2. A temperature recording device approved by the department, if the bulk tank is manufactured after January 1, 2000. The temperature recording device shall comply with sub. (2m).
- (d) A bulk tank with a capacity of less than 1,500 gallons shall be equipped with a; mechanical agitator which will ensure homogeneity of all milk contained in the bulk tank within 5 minutes after the agitator begins operating. A bulk tank with a capacity of 1,500 gallons or more shall be equipped with an agitator which will ensure homogeneity of all milk contained in the bulk tank within 10 minutes after the agitator begins operating.
- (e) A bulk tank which is designed to be cleaned in place by the mechanical circulation of cleaning, rinsing and sanitizing solutions onto interior milk contact surfaces shall be designed and constructed so that cleaning, rinsing and sanitizing solutions cannot enter the bulk tank while it contains milk.  
NOTE: Bulk tanks manufactured in compliance with the "3-A Sanitary Standards for Farm Milk Cooling and Holding Tanks" meet the sanitary design and construction requirements of this subsection. The "3-A Standards" are published by 3-A Sanitary Standards, Inc., 1451 Dolley Madison Blvd, Suite 210, McLean VA 22101-3850, telephone 703-790-0295, website [www.3-a.org](http://www.3-a.org). Copies of the "3-A Standards" as amended effective November 16, 2003, are on file with the department and the legislative reference bureau. Copies may be obtained from "3-A Sanitary Standards, Inc., Online Store", at <http://www.techstreet.com>

(2m) BULK TANK TEMPERATURE RECORDING DEVICE.

All of the following requirements apply to a temperature recording device under sub. (2) (c) 2.:

- (a) The temperature recording device shall have a range of at least 50°F (28°C). The range shall include normal storage temperature, plus or minus 5°F (3°C).
- (b) The temperature recording device shall be capable of recording temperatures up to 180°F (83°C).
- (c) A temperature recording chart on which the temperature recording device records milk temperatures shall have graduations of not more than 2°F (1°C) at temperatures below 100°F (38°C) and shall have at least one time span division per hour. The circular chart shall make 1 revolution in not more than 7 days and shall be graduated for a maximum record of 7 days.
- (d) The milk producer shall retain milk temperature records for at least 6 months after the temperature recording shall identify the milk producer, the date or dates to which the records pertain, the bulk tank on the dairy farm, the signature of the person who removed the temperature records from the temperature recording device and any unusual occurrences related to milk temperature

- (3) BULK TANK COOLING CAPACITY. A bulk milk tank shall be capable of cooling all milk placed in the tank to a temperature of 50°F (7°C) within one hour after the milk is placed in the tank. If uncooled milk from subsequent milkings is added to cooled milk in the bulk tank, the bulk tank shall be capable of maintaining the blend temperature at or below 50°F (10°C), and reducing the blend temperature to 45°F (7°C), within one hour.



## WISCONSIN REQUIREMENTS for MINI-MILKHOUSE/PUMPHOUSE

Wisconsin Department of Agriculture  
Trade and Consumer Protection  
Division of Food Safety

Following is clarification of the practice of installing a mini-milkhouse or pumphouse.

### **Definition:**

Mini Milkhouse/Pumphouse

An area outside of the milkhouse or clean-in-place parlor used to house acceptable milking equipment as listed below.

### **Purpose:**

To allow the installation of a pipeline system in milking facilities when due to the existing construction and facility layout it is impossible to provide the proper placement of milking equipment in the milkhouse or clean-in-place parlor.

### **Acceptable Equipment:**

1. Receiver Jar
2. Milk Pump
3. Milk Line Drain
4. Moisture Trap
5. Plate type pre-cooler

### **Construction**

1. Provide adequate lighting - 30ft candles of illumination.
2. Walls, floor and ceiling must comply with milkhouse standards.
3. Provide a trapped floor drain or a properly installed and maintained sump,
4. Provide adequate room to service equipment.
5. Maintain enclosure clean and accessible for inspection.
6. Provide hot and cold running water directly plumbed to the enclosure **or** accessible to the enclosure through a hose station or bucket and brush.
7. Ensure all access points into the mini-milkhouse are dust tight.
8. Access may be accomplished from the barn.



## WISCONSIN MILKING PARLOR CONSTRUCTION STANDARDS

Wisconsin Department of Agriculture,  
Trade and Consumer Protection  
Division of Food Safety

**This standard applies to milking parlors where CIP milking equipment is cleaned and stored.**

1. Floor and Gutter Construction:
  - a. Floors and gutters shall be constructed of concrete or other materials that are equally impervious and easy to clean. Floors and gutters shall be sloped at least one inch per 10 feet to the drain. Gutter covers, if installed shall be made of impervious material and be removable for cleaning.
  - b. A watertight sump with pump may be used to elevate the liquid in the operators pit into the gutter.
2. Wall and Ceiling Construction:
  - a. Walls and ceilings shall be constructed and maintained so that they may be kept clean. Wall and ceiling finishes shall be light colored and easy to clean.
  - b. Doorways to and from the milking parlor shall be provided with tight-fitting solid doors. These doors shall be closed when equipment is being cleaned or stored. Strip curtains are not allowed as a replacement for solid doors. Openings shall be protected against entry of insects, rodents and other pests.
  - c. Windows should be installed flush with the inside parlor walls or the sill should be sloped to drain completely.
  - d. Open-air parlor facilities are designed for non--confined animal housing systems (rotational grazing). These facilities are exempt from CIP parlor wall, door and window standards. All open-air parlors require a formal variance issued by the department. Contact the area Food and Dairy Specialist for additional information.
3. Lighting:
  - a. Natural or artificial lighting shall be provided in parlors to ensure adequate illumination for daytime and nighttime milking operations.
  - b. There shall be at least 10 foot candles of illumination in all working areas and at least 30 foot candles of illumination in all areas of the milking parlor where CIP milking equipment is cleaned, sanitized and stored.
4. Ventilation:

Ventilation shall be adequate to prevent visible condensation on walls and ceiling, and to prevent excessive odors. Heating, ventilating and air conditioning systems shall be designed so that air from the parlor, animal housing areas and toilet room may not enter the milk room.
5. Milking handling equipment:
  - a. All milk handling equipment installed shall comply with 3A Accepted Practice 606-05 and ASAE Standard S518.2.
  - b. Before installing a milk handling system, the installer shall submit plans to the department for review.
  - c. **New** milk handling systems or equipment shall not be sold until specifications or prototype equipment are **first** reviewed by the department.
  - d. Butterfly valves shall be of sanitary design and construction. They shall be easy to access and disassemble. Butterfly valves shall be disassembled and cleaned after each milking.

- e. Air under pressure in contact with milk shall comply with 3A Accepted Practice 604-04. Areas of primary concern are the use of a disposable media filter and the sanitary check valve located at the point of application. This valve requires hand cleaning after each use.
- f. Milk handling systems shall be effectively separated from the cleaning make-up vats or the CIP solution lines during milking to avoid possible contamination.
- g. CIP milking equipment, if cleaned, sanitized or stored in the milking parlor, shall be designed, installed, handled and stored so that milk contact surfaces are protected from contamination at all times.
- h. The installation of the receiver group in a pit is not recommended unless an adequate means is provided to preclude cross-contamination of the milking system with the floor drains located within the pit.
- i. Milk lines, when installed embedded in concrete should be sleeved with oversized PVC piping to allow for line expansion and inspection.

6. Water systems:

- a. Wells used to supply water shall comply with chapter NR 812, Wisconsin Administrative Code.
- b. All plumbing shall comply with chapter COMM 82, Wisconsin Administrative Code.
- c. Water discharged from milk pre-coolers may be used for milkhouse and milking parlor operations, watering livestock and holding area wash down.
  - The pre-cooler water reclaim system shall meet the requirements listed in department guideline F-fd-36, "*Wisconsin Dairy Farm Milk Pre-Cooler Requirements*".
  - Reclaimed water storage tanks shall not be cross connected to the potable water system.
  - Outlet lines from the plate cooler shall not be cross connected to the potable water system.
- d. An air gap shall be maintained between every potable water outlet and the flood rim of the vessel that it supplies, and between the potable water outlet and any source of potential contamination, unless an alternate method of protection is provided.
- e. If cows are cleaned in a milking parlor prep stall prior to milking, rather than being manually cleaned at the milking stations, hot water under pressure shall be supplied to the prep stall and used for cleaning purposes. There shall be an adequate supply of hot water so that all cows processed through the prep stall may be fully cleaned without impairing the availability of hot water for other milking parlor or milkhouse operations.

7. Wastewater Handling:

- a. Wastewater containing milky pre-rinse from pipelines and bulk tanks should be used for animal feed or deposited in the manure handling system.
- b. Detergent wash, acid rinse, and sanitizing solutions (graywater) may be collected and reused for milking parlor floor, wall and holding area washdown.
- c. Wastewater generated during water softener discharge may be used for milkhouse, milking parlor and holding area washdown.
- d. Wastewater collected from floor drains should not be reused for milking parlor floor, wall and holding area washdown.
- e. When a liquid tight holding tank is installed for wastewater it should be provided with a manhole opening sufficient for inspection and cleaning as necessary.
- f. Manure and liquid wastes from milking parlor operations shall be drained and removed from the parlor in a sanitary manner after each milking, so that there are no solid or liquid waste accumulations in the milking parlor.
- g. Sewage from toilets and showers shall be disposed of in a septic system. Sewage shall not be disposed of in the manure handling system. The use of chemical toilets, pit privies, and incinerator toilets meet the intent of this section



## **RECESSLESS OR ROLLED-ON FERRULES on MILKING PIPELINES**

Wisconsin Department of Agriculture  
Trade and Consumer Protection  
Division of Food Safety

Effective January 1, 2001, recessless or rolled-on ferrules are no longer acceptable for most milking pipeline installations. 3-A Accepted Practice for the Design, Construction, and Installation of Milking and Milk Handling Equipment, Number 606-05 states that recessless or rolled-on fittings are acceptable only when modifying or repairing existing on-site farm milk handling systems with fittings installed with no cracks or crevices

Please use the following criteria for the evaluation of pipelines utilizing recessless or rolled-on ferrules.

Milk handling systems installed prior to January 1, 2001 are acceptable when in good repair with no cracks or crevices.

Relocation of used milk handling systems to a different farm.

- Existing recessless or rolled-on fitting in good condition are acceptable.
- Fittings in poor condition replaced with a weld on style.
- Any changes to the original pipeline configuration and any fitting either added or replaced require a welded ferrule.

Modification to any existing milk handling system.

- Existing recessless or rolled-on ferrule in good condition are acceptable.
- Fittings in poor repair replaced with a weld on style.
- Any changes to the original pipeline configuration where fittings are either added or replaced, the use of recessless, rolled-on and weld ferrules are acceptable.

Repairs to existing systems utilizing recessless or rolled-on ferrules?

- Recessless or rolled-on ferrule may be used for repair when the fitting is installed with no cracks or crevices.

Repairs to existing systems utilizing welded ferrules?

- Recessless or rolled on ferrules may be used for emergency repairs where welding equipment is not available. Replace these fittings with a welded fitting as soon as practical. The recessless or rolled-on ferrule is only a temporary repair.



## WISCONSIN DIRECT TANKER SHIPPING REQUIREMENTS

Wisconsin Department of Agriculture  
Trade and Consumer Protection  
Division of Food Safety

**Definition:** The only classification for direct shipment of milk is when the tanker is directly attached to the milkhouse at the farm with an access port that can be sealed. All other requirements in ATCP 60.11 must be followed (See illustration below). Any time a tanker is located away from the milkhouse it is not a direct ship farm. This includes one-time loading of milk. This type of shipment is a standard farm pick-up with a bulk transportation tanker. All sampling is done on the farm from a bulk tank by a licensed bulk Weigher and sampler. At this time any approved installations where the tanker is not sealed to the milkhouse will be accepted, but all facilities (including all prior approvals) must be in compliance with this standard by September 1, 2012. The producer must provide documentation of acceptance from the department (approval letter).

- 1) The facility and equipment complies with ATCP 60, Wisconsin Administrative Code (Dairy Farms), applicable sections of the 3A Standards and this policy.
- 2) Submit a written plan to the Department prior to the commencement of direct tanker shipping.  
Submit the plan using the following division supplied forms:
  - Application for Milk Handling Equipment and Facility Installation (F-Fd-31)
  - Supplemental Application for Direct Tanker Milking Operations (F-Fd-258)

Please provide all pertinent information on the application form with consideration to the following items.

### **EXTERIOR CONDITIONS**

- 1) Park the tanker on a surface constructed of concrete or other equally impervious material.
- 2) Size the parking surface to extend from the milkhouse to under the front feet of the tanker (minimum requirements).
- 3) Slope the surface to provide adequate drainage.
- 4) Terminate all permanent pipelines in the milkhouse.

### **TANKERS**

- 1) Tanker(s) meet applicable 3 A Standards for construction and licensed (as applicable) as a Wisconsin Bulk Milk Tanker.
  - Air or mechanical agitation modifications to the tanker meet sanitary standards.
  - Tanker exterior modifications to fit the dock seal meet sanitary standards.
- 2) The tanker utilizes a close coupled outlet valve.
- 3) Protect the outlet valve with an effective dust cover or locate the valve within a pump/hose cabinet.
- 4) Provide a tamper detectable method to seal the tanker access port cover.
  - Seal the access port cover following cleaning and sanitizing.

## **INTERMEDIATE COOLING**

- 1) The cooling method meets Division of Food Safety criteria the construction guidelines listed in the 3A Standards and the cooling requirements listed in ATCP 60.12(4), Wis. Adm. Code.
- 2) Cool milk to 45 degrees F or colder prior to it entering the tanker.
- 3) Install a recording thermometer in the appropriate location based on the cooling equipment used.
  - When using a plate or tube heat exchanger install the recording thermometer probe downstream of the heat exchanger. Install the recording probe in a sanitary well in the pipeline.
  - When using a bulk tank as an intermediate cooling method, install the temperature recording device on the tank.
  - Accuracy checks conducted by the dairy plant field representative or inspector shall be completed and documented on the farm at least every 6 months. Field rep documentation should be maintained in the inspection folder.
- 4) All recording thermometers comply with ATCP 60.11(2m), Wis. Adm. Code
  - Recording chart span of not less than 50 degrees F and includes a range of plus or minus 5 degrees F from the normal product temperatures recorded.
  - Recording chart capable of recording temperatures up to 180 degrees F.
  - Recording chart graduated in not more than 2 degree F graduations spaced no less than 1 mm apart at temperatures below 100 degrees F.
  - Recording chart has at least one time span division per hour.
  - Recording chart makes one revolution in not more than 7 days, graduated for a maximum record of 7 days.
  - When using strip chart type recorders the chart must move at least 1 inch every hour and used continuously for up to one month.
  - Electronic record keeping systems require division approval prior to use. Contact the local food & dairy specialist for further information.
- 5) Install an indicating thermometer as close as possible to the temperature recording probe to verify accuracy of the recording thermometer, within  $\pm 2^{\circ}$  F every 6 months.
  - Thermometers must be verified for accuracy within  $\pm 2^{\circ}$  F every six months by the dairy plant field representative and properly documented (document in a log or on chart).
  - Regulator inspector should have means to check thermometers. Either a separate (third) well should be installed or one of the probes should be easily removable. One of these wells should be capable of accepting a regular stem thermometer.
  - Install the indicating thermometer in a sanitary manner, no threads in contact with milk.
  - The department considers (as per FDA M-I-03-13) the digital readout on the chart recorder as an indicating thermometer, but a separate IT device is preferred.
- 6) Properly design and operate the cooling media system to prevent contamination of the milk supply.
  - Water used to cool the milk supply from a safe and approved source.
  - Use food or pharmaceutical grade coolant additives that are non-toxic and comply with 21 CFR 184.1666.
  - Use approved food grade materials.
  - Provide a sanitary sampling port or other sampling access to the cooling media system.
- 7) Sample the cooling media every six months.
  - Test results from a certified lab shall indicate the cooling media is free of coliform bacteria.

- Post a copy of the current test results in the milkhouse and on file at the producers assigned dairy plant.
- Sampling conducted by the dairy plant field representative.

## **FARM PROCEDURES**

- 1) Unlimited milking periods to fill the tanker.
  - ATCP 82.10 requires that if milk from a grade A or grade B dairy farm violates an applicable standard under s. ATCP 60.15 on any single test, milk from that farm shall be collected at least once every 2 days until a subsequent test shows that the milk from that dairy farm no longer violates that standard. The Milk Safety Branch of the Food & Drug Administration (FDA) recommends that storage of milk in the transport tank on the farm should not exceed 72 hours.
- 2) Requires a protected opening (dock seal) into the milkhouse or an enclosed intake meeting milkhouse requirements.
  - Provide a tight-fitting dock seal connection to prevent the entrance of insects and other pests.
  - Construct the dock seal of non-absorbent washable material designed for the intended use.
  - Provide a properly sized dock seal to facilitate access to the tanker outlet valve.
  - Review of other methods if found to meet the intent of this section may be accepted. Other methods shall require technical services review and approval.
- 3) Hose attachment
  - Attach the milk transfer hose within the milkhouse.
  - Provide a sanitary drip pan under the outlet valve to capture spilled milk and sanitizing solutions and drains them back to the milkhouse.
  - Sanitize the tanker outlet valve and hose connections prior to connecting the milk transfer line.
  - Store all pipeline and hose caps in the milkhouse during milking operations.
  - Provide a sanitary and seamless milk transfer hose intended for CIP cleaning (NO hose Clamps). Store transfer hose in a self-draining position with the ends protected from contamination.
- 4) Point of Sale
  - The point of sale of a tanker of milk from a **single farm** is when the dairy plant or an agent of the dairy plant has accepted it. In other words, who is responsible for the milk if the tanker has an accident on the way to the plant? The producer or the plant?
  - Regardless of point of sale, remove all milk confirmed positive for drug residue from the human food chain, disposed and **immediately reported to the department**. The plant shall maintain a disposal record for each affected tanker. When the point of sale is at the dairy plant the direct ship producer is not required to complete the 10 Step Drug Protocol Program.
- 5) Cleaning Procedures
  - Cleaning the milking system, including milk transfer hose and cooling tank following completion of each milking or at least once every 24 hours.
  - Sanitize all equipment prior to use.

## **WEIGHING & SAMPLING OF THE MILK**

**Milk Sampling at the Dairy Plant** - acceptable by utilizing one of the following methods.

- 1) Sampling by a licensed weigher and sampler from a properly agitated tanker located in a suitable facility (i.e. Protects against environmental contamination)
  - Agitate the milk tanker in accordance with the criteria outlined in the Agitation Methods section outlined below.
  - Sample via a properly located and approved sampling valve or a sample obtained from a sanitary dipper.
- 2) Sampling by a licensed weigher and sampler from a properly agitated storage tank or silo prior to commingling.
  - Agitate the storage tank or silo in accordance with the criteria outlined in the Agitation Methods section outlined below.
  - Sample via a properly located and approved sampling valve
- 3) A division approved in-line milk sampling device.
  - Submit a specific protocol for the sampling device to the division for review and acceptance prior to installation.
- 4) Screen all tanker loads for drug residue before unloading or commingling with other milk.
- 5) Record the temperature of each delivery of milk.
- 6) Annotate the weight collection record with the milk delivery temperature.

**Milk Sampling at the Farm** - acceptable by utilizing one of the following methods:

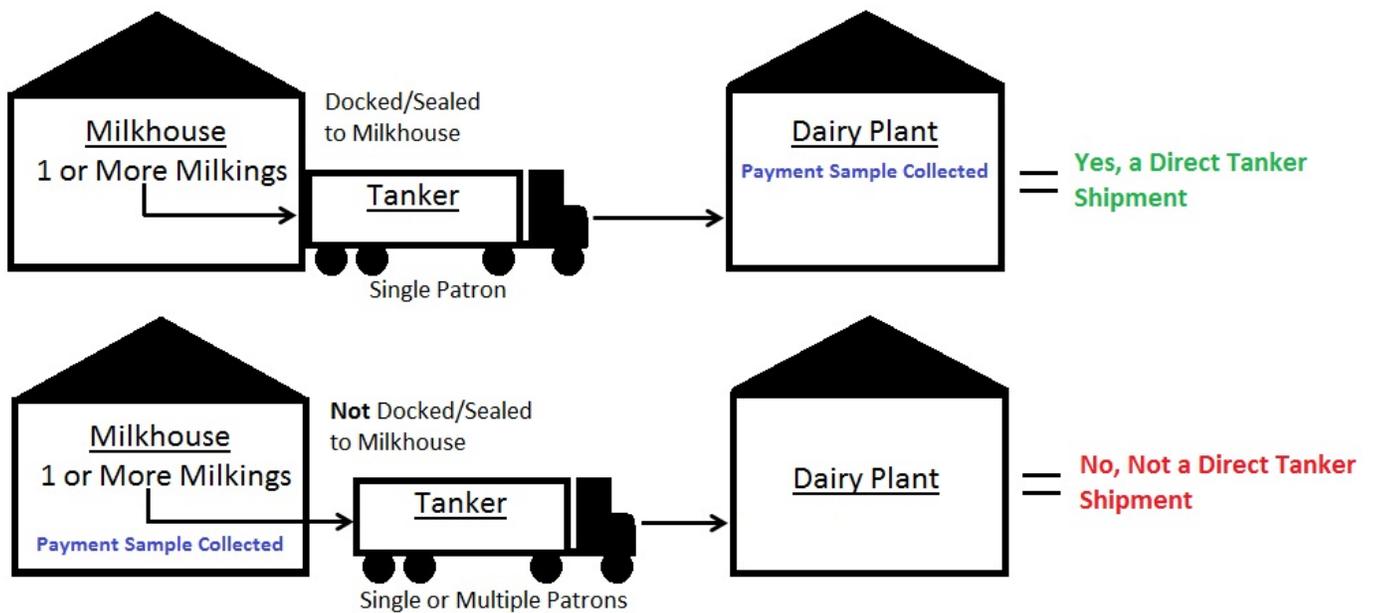
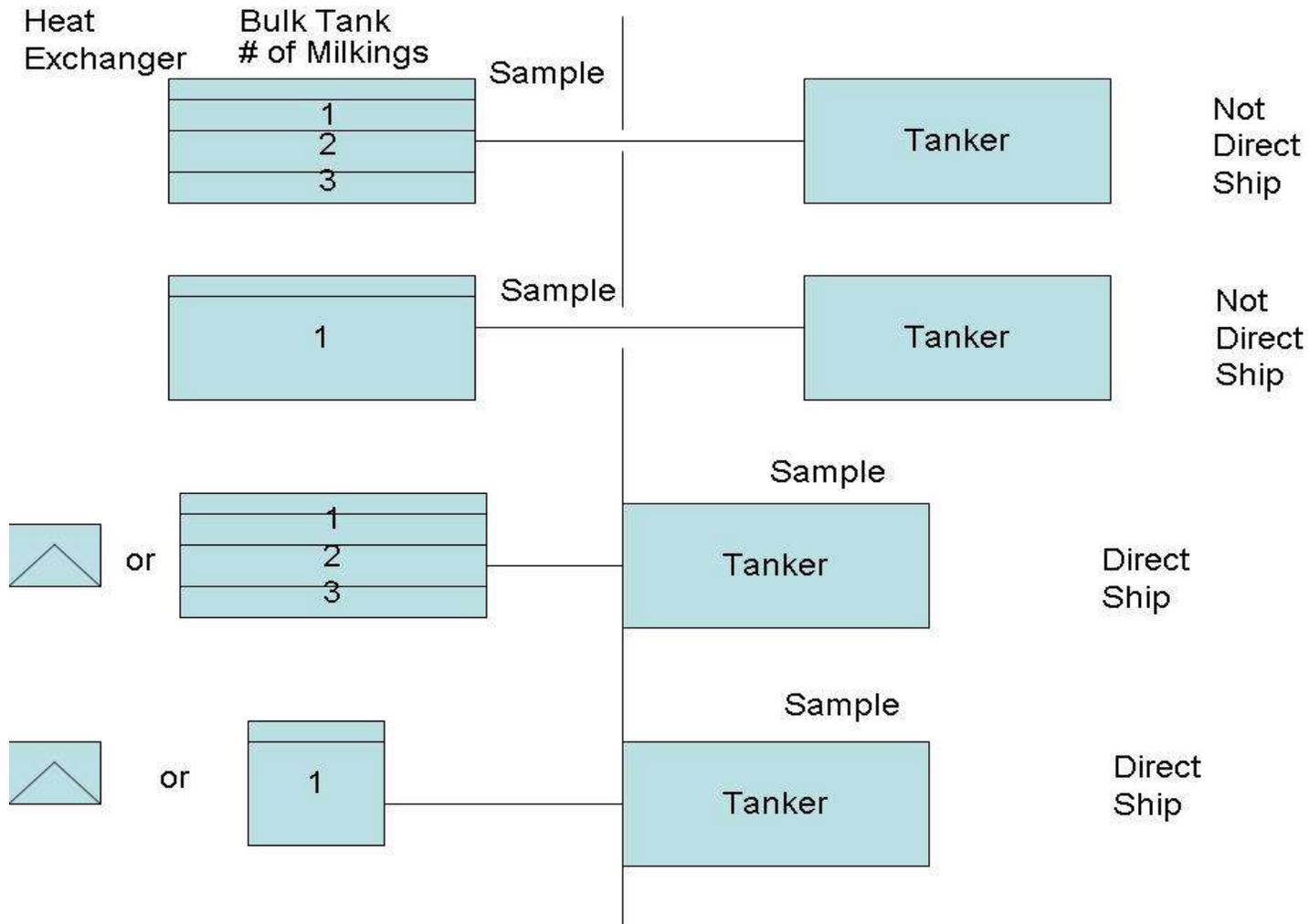
- 1) Sampling of tanker by a licensed BMWS from a properly agitated tanker located in a suitable shelter adjacent to, but not inside the milkhouse.
  - The suitable shelter meets the construction, lighting and drainage requirements of a milkhouse.
  - Agitate the milk tanker in accordance with the criteria outlined in the Agitation Methods section outlined below.
- 2) A division approved in-line milk sampling device installed on the milk pipeline system.
  - Acceptable for both drug residue screening and quality tests.
  - Submit a specific protocol for the sampling device to the division for review and acceptance prior to installation. **Note:** The producer may use a sanitary in-line milk sampling device that does not meet the division's acceptance criteria for milk quality sampling to collect a sample for an unofficial drug residue screening. Any **unapproved** in-line sampling method **is not** acceptable for official drug screening or milk quality testing.

### **Agitation Methods**

- 1) Agitation method ensures a homogeneous product.
  - Establish an agitation protocol in compliance with Standard Methods for the Examination of Dairy Products, Section 3.042 B.
  - Maintain a copy of agitation protocol at the receiving dairy plant and available to the department upon request.

### **Weighing Methods**

- 1) Establish a weighing method that meets the criteria outlined in ATCP 92, Wis. Adm. Code, (Weights and Measures).
- 2) Return a duplicate copy of the weight collection record to the farm for posting in the milkhouse and available for inspection.





Wisconsin Department of Agriculture, Trade and Consumer Protection  
Division of Food Safety

## Supplemental Application for Direct Tanker Milking Operations

Mail To: WDATCP 718 W Clairemont Ave Ste 128, Eau Claire WI 54701

- The Department requires the installer, on behalf of the milk producer, to submit this supplemental application whenever a mobile tanker will be used to store milk on the farm.
- This form must be submitted in conjunction with the "Application for Milk Handling Equipment", (F-fd-31).
- Only plans that are complete and legible will be reviewed.
- Coordinate the completion of this form between the installer, producer, milk hauler, and dairy plant to assure accurate information is provided.
- Refer to F-fd-71 "Direct Tanker Shipping from the Farm Requirements" document for guidance.
- The review of your plan and /or application is based on Wisconsin regulations and standards in effect at this time.
- Modification of this installation may be required at some future date as regulations and standards are updated.

**Please Print Clearly and Check Spelling**

### INSTRUCTIONS

Complete all blanks applicable to this installation. This application must be accompanied by a detailed legible drawing of all the components pertaining to the Direct Ship. Use the numbers below and the numbers from the "Application for Milk Handling Equipment and Facility Construction" F-fd-31 to identify all components.

21. Cooling Media Sample Port	27. Sanitizing Station
22. Tanker Valve Drip Pan	28. Check Valve(s)
23. Indicating Thermometer	29. Milk Transfer Hose(s)
24. Recording Thermometer Probe	30. Drip Sampler
25. Recording Device	31. Milk Line Air Blow Fitting
26. Tanker Dock Seal(s)	32. Hard Surfaced Tanker Pad

## PRODUCER INFORMATION

NAME:

CITY, STATE:

DATE:

## PART I - EXTERIOR CONDITIONS

### Tanker Parking Surface (check one)

Concrete       Asphalt       Other

### Extends Under Full Length Of Tanker

Yes       No Explain:

### Surface Sloped to Drain

Yes       No Explain:

### Tanker Connection to Milkhouse

Dock Seal       Hose Port       Enclosed Intake

Other Explain:

## PART J - TANKERS(s)

### Direct Tanker Equipment Installation (check one)

#### Type of tanker used

Over the Road       Hose Cabinet

#### Who Owns the Milk Tanker(s)

Dairy Plant       Producer       Hauler

Provide Milk Tanker License Numbers(s)

1		2	
3		4	
5		6	

### Tankers(s) Meet 3A Sanitary Construction Standards

Yes       No

### Tanker Modified to Fit Tight To Milkhouse

Yes       No

### Tanker Access Ports Sealable

Yes       No

**Continue on Reverse Side**

### PART K - INTERMEDIATE COOLING

**Milk Cooling Method**

- Heat Exchanger     Bulk Tank

Provide All Pertinent Information in Section E of Application for Milk Handling Equipment and Facility Construction F-fd 31

**Temperature Monitoring**

- Chart     Electronic

Enclose copy of the chart or chart specifications.

### PART L - FARM PROCEDURES

\_\_\_\_\_ How Many Milkings to Fill Tanker

\_\_\_\_\_ hrs. How Long Will Tanker Remain On Farm

**Where Is the Point Of Sale for the Milk**

- The Farm     The Dairy Plant

**Is the Milking System Cleaned After Every Use**

- Yes     No

**Transfer Hose, Check Valve, Exposed Interior Portion of Tanker Valve, Washed & Sanitized After Each Milking**

- Yes     No

Hoses and Fittings of Sanitary Design for Clean in Place, No Barbed Fittings with Hose Clamps.

### PART M – WEIGHING & SAMPLING OF THE MILK

**Performed By a Licensed Weigher & Sampler**

- Yes     No

**Department Approved Facility for Receipt of Direct Shipped Tankers**

- Yes     No

**Milk Agitation Location**

- Tanker     Storage/Silo  
(May Not Be Commingled With Other Milk)

**Method of Milk Agitation**

- Mechanical     Air     Other

**Location of Official Sampling**

- Farm     Dairy Plant

**Type of Official Sampling**

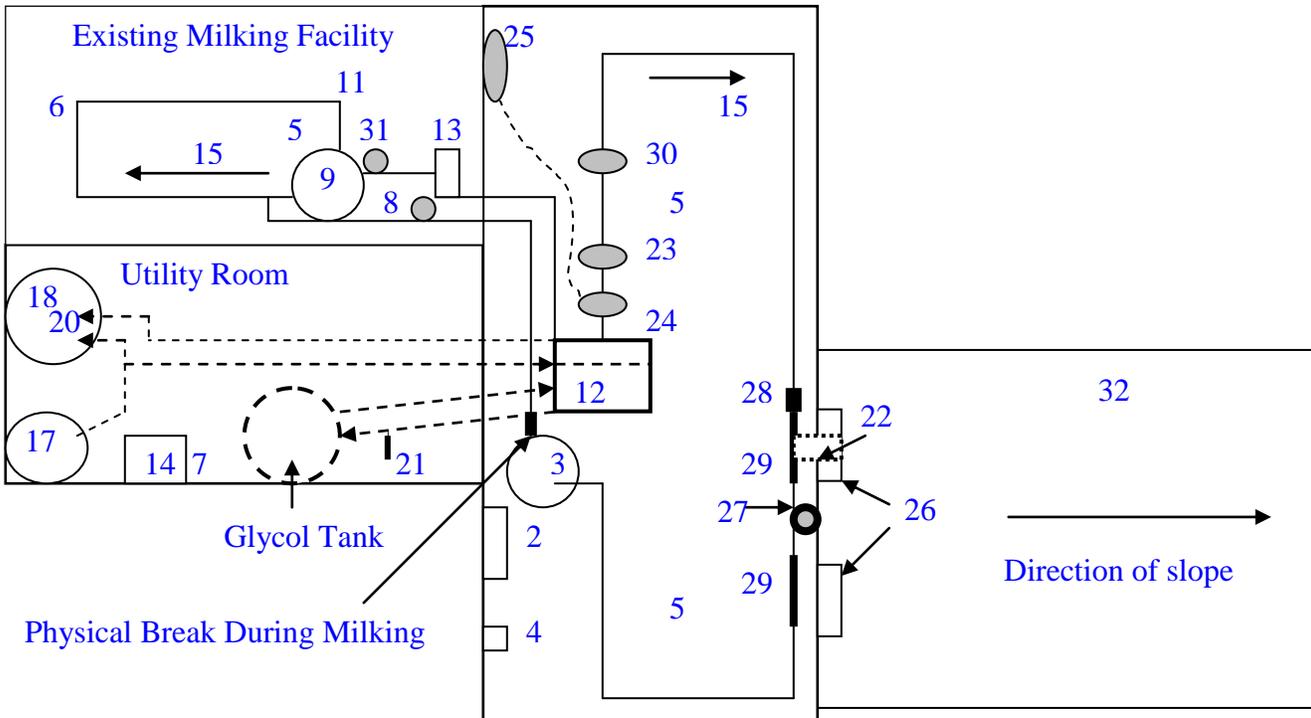
- Tanker     Storage Tank     Drip Sampler

**Length of Agitation Prior To Sampling**

\_\_\_\_\_ MINUTES

Agitation Protocol Established in Compliance with Standard Methods for the Examination of Dairy Products, Section 3.042 B. Test results on file at the receiving Dairy Plant.

Below is an example drawing of a Direct Ship operation added to an existing milking operation.





Wisconsin Department of Agriculture, Trade and Consumer Protection  
Division of Food Safety 608-224-4732

### **SUPPLEMENTAL APPLICATION AUTOMATIC MILKING INSTALLATION (AMI)**

Attach this form and all supporting documents to F-fd-31 when submitting.

PRODUCER NAME:	
CITY, STATE:	DATE:

This application allows the filer to explain how the proposed installation complies with Appendix Q of the Grade "A" PMO and current department rules. Please attach plans showing locations of AMIs, plumbing devices, milk storage, ventilation, lighting and milk handling equipment along with operator and livestock traffic flow. Attach diagrams and testing procedures of all isolation valves. Note: for additional information refer to the Appendix Q of the PMO.

#### **ITEM 1. ABNORMAL MILK**

Describe the method of separating milk from animals that are producing milk with abnormalities or animals treated with antibiotics. See Item 14 for proper separation and cleaning of milking equipment in contact with abnormal or antibiotic treated milk. Describe the method of abnormal milk detection.

#### **ITEM 2. MILKING BARN, STABLE OR PARLOR - CONSTRUCTION**

Provide a wall, floor, ceiling schedule for the AMI milking room. Describe the method of clean access for inspection and maintenance personnel.

#### **ITEM 3. MILKING BARN, STABLE OR PARLOR – CLEANLINESS**

Describe the method and frequency for cleaning the AMI milker box and surrounding area.

#### **ITEM 9. UTENSILS AND EQUIPMENT – CONSTRUCTION**

Provide documentation on any prototype equipment used for the AMI. All milking equipment shall meet the sanitary construction in respect to fit and finish.

**ITEM 10 & 11. UTENSILS AND EQUIPMENT – CLEANING AND SANITIZATION**

Provide the cleaning method for the AMI following abnormal milk detection. Provide the method and cleaning/sanitization frequency of the AMI.

**ITEM 12. UTENSILS AND EQUIPMENT – STORAGE**

Provide documentation of the AMI positive air ventilation system, to include air source, air filtration (if any) and system operating criteria. Provide information on the type of flooring used in the cattle staging area, i.e., slotted floor over manure, solid concrete floor.

**ITEM 13. MILKING - FLANKS, UDDERS AND TEATS**

Provide documentation of the National Conference on Interstate Milk Shipments (NCIMS) M-I Memoranda of acceptance for the teat prepping system.

**ITEM 14. PROTECTION FROM CONTAMINATION**

Provide information regarding the separation between cleaning/sanitizing solutions and milk intended for sale and between milk with abnormalities and milk intended for sale. If an inter-wired block-bleed-block fail-safe valve system is used, provide documentation and testing protocols.

**ITEM 18. RAW MILK COOLING**

For AMIs the raw milk must be cooled following current standards. Explain the milk cooling and storage process.

# **Question and Answers From April 2014 Installer Meetings**

## **Application**

- 1. Q.** Do you pay for each item that you filled in on the milk equipment and handling application?  
**A.** No, each application submitted is \$25.00.
- 2. Q.** What if I (the installer) am doing the pipeline only, not the building or the lighting, do I apply separately?  
**A.** Please attempt to coordinate with the building contractor so that the entire project is included on one plan submission. If this is not possible please submit the pipeline information on one plan and the building information on another plan, but be aware that separate plan submissions will require separate \$25 plan application fees.
- 3. Q.** Do we need to fill in everything on the application if we are just changing a hot water heater?  
**A.** Please include information used to determine total hot water needs for the milkhouse such as the pipeline size and length as well as the bulk tank size.
- 4. Q.** On a new installation, what about any revisions that happen during the construction, do we submit a new application?  
**A.** Always try to have a complete application upon submitting, minor changes are allowed without the need for submitting a new, revised application.
- 5. Q.** What about doing emergency repairs or replacement, what do we do?  
**A.** Do the repair and if you are not making any changes such as size or length no plan needs to be submitted. If the emergency repair or replacement involves a replacement bulk tank or changes to the pipeline size or length, please submit plans for the work completed ASAP.
- 6. Q.** Who is responsible for submitting the plan submission on the application?  
**A.** ATCP 60.10(6) states, "Before installing, reconstructing or extensively altering a bulk tank, milking system, milk handling system, milk house, milking parlor, or dairy farm water supply system, the installer shall on behalf of the milk producer submit plans to the department for review." A milk producer, being the license holder, is ultimately responsible to see that plans are submitted for any installations or modifications made at their facility.

7. **Q.** How often are you receiving plumbing, electrical, building changes done on at existing operation?  
**A.** Very few, but word is getting out there.
8. **Q.** Can application forms be found on the computer?  
**A.** The only application form that is currently available to be filled out electronically is the primary Application for Milk Handling Equipment and Facility. Both that form and the other supplemental applications which can be printed and filled out by hand can be found in the 2014 Installer's Manual available on-line at <http://datcp.wi.gov/uploads/Food/pdf/MilkInstallersManual.pdf>

### **Automatic Milking Installations (Robots)**

1. **Q.** Is a gated access to the robot room allowable off the cow alley way?  
**A.** This is not a preferred access to the robot room due to the need to walk through manure on the alley way floor. Please provide access via a walkway that does not cross cattle aisles or consider using an elevated catwalk.
2. Doesn't the Inspector need to have someone with him or her during an inspection in the robot area?  
**A.** No, Sec. 97.12(1) permits department officials to access a farm at any reasonable hour to enter and inspect a farm, whether or not a representative of the farm is available to accompany them.

### **Water Systems**

1. **Q.** Is a low pressure switch acceptable for use on a high pressure pump?  
**A.** No, Wisconsin's plumbing code calls for a RPZ valve in this application. Low pressure cut-out switches are subject to failure and do not adequately protect against the pressure drop risks presented by high pressure pumps.
2. **Q.** Can a Watts 9D be used as a backflow prevention device on the cross-connected side of a plate cooler?  
**A.** In this scenario a Watts 9D or equivalent would need to be installed on the potable water supply upstream from the plate cooler. Downstream from the plate cooler an approved anti-siphoning backflow prevention device would be required to isolate that cross-connected potential source of contamination from the plate cooler based on the type of hazard that potential source of contamination poses. A Watts 9D is only adequate for low and medium risk contamination applications. An RPZ, Watts 288-A, or equivalent device may be required if the connection is to a high hazard contamination source.

- 3. Q.** Once water left the plate cooler is it no longer potable?  
**A.** ATCP 60.08(7) Wis. Adm. Code and Appendix D, section VI of the 2013 Pasteurized Milk Ordinance (PMO) allow reclaiming water discharged from a plate cooler for potable purposes with controls and testing in place. Please contact your area specialist for more details on these requirements. Water reclaimed from a plate cooler may also be used for the limited purpose of pre-rinsing dairy equipment as long as it is collected directly for this purpose, used for a single rinse application, and disposed of as wastewater thereafter.
- 4. Q.** Where can I find the requirements for backflow prevention?  
**A.** The DNR and DSPS are the water authorities and have the codes that need to be met. The requirements are based on the hazards.  
DSPS Plumbing Program: <http://www.drl.wisconsin.gov/Default.aspx?Page=c61cac92-3886-47c1-8791-ff7137db1e58>  
DNR Well Program: <http://dnr.wi.gov/topic/wells/>
- 5. Q.** Does the DNR or DSPS require back flow prevention for chemicals?  
**A.** No, unless the chemical is connected to the potable water system.
- 6. Q.** Do the water supply lines going into calf milk pasteurizers need to have backflow prevention?  
**A.** Yes, the water reservoirs and potential for milk contamination in calf milk pasteurizers require an approved anti-siphoning backflow protection device on the water supply lines.
- 7. Q.** Do you need to have another back flow preventer device in connection with the plate cooler on lines further down the line even though you have a back flow device next to the heat exchanger?  
**A.** The backflow prevention device must be installed as close as practical to the potential source of contamination. If there is a backflow prevention device further upstream it is recommended to install one adjacent to the plate cooler to reduce the likelihood of tying in an unprotected use to that water line between the backflow prevention device and the plate cooler.
- 8. Q.** What is the distance for piping for an air gap on the overflow for a storage tank?  
**A.** If the air gap is external to the storage tank then it must be at least two times the pipe diameter of the fill line. If the air gap is internal to the storage tank utilizing an overflow line, then the distances must be calculated using the DSPS Air Gap CREW Calculator found at <http://www.drl.wisconsin.gov/Documents/Industry%20Services/Forms/Plumbing/PlumbingH2OSupAirGapCalculator.xls>

## **Equipment / Facility**

- 9. Q.** Can a plate cooler be placed in a mini milk house?  
**A.** A plate cooler can be used anywhere as long as the room meets the sanitary requirements for milk house, this includes the milkhouse, a mini-milkhouse, a parlor where milking equipment is washed and stored, or a utility room constructed to milkhouse standards.
- 10. Q.** Is it legal to face weld on rolled-on ferrules?  
**A.** It is “legal” but not preferred. The weld needs to be perfect with no flaws so the gasket fits and seats properly.
- 11. Q.** If a parlor was put in 2002 with rolled on ferrules do we have to go back and update?  
**A.** No.
- 12. Q.** What about the version of the slip on ferrules that you weld inside?  
**A.** If the fitting has a 3-A symbol and the weld is smooth and free of imperfections, then it would be acceptable.
- 13. Q.** What about piano hinges on CIP tank?  
**A.** Start to get away from this type of hinge and start to replace them as they rust or are not functioning properly.
- 14. Q.** What about threaded bolts in a CIP tank?  
**A.** Never have been acceptable. Threads are not of sanitary design and are not permitted in product contact areas including inside CIP system tanks.
- 15. Q.** When is the data needed to be on the chart before or after?  
**A.** Notations should be made on the chart as they occur, not after the fact when the chart is removed from the recorder.
- 16. Q.** Are bulk tank clearances the rule?  
**A.** No, clearances are a guideline and can be discussed with a specialist. Adequate clearance for cleaning and maintenance is required and can be evaluated on a case by case basis.
- 17. Q.** If a tank is not bulk headed can it be against a wall?  
**A.** Yes, but it must be sealed tight to the wall to ensure that water and debris cannot get in-between the tank and the wall.
- 18. Q.** Can an electronic thermometer be used as an indicating thermometer?  
**A.** Yes, as long as it is calibrated and working properly.

- 19. Q.** Can saleable milk (as in milk with a high somatic cell count) that may be used to feed calves be in the milk house?  
**A.** Yes, but most likely it would not be saleable if it has a high count. If it already separated for the calves than it animal feed storage and should not be in the milk house.
- 20. Q.** Does the PMO allow laundry in the milkhouse?  
**A.** No, there is a difference of inspection philosophy between the two agencies. The Wisconsin Administrative Code ATCP 60, Dairy Farms does not consider this a violation when used solely for the washing and drying of towels used for udder preparation. Item 6r. Milkhouse – Cleanliness of the PMO states that only articles directly related to milkhouse activities shall be permitted in the milkhouse, which has been interpreted to exclude cow towel washers and dryers from the milkhouse.
- 21. Q.** Do cow entrance and exit doors have to be self-closing?  
**A.** No, only milk house doors have to be self-closing.
- 22. Q.** Do all bulk tanks need agitators?  
**A.** Yes, ATCP 60.11(2)(d) states, “A bulk tank with a capacity of less than 1,500 gallons shall be equipped with a mechanical agitator which will ensure homogeneity of all milk contained in the bulk tank within 5 minutes after the agitator begins operating. A bulk tank with a capacity of 1,500 gallons or more shall be equipped with an agitator which will ensure homogeneity of all milk contained in the bulk tank within 10 minutes after the agitator begins operating.”

### **Direct Ship Operations**

- 1.** Will a roof over direct tankers be required?  
**A.** No, this is not a current requirement and there are no current proposals or discussions to make this a requirement.
- 2. Q.** Is there a requirement to have both a temperature recording chart and an indicating thermometer?  
**A.** Yes, both a recording chart and an indicating thermometer are required. However, if the recording chart has digital temperature readout, then that is acceptable to serve as the indicating thermometer for that installation.
- 3. Q.** Are there any approved in-line sampling systems?  
**A.** Yes, there are some approved systems. Please see <http://www.fda.gov/downloads/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Milk/UCM357245.pdf> for more information on devices that have been FDA approved for in-line sampling as of May 2006.

**4. Q.** Are partial pick-ups approved?

**A.** As of May 2014 the only partial pick-ups that are permitted require that the remainder of the milk be picked up prior to adding any more milk to the tank. There is currently a proposed revision to ATCP 82 awaiting legislative approval that will permit partial pick-ups of milk as long as a few prerequisite items are met. Please watch for more information on this topic after the revisions to ATCP 82 are approved by the legislature and published.

**VARIOUS MANUFACTURERS OF BACKFLOW PREVENTERS.**

## ASSE 1001 PIPE APPLIED ATMOSPHERIC VACUUM BREAKER

MANF.	MODEL NO.
<b>WATTS</b>	288A
<b>WILKENS</b>	35
<b>FEBCO</b>	710 & 715
<b>CONBRACO</b>	38-100 & 38-200
<b>CASH-ACME</b>	V-101



## ASSE 1011 HOSE CONNECTION VACUUM BREAKER

MANF.	MODEL NO.
<b>WATTS</b>	8, 8A, 8AC, 8B, 8BC, 8C, NF8, NF8C, 8P, 8FR
<b>WILKENS</b>	BFP-8 & BFP-8F
<b>CONBRACO</b>	38-304, 38P, 38-400, 38-404
<b>CASH-ACME</b>	V-3, V-4, VB-222
<b>FABCO</b>	731 series
<b>DANFOSS</b>	HB8



## ASSE 1012 BACKFLOW PREVENTER WITH INTERMEDIATE VENT

MANF.	MODEL NO.
<b>WATTS</b>	9-D
<b>WILKENS</b>	750
<b>FEBCO</b>	815
<b>CONBRACO</b>	40-400 & 4J-400
<b>CASH-ACME</b>	BFP
<b>DANFOSS</b>	8200



## ASSE 1013 REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

MANF.	MODEL NO.
<b>WATTS</b>	009, 909, 995, N995, Z995
<b>WILKENS</b>	375, 975, 975XL, 975BMS/MS, 975XLBMS/MS
<b>FEBCO</b>	860, 880, 880V, 825, 825YA, 820
<b>CONBRACO</b>	40-200, 40-200U, 40-200Z, 4S RP
<b>FLOMATIC</b>	RPZE, RPZ IIE



## ASSE 1019 VACUUM BREAKER WALL HYDRANTS

MANF	MODEL NO.
<b>WATTS</b>	HY-42, HY-42B, FHB-1 & FHB-2
<b>WILKEN</b>	Z1300 series



### ASSE 1020 PRESSURE VACUUM BREAKER ASSEMBLY

MANF.	MODEL NO.
<b>WATTS</b>	800
<b>WILKENS</b>	420, 720A
<b>FEBCO</b>	765, 765U
<b>CONBRACO</b>	40-500, 4V-500,
<b>FLOMATIC</b>	PVB



### ASSE 1052 HOSE CONNECTION BACKFLOW PREVENTER

MANF.	MODEL NO.
<b>WATTS</b>	N9-CD
<b>CONBRACO</b>	38-304-02
<b>NIDEL</b>	38HD
<b>WILKINS</b>	Z-1399



### ASSE 1056 BACK SIPHONAGE VACUUM BREAKER

MANF.	MODEL NO.
<b>WATTS</b>	008
<b>CONBRACO</b>	4W-500



### ASSE 1055 CHEMICAL DISPENSING SYSTEMS (An Internal Air Gap Device)

- a) Type A: These devices have the chemical(s) pressurized above atmospheric pressure; and  
 (b) Type B: These devices do not pressurize the chemical(s) above atmospheric pressure. The only source of back pressure comes from an elevated hose.

STD.	HAZARD	LIMITATIONS
ASSE 1001	HIGH	NO VALVES AFTER, NO BACK PRESSURE, 12 HR. MAX.
ASSE 1011	HIGH	NO VALVES AFTER, 12 HR. MAX.
ASSE 1012	LOW	
ASSE 1013	HIGH	
ASSE 1020	HIGH	NO BACK PRESSURE
ASSE 1052	HIGH	NO VALVES AFTER, 12 HR. MAX.
ASSE 1056	HIGH	NO BACK PRESSURE
ASSE 1055	HIGH	

### Air Gap Calculation contact

**Plumbing Consultant Section Chief**  
 James Miller (608) 266-8072

## Backflow Prevention Guide For Agricultural Applications

Hazard/Equipment	Approved devices or methods <sup>2</sup>						Comments
	Air gap ANSI std.	ASSE 1013	ASSE 1001 <sup>1</sup>	ASSE 1012	ASSE 1055	ASSE 1011 <sup>1</sup> 1056 1019 1052 <sup>1</sup>	
Pasteurized product lines w/out cleaning solution	X	X		X			
Raw product lines w/cleaning solution	X	X	X				
Animal watering tanks	X	X	X			X	
Cooling water w/out additives	X	X	X	X			
Reclaimed water (low hazard)	X	X	X	X			
Reclaimed water (high hazard)	X	X	X				
Chemical injector or proportioner	X	X			X		Per alternate approval or adopted standard
Boiler w/non-toxic additives	X	X		X			
Boiler w/ toxic additives or pot feeder	X	X					
Separator bowl installed downstream of pasteurization	X	X		X			
Separator bowl installed upstream of pasteurization	X	X					
Homogenizer	X	X					
Pump seals (open)	X	X	X	X			
Portable pressure washer	X	X				X	
Permanent pressure washer	X	X					

<sup>1</sup> No valves downstream of the device.

<sup>2</sup> Also see manufacturers limitations for devices.