

**STANDARD SANITARY  
OPERATING PROCEDURES  
FOR  
P. A. BOWEN FARMSTEAD**

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## GENERAL DESCRIPTION OF OPERATION

1. Cows are brought into the holding area and then into the milking parlor.
2. Cows are properly prepared for milking. Milking units are attached and milk flows directly into stainless steel milk cans via a special milk can lid that provides a connection to the milker unit.
3. After milking has been completed and/or when the milk can is filled, the special milker unit lid for the milk can is removed and a solid milk can lid is placed on the can. The milk can is then transported to the milk room where the lid is removed and the milk is transferred into a stainless steel receiving funnel.
4. The milk pump at the base of the receiving funnel pumps the milk through a fabric-style in-line milk filter and through a stainless steel transfer line into the combination milk tank/cheese vat located in the cheese room.
5. A chiller unit in the mechanical area cools water and this cold water is then circulated via plumbing pipes through the jacket of the milk tank/cheese vat. The milk is cooled within one hour to below 40 degrees Fahrenheit. While milk is in the tank, the milk is periodically agitated with the use of a cycle timer. An Anderson recording thermometer records milk and wash temperatures.
6. At the end of milking, cleaning solution is prepared in the milk-receiving funnel. This cleaning solution is circulated with the pump through the stainless steel transfer line to clean the system.
7. When cheese making is begun, hot water from a hot water boiler unit located in the mechanical area is circulated via plumbing pipes through the jacket of the milk tank/cheese vat, warming the milk to culture temperature.
8. The milk is cultured and rennet is added according to the cheese making recipe.
9. The curd is cut with stainless steel cheese knives. The cheese curd is properly handled and placed in cheese molds. For cheddar cheese, the molds are pressed using an air powered two-ram A-frame cheese press.
10. After the cheese is properly pressed, the cheese is removed from the molds and placed on shelves in the aging room. It is aged for a minimum of 60 days in the aging room.
11. The aging room is automatically climate controlled using a sanitary air handler connected via plumbing pipes to a chiller. Humidity is added to the room as needed with the use of humidifier units.
12. After the cheese is properly aged, the cheese is removed from the aging room and stored in a cold storage area and/or packaged for sale.

# AGING ROOM CLIMATE CONTROL DESCRIPTION

The Dairy Heritage Sanitary Climate Control is a custom designed system to allow the cheese maker to properly age and finish cheeses. The system can cool the air by circulating cold water through the air handler. The system can heat by circulating hot water through the air handler (aging and make rooms). The system can humidify by turning on humidifiers located in the rooms. The system can dehumidify by heating and cooling the air repeatedly until moisture is removed from the air (aging and cold storage room). The Dairy Heritage Sanitary Climate Control system is made up of several parts:

1. PLC Control. This control monitors temperature and humidity in both the aging and the finishing rooms. It has the capability of cooling and adding humidity in the aging room. In the finishing room, it has the capability of heating, cooling, adding humidity, and dehumidifying. The PLC has a touch screen HMI (Human Machine Interface) that allows for the operator to change temperature and humidity settings as well as to monitor current conditions in the room. In addition, the control is capable of alarming the operator when conditions are outside of predetermined parameters.
2. The Chiller Unit. This unit is located in the mechanical area. The compressor and heat exchanger on this unit cools a water/glycol mixture to the temperature called for by the PLC control to achieve the proper Delta-T between the air temperature and the water temperature. We operate on as low a Delta-T as practical to keep from removing too much moisture from the air in the aging room. This chilled solution is circulated through the sanitary air handler units located in each room.
3. The Boiler. This High-Efficiency LP Gas boiler is located in the mechanical area. The boiler heats water which is then circulated through the heating coil in the finishing room as required. The PLC controls the temperature of the water circulating through the sanitary climate control units with a modulating valve. The hot water circulating through the coil in the finishing room allows the air to be heated and then cooled over and over until sufficient moisture has been condensed and removed from the air.
4. The Sanitary Air Handler. The air handler in both the aging room and the finishing room is a sanitary wash-down unit. The housing is made of stainless steel. The fans located on the unit have a poly housing. The coils have a special chemical-resistant coating and have fins that are spaced extra far apart to allow for cleaning solution to penetrate through the coil. The air handler in the aging room has one coil – a cooling coil. The air handler in the finishing room has two coils – a cooling and a heating coil. Air is drawn in at the base of the unit, pulled up through the coil or coils and blown out through a fabric duct sock.
5. The Duct Sock. The permeable fabric of the duct sock is engineered to provide proper air distribution throughout the room. The fabric is washable and can be removed from the air handler unit and cleaned.
6. Humidifiers. Humidifiers are located in the aging and finishing rooms and are controlled by the PLC control. Water is plumbed to these units and they blow a fog of water vapor into the room when additional humidity is required.

# MILKING INSTRUCTIONS

## PRE-MILKING

1. Wash hands, put on dark blue smock
2. Sanitize milking claws. Fill left hand sink with cold water to the lower line. Add 2 ounces of Extract 2. Turn on Wash-Down switch.
3. Sanitize lids with the water plus Extract 2. Put lids into sink with claws, making sure every part is submerged, then pull out to hang.
4. Sanitize cans by putting some of the water plus Extract 2 into the cans, brush and dump back into the sink. No need to rinse cans.
5. Let wash-down run about 5 minutes or until the water is low. Pull the plug and turn off the sanitizer.
6. Drain blue hose lines to make sure they are empty
7. Place lids on cans. Hook 2 black tubes to 2 blue receptacles, hook blue tube to stainless steel receptacle. Close on top by slipping handle into the groove.
8. Wash down parlor. All floor should be wet, this will make clean up after milking much easier.

## MILKING

1. Put grain in trough. Bring cows in, secure with guard.
2. Turn on system and pulsators; bring cans and claws into the parlor.
3. Insert plastic tube on milking can into the vacuum and attach pulsator line.
4. Make sure knob on milking claw is closed.
5. Assess teats and bag for dirt and debris. If cow is visually dirty, wash teats and, only if necessary, wash bag with mild soap-iodine solution, then dry completely.
6. Dip each teat with pre-dip solution, let set 30 seconds. Wipe off teats with paper or cloth towels, 1 clean towel per cow.
7. Pre strip each teat for 3 or more squirts, looking for abnormal signs such as clots, specks, blood or watery milk. Hook up cow on good quarters. If there are any signs of off milk, do NOT put in cans for transfer. Either hand milk into a container to discard or wait until last to milk out with claw and empty can.
8. Note: Only dip teats and prep on four cows at a time; hook milkers up and when they are almost done, do 4 more.
9. Turn on vacuum at individual switch.
10. Turn milking claw over and attach the claw to the teats.
11. As soon as no more milk is coming out, remove the claw by turning off the vacuum switch and gently pulling off, breaking the suction.
12. Watch for milk level in cans. When full, set aside for transfer.
13. Milk bad quarters; give milk to calves or pigs.
14. Dip the teats with post dip-specified dipper, but do not wipe this time
15. Release the cows.
16. Rinse off cans, put on plain lids or disconnect hoses off lids
17. Put cans on cart and take to the transfer room. Spray cans with sanitizer and transfer as quickly as possible.

## **POST-MILKING**

1. Put milking claws back in sink and connect blue plastic tube to washing unit for washing. Spray off any debris.
2. Clear tubes need visual inspection; replace when needed
3. Pug plugs in sink near drain end.
4. Fill sink with warm (not hot) water < 110 degrees to first line. Run about 5 minutes or until water is mostly gone. Shut off. Pull plug to drain leftover water.
5. Drain blue tubes; replace drain plug.
6. Fill sink with hot water > 160 to first line and while filling add 2 ounces (2 pumps) CIP detergent. Run about 5 minutes or until water is mostly gone. Write temperature on chart. Brush claw units and hose with wash water during wash. Shut off. Release drain plug to drain and lift blue hoses to drain.
7. Replace plug and fill sink with cold water to first line and add 2 ounces (about 2 pumps) acid. Run about 5 minutes or until water is mostly gone. While running, scoop water from sink over claws several times. . Release plug, drain water and drain water from blue hoses; turn off system.
8. Hang up clear hoses, leaving milking units in the sink.
9. While doing all this washing, you can also hose down the milking parlor
10. Turn off compressor, put everything away, leaving things neat and tidy.

## **CALIFORNIA MASTITIS TESTING (CMT)**

1. Use CMT paddle on all cows once a week, or when you think a cow has abnormal milk, and use for rechecking.
2. After pre-strip and dry off, fill each cup with milk from cow quarters on paddle with corresponding teat location to first line, with paddle tilted to a 45 degree angle.
3. Squirt reagent to second line, holding paddle at angle.
4. Swirl paddle.
5. Evaluate the consistency of the mixture. The more gel, the higher the Somatic Cell Count (SCC). A flat swirl of liquid in the cup, the better (lower) the SCC.
6. If test is gelled, showing a high SCC, milk that quarter for waste milk last.

WASHING INSTRUCTIONS  
SUMMARY

BEFORE MILKING

2 ounces Extract-2 with Cold Water  
Drain blue hose.

AFTER MILKING

Warm Water Rinse 110 degrees or less  
Drain Blue Hose

2 ounces CIP Detergent with Hot Water over 160 degrees  
Drain Blue Hose

2 ounces Pink Acid with Cold Water  
Let water drain from sink  
Drain Blue Hose

NOTE: 2 ounces is approximately 2 full pumps

# **ENTERING TRANSFER ROOM and MAKE ROOM**

## **BEFORE ENTERING TRANSFER ROOM**

1. Remove all jewelry
2. Put on smock, crocs and hairnet
3. Leave cell phone on the cart
4. If transferring the milk after you just milked, put on white scrubs or jump suit.
5. Cheese-makers need to wear clean clothes. If clothes are not covered when milking, he/she should change into clean clothes before entering make room.
6. Anyone who has been with pigs or chickens must shower and change clothes before entering Transfer Room and Make Room

## **IN TRANSFER ROOM**

1. Check that foot bath has water + sanitizer
2. If foot bath is low in water, add about 1 ml sanitizer and water to fill
3. Test with test strip—the strip should show about 100-200 parts per million
4. Step into foot bath
5. Thoroughly wash hands and arms in sink
6. Dry hands with paper towels.
7. Note: Every day during milking season, dump mat of water, then refill with 2 gallons of water + sanitizer from funnel.

## **IN AGING ROOM**

1. Wipe hands with sanitary wipes before handling cheese.
2. When washing aging room do not spray near cheese.

## **TRANSFER ROOM WASHING INSTRUCTIONS FOR MILK TRANSFER & CHEESE MAKING**

In Transfer Room, left hand valve, near floor, is **Funnel Valve (FV)**;  
Right hand valve, near floor, is **Milk Line Valve (MV)**.

### **BEFORE FILLING VAT**

1. Wash hands, nails and arms; while stepping into foot bath
2. Sanitize Milk/cheese vat before filling with milk for the first time when empty. Make sure no sanitizer water is pulled in vat, should be all drained.
3. Make sure pipes are hooked up for loop; FV should be closed, MV open.
4. Loosen valves and put intake pipe into funnel. Tighten valves.
5. With pump set on about 25 Hz, drain water from funnel, with water exit over exit pipe. Open FV at the end and then close.
6. Watch carefully and be sure to turn off pump with water is gone.
7. Fill funnel half way with cold water, drain.
8. Fill funnel with cold water and add 3 oz sanitizer.
8. While filling, dump mat of water, then refill with 2 gallons of water + sanitizer from funnel. Test water in mat with test strip.
9. On cheesemaking days, fill sample taking cylinder from vat with sanitizer. Place sample dipper and yard stick into the cylinder.
10. On Monday and Thursday, empty mats in packaging room and refill with 2 gallons sanitized water from funnel; dump and refill bucket with clamps in make room and dump and refill spray bottles with sanitizer (as needed, based on test strip).
9. With water exit over funnel, run pump at 35 Hz about 2 minutes
10. Drain water from funnel, opening FV at end and then closing, making sure to turn off pump when funnel is empty. Flip MV a couple of times leaving open at end.
11. In make room, open front of pipe near floor to drain trapped water; also slightly open pipe next to pump and let trapped water drain.

### **FILLING VAT**

1. Undo pipe connection and insert filter
2. Connect two pipes to milk vat, making sure pipe is facing vat wall. Secure all clamps. Make sure cap is on drain of milk vat and valve near floor is closed.
3. If filling an empty tank, spray tank with sanitizer, install paddles and turn switch to cool.
4. With FV closed and MV open, and pump set at 25 Hz, suck out milk from cans.
5. Chase last milk with 1 gallon of water
6. Turn pump off immediately.

### **AFTER MILK TRANSFER when not making cheese**

1. Reconnect pipe; put two pipes into funnel.
2. Fill funnel with warm water and run at 45 Hz with water exiting. Start with MV open and FV closed; change to MV closed and FV open. Turn off when empty
3. Fill funnel with hot water, checking temperature. Temperature should be above 152. Note temperatures on chart.

4. Run some hot water with pipe over drain until metal drain is hot. Then stop pump. Move exit pipe back over funnel and continue filling with hot water.
5. As water is filling, add 7 oz CIP detergent. Run 10 minutes total with water going into the funnel, then drain. Start with both valves open, then close FV. Need to check temperature at 10 minutes.
6. Fill funnel with cold water; put pipe to exit run pump with water, rinsing line to empty of soap. When soap is finished leaving, put pipe back in funnel.
7. Finish filling to top with cold water and add 3 ounces pink acid sanitizer and run about 5 minutes at 35 Hz. Start with MV open and FV closed, then open funnel valve, flip a couple of times. Do not drain, leaving sanitizer plus water in funnel until next use.
8. During non-milking season, place top on funnel. Make sure top is clean.
9. Pick up blue drain line so it is not on floor, and hang on hook.

#### **AFTER MILK TRANSFER when making cheese**

1. Remove filter and put back pipes to form loop going out through whey pipe to outside.
2. Fill funnel with warm water and run at 35 Hz for 2 minutes with MV open, FV closed to rinse out the line.
3. Attach whey pipe to vat and outlet at the pump. **Turn Milk Valve to CLOSED**
4. AFTER CHEESE MAKING and WHEY DISPOSAL, fill funnel with warm water and run at 45 Hz with water exiting. Start with MV open and FV closed; change to MV closed and FV open
5. Fill funnel with hot water, checking temperature. Temperature should be above 152 F to start and above 145 degrees after ten minutes. Note temperatures on chart.
6. As water is filling, add 7 oz CIP detergent. Run at 45 Hz for 10 minutes total with water going into the funnel, then drain. Start with both valves open, then close FV. Need to check temperature at 10 minutes.
7. Start filling funnel with cold water; when about half full, run with exit pipe, draining to get soap out before sanitizing starts.
8. Fill funnel with cold water and 3 oz pink acid sanitizer and run about 5 minutes at 35 Hz. Start with MV open and FV closed, then open funnel valve. Do not drain but leave sanitizer plus water in funnel until next use.
9. During non-milking season, cover funnel with top, making sure top is clean

#### **WASHING CANS POST MILKING**

1. In transfer room, wash and sanitize cans and lids after emptying, using steps below.
2. Rinse cans inside and out with warm water, below 110 F, from hose.
3. Fill right hand sink with 2 ounces of Acid Sanitizer and cold water to the six-inch mark
4. Sprinkle powdered detergent (2 ounces total) inside one can and add water. Wash all the cans sequentially with this soapy water.
5. Scrub each can with a white pad. Discard pad outside transfer room after use.
6. In left hand sink, finish washing each can and rinse with sink plugged.
7. Finish rinsing each can using hose.
8. Wash lids in left hand sink and rinse with hose.
9. Rinse cans and lids in sink with acid sanitizer.
10. Wash cart off before putting cans back on
11. Returns cans and lids to milk room; hang cans upside down on hooks.

# MAKE ROOM CLEANING INSTRUCTIONS

## CLEANING EQUIPMENT AND VAT AFTER MAKING CHEESE

1. Rinse off any curds or solids from equipment
2. Fill right hand sink with 2 1/2 oz of acid sanitizer and 6 inches (15 gallons) cold water
3. Run water in whey line to chase whey into whey tank. Move whey hose to drain.
4. Run soapy water through whey line. Make sure it is going in drain in floor
5. Run sanitizer water from sink through whey line with whey line in drain in floor.
6. Wash all equipment by applying Expedite detergent directly to white scrubber pad and scrubbing equipment thoroughly.
7. Rinse with warm water
8. Dip in right hand sink and allow to drain.
9. Scrub vat with cleaning powder or detergent applied to white pad; rinse with hot water from hose, spray on sanitizer. (Pad should be discarded from make room after using.)
10. Remember exit hole at bottom of tank—use small brush or pad to get clean; rinse and sanitize exit hole with spray sanitizer
11. Wash, rinse and sanitize the cheese drain table if it has been used.
12. Scrub vat top with soapy water, rinse with hose, spray on sanitizer and replace on vat
13. Let agitators drain; do not put back in tank until time to fill with milk.
14. When cheeses are moved to aging room, clean and sanitize drain table
15. Remove trash from make room and transfer room after making cheese.

## CLEANING WHEY LINE AFTER MAKING CHEESE

1. Place end of whey line in sink or vat that has rinse water to push out remaining whey.
2. Place end of whey line in left hand sink with detergent and warm water. Make sure whey pipe is in drain hole outside, with whey valve on.
3. Run at about 30 Hz to remove whey and detergent water from sink.
4. Place in right hand sink and remove acid plus water
5. Reconnect loop and hang up whey tube.
6. Remove connecting pieces every two weeks from ends of whey hose and wash with suitable brush.

## CLEANING PIPES AFTER DRAINING WHEY LINE

1. Undo pipes connecting line to cheese vat and connect loop to outdoor whey line; set pump at about 35 Hz
2. After milk transfer, suction pipe and pipe pieces have been put back into funnel; open MV; open and close FV during cycle.
3. Fill funnel with warm water under 110 degrees; run water out through drain.
4. After cheesemaking, switch pipes back to inside drain loop.
5. Fill funnel with warm water; run warm water at 45 Hz opening FV half way through.
6. When empty, turn off and close FV.
7. Turn off cold water valve.

8. Run with warm water (less than 110 F) about 2 minutes; drain
9. Run with 7 ounces CIP detergent and hot water > 160 about 10 minutes. Use brush to clean side of funnel; drain.
10. Fill half way with water then drain. This is to rinse out detergent.
11. Turn cold water valve back on.
12. Fill funnel with cold water and 2.5 ounces Sanitizer acid.
13. Run at 35 Hz with drain pipe inside funnel for 3-5 minutes, then turn off.
14. Cover funnel, leaving sanitizer plus water in funnel until next use.
15. Pick up blue drain off of floor and hang on hook

## CLEANING FLOOR

1. Hose floor off in make room and transfer room with warm water to drains.
2. Spray floor with foam soap
3. Brush floor with red floor brush
4. Rinse floor off with water to drains, squeegee floor towards drains
5. Remove drain covers to wash drains in make room, aging room and transfer room.
6. Check drains in storage room, packaging room and cold storage room and wash if necessary.
7. Take drain baskets out and wash, rinse and sanitize.
8. Get bucket of soapy water from left hand sink. Dip drain brush in soapy water. Pour some of the soapy water in each drain, then brush with black/red drain brush.
9. Run water down drains to clear.
10. Spray hydrogen peroxide into drains.
11. Replace baskets and covers.
12. With every cheesemaking, clean floor and drains in aging room. Note to be very careful in aging room not to get cheese wet.

## CLEANING TABLE

1. Put detergent on white pad and scrub table
2. Rinse with hot water and squeegee dry
3. Pour on some vinegar, wipe over whole table
4. Rinse with hot water and squeegee dry

## CLEANING CHEESE MOLDS

1. For cheddar and jack molds, rinse all pieces carefully with hot water using sprayer hose, to remove all butterfat and cheese from holes
2. Fill right hand sink with 2 1/2 oz of acid sanitizer and 6 inches (15 gallons) cold water
3. Clean each mold by applying Expedite detergent to white pad. Scrub well, making sure to remove any cheese from holes.
4. Rinse with warm water. While rinsing blue cheese molds, inspect for clogged holes—use a brush to unclog.
5. Place in right hand sink and leave about 2 minutes.
6. Place on clean drain table to dry.
7. Clean off drain board, rinse and pour a little acid sanitizer water from right hand sink. Squeegee dry. Rinse out left hand sink
8. Drain right hand sink.
9. To remove calcifications from blue molds, occasional soak in sink with cold water and 1-2 gallons vinegar. Soak overnight, scrub with scrubber, rinse with warm water and dip into sink with acid sanitizer added. Drain on clean table.

## BRUSH PROTOCOLS

1. All red brushes are for floors and walls, no food surfaces
2. Black brushes with red handles are for floor drains
3. All dark green brushes are for the milking parlor and should remain in the milking parlor
4. White brushes are for food surfaces such as milk tank, cheese drain table, sinks and counters, cheese press and aging boards
5. All brushes are stored hanging up.
6. After brush usage, brushes must be free of debris, washed if needed and acid sanitized, then hung up in the approved location.
7. Check brushes before use for loose bristles, cracked blocks or handles.
8. Poor quality brushes should be discarded and replaced.

## BRUSH CLEANING PROCEDURE

1. After use take brush with soap and water and wash
2. Spray with high pressure hose to rinse.
3. Soak in acid sanitized water for few minutes
4. Hang up to dry.

## SPRAY SANITIZER IN BOTTLES

1. Each day before using spray sanitizer, check for appropriate chlorine ppm using test strip.
2. If sanitizer is not strong enough dump old and make new.
3. Fill water in sprayer and add 2 ml Extract II, or fill from funnel when running sanitizer.

## BOARD CLEANING PROCEDURE

1. Rinse boards with hot water
2. If necessary, brush off debris sticking to boards, then rinse again with hot water
3. Rinse again and squeegee dry
4. Spray on hydrogen peroxide
5. If bubbles form, rewash and rinse and repeat until no bubbles form
6. Spray with 5% vinegar
7. Spray with hydrogen peroxide
8. Let boards dry individually in storage room, then put aside to wait for sanitizer treatment
9. When you have about 10 or more dry, cleaned boards, brush on both sides with mixture of sanitizer and water, at 200 ppm. Allow to dry and put back with ready boards.

## ADJUST PRODUCTION ROOM TEMPERATURE

1. Press the “PRODUCTION ROOM” button on the Home Screen (the screen that says “Sanitary Climate Control System” at the top). This take you to the Production Room temperature set point screen.
2. Tap the Room Temperature Set point numbers. This will bring up a number keypad.
3. Enter the new temperature set point you want and press ENTER. The new set point should be displayed.
4. Press HOME to return to the Home Screen.

USE SAME PROCEDURE FOR ADJUSTING  
AGING ROOM AND STORAGE ROOM TEMPERATURE AND HUMIDITY

## HUMIDIFIERS MAINTENANCE

1. There are five humidifiers – Four in the aging room and one in the Cold Storage (not being used).
2. Aging room humidifiers should be cleaned once a month.
3. To remove humidifier from rack on wall, first shut water supply line off, then unscrew the water line from the unit, then unplug unit from receptacle.
4. Empty water from unit
5. Wash the basin then adding distilled vinegar or Shine-Ezy in basin until fluid comes out overflow hole.
6. Put top unit back on and run in a large plastic bag for 10 minutes or until calcification comes off
7. Remove solution and rinse.
8. Replace unit in the rack, hook up water supply line, turn on water and plug back in to receptacle.

## USE of pH METER

1. Store in tube (vial) with tap water or storage solution
2. Before calibrating, place in cleaner about 1 minute, wipe off.
3. To use, first put in vial with H<sub>2</sub>O. Press on button. Leave 2 minutes
4. Meanwhile, replace pink and yellow calibration liquids.
5. To calibrate (always calibrate before cheese making), wipe with soft tissue, place in 7.0, leave about 30 seconds, then press calibrate, leave 30 seconds and then press hold
6. Wipe, then place in 4.0, leave about 30 seconds, then press hold.
7. Turn off calibration button.
8. Take pH of milk dipped into a vial. (Never take pH of milk in vat as glass tip could break off and ruin the batch.)

## MAKING CHEDDAR CHEESE

### FILLING VAT AND HEATING MILK

1. Fill vat with pump at 25 Hz
2. Chase last milk with a gallon of water; turn pump off immediately;
3. Make sure cylinder is ready with sample dipper and yardstick.
4. Take 5 samples in vials of milk marked and placed as follows:
  - a. Wearing gloves, place sample in green-top container (for coliform testing) and place in ice bath in lab sink.
  - b. "Temp," and put in lab ice bath
  - c. "Date and three-days later date" and put in lab ice bath for Appendix N testing
  - d. "pH" to test pH of milk, keep in make room
  - e. "P A Bowen and date" put in freezer
5. Have another vial ready marked pH for pH reading before addition of rennet.
6. Measure height of milk in tank and figure pounds of milk and amounts of cultures. (1000 pounds is 17.5 inches); record on make sheet.
7. Turn on agitator to 20 Hz, heat and blue valve on wall, set at 3.
8. Heat milk to 90 degrees (takes about 30 minutes). Watch carefully! The milk heats quickly and it should not get too hot. Turn off when digital gets to about 88.2, and temp will gradually rise to 90.
9. Measure pH and record on make sheet.

### ADDING CULTURES

1. Take out RA culture when you arrive at the make room, to warm.
2. When temperature is right and with agitators on, sprinkle on RA and Emfour cultures; mix at 20 Hz for 2 minutes, then turn down to 10 Hz. Agitate at low speed for 60 minutes.
3. (Do Appendix N testing during this period)

### ADDING RENNET

1. Check temp. If temp has dropped, carefully heat back up to 90, (88 on digital thermometer) NO MORE.
2. Measure rennet and mix with 1 quart water (half the container)
3. With agitators at 20 Hz, add rennet in dribbles. Note, NEVER sanitize the rennet cylinders, use for rennet only
4. Agitate at 20 Hz for 2 minutes no more, then turn off.
5. Remove agitators. Rinse agitators, then wash with detergent using white brush or pad, rinse and spray sanitize
6. Leave rennet about 30-50 minutes. Break should be clean but soft. (Do salting and turning in aging room during this time.)

## CUTTING CURDS AND MAKING CHEESE

1. Remove cheese vat top. Check for right gel (soft set but clean), in the milk.
2. Warm cheese cutter with warm water before cutting. Spray on sanitizer.
3. Cut curds in three directions, horizontal knife first crossways; then vertical knife lengthwise and crosswise. Heal (let curds drop) for 10 minutes
4. Return agitators and agitate at 26 Hz, increasing to 30 Hz, checking pH frequently, and gently removing curds from corners
5. At the same time, begin to heat, with wall setting less than 1. You want to go from 90 to 102 in 40 minutes, reaching 95 by 20 minutes and 102 by 40 minutes from rennet time.
6. Agitate until curd pH reaches <6.24, checking heat to keep at 102 and removing curds from corners, before removing paddles.
7. **Check outside to make sure that whey hose is in tank, and tank valve is closed (turned to the right or starboard.)**
8. Remove paddles and push curds away from drain. Spray cylinder with sanitizer and place over drain. Use hand to remove any curds from inside the cylinder. Put pump at 16 Hz. Open vat drain, then turn on pump, then turn whey removal lever (yellow lever on wall) down (for “down and out.”)
9. Mound up curds on each side, letting whey flow out the center. Leave mounded curds 20 minutes
10. Remove whey pipe and let remaining whey flow into bowl, transferring whey frequently to a bucket.
11. Cut curds at 5 inches wide and turn 180 degrees. Follow directions on make sheet for turning.
12. Line molds with cheese cloth (see photos). About one mold for each 160-200 pounds milk.
13. Spray peg mill with sanitizer. Run the curds through the peg mill; after, disassemble mill for washing
14. Mound curds on each side again. Add salt in three batches, mixing well with each batch and letting sit 10 minutes between saltings. Note: Salty white whey should drain into a bowl and not be given to animals, but OK to put down drain.
15. Transfer curds to molds. Fill to brim and press down. Add round of cheesecloth. Use inserts if necessary to bring total volume over the top of mold; Put on top.
16. Press for 30 minutes at 15 psi; remove from press, push down plastic hoop and pull up cheese cloth, pressing onto the round on the top as neatly as possible. Pull up hoop again to brim, add inserts if necessary and put on top.
17. Put in press again and press overnight at 30-40 psi.
18. Next day, remove molds, transfer to aging on dry clean boards
19. One or two days later, turn and smear with lard.
20. Turn cheese frequently, smoothing down fuzzy mold that develops.
21. At day 60, take core sample and test for pH. Record results on 60-day pH sheet

## WHEY DISPOSAL

1. Whey drained from cheese vat and cheese table is pumped out to the whey tank on south side of building
2. At a later time, the whey tank is taken to the pigs so that whey can be fed to the pigs.

## MAKING AQUASCO JACK CHEESE

### FILLING VAT AND HEATING MILK

1. Fill vat with pump at 25 Hz
2. Chase last milk with a gallon of water; turn pump off immediately;
3. Make sure cylinder is ready with sample dipper and yardstick.
4. Take 5 samples in vials of milk marked and placed as follows:
  - a. Wearing gloves, place sample in green-top container (for coliform testing) and place in ice bath in lab sink.
  - b. "Temp," and put in lab ice bath
  - c. "Date and three-days later date" and put in lab ice bath for Appendix N testing
  - d. "pH" to test pH of milk, keep in make room
  - e. "P A Bowen and date" put in freezer
5. Have another vial ready marked pH for pH reading before addition of rennet.
6. Measure height of milk in tank and figure pounds of milk and amounts of cultures. (1000 pounds is 17.5 inches); record on make sheet.
7. Turn on agitator to 20 Hz, heat and blue valve on wall, set at 3.
8. Heat milk to 90 degrees (takes about 30 minutes). Watch carefully! The milk heats quickly and it should not get too hot. Turn off when digital gets to about 88.2, and temp will gradually rise to 90.
9. Measure pH and record on make sheet.

### ADDING CULTURES

1. Take out RA culture when you arrive at the make room, to warm.
2. When temperature is right and with agitators on, sprinkle on cultures; agitate slowly for 60 minutes.
3. (Do Appendix N testing during this period)

### ADDING RENNET

1. Check temp. If temp has dropped, carefully heat back up to 90, (88 on digital thermometer) NO MORE.
2. Measure rennet and mix with 1 quart water (half the container)
3. With agitators at 20 Hz, add rennet in dribbles. Note, NEVER sanitize the rennet cylinders, use for rennet only
4. Agitate at 20 Hz for 2 minutes no more, then turn off.
5. Remove agitators. Rinse then wash agitators using detergent and white brush, rinse and spray sanitize
6. Leave rennet about 30-50 minutes. Break should be clean but soft. (Do salting and turning in aging room during this time.)

### CUTTING CURDS AND MAKING CHEESE

1. Remove cheese vat top. Check for right gel. Should be somewhat soft.
2. Warm cheese cutter with warm water before cutting. Spray on sanitizer.
3. Cut curds in three directions, horizontal knife first crossways; then vertical knife lengthwise and crosswise. Heal (let curds drop) for 10 minutes

4. Return agitators and agitate at 22 Hz, checking pH frequently, and gently removing curds from corners
5. At the same time, begin to heat on at less than Setting 1. You want to go from 90 to 98 in 30 minutes.
6. Agitate another 40-120 minutes or until curd pH reaches 5.8 – 6.0, checking heat to keep at 98.
7. Meanwhile line molds with cheese cloth (see photos). Approximately one mold for each 100 pounds milk.
8. **Check outside to make sure that whey hose is in tank, and tank valve is closed (turned to the right or starboard.)**
9. Push curds away from drain (keeping paddles on). Spray cylinder with sanitizer and place over drain. Use hand to remove any curds from inside the cylinder. Put pump at 16 Hz. Open vat drain, then turn on pump, then turn whey removal lever (yellow lever on wall) down (for “down and out.”)
10. Drain to top of curd, close vat valve and remove cylinder strainer.
11. Use the food grade hose to fill with plenty of cold water until whey temperature is about 90 degrees. Start agitating after filling a little (may need to push the paddles).
12. Agitate until whey is about 88 degrees, adding water to bring the temperature down.
13. Remove paddles, add cylinder strainer. Open vat valve and drain whey at 16 Hz, mounding up curds on either side so all liquid can drain.
14. When cheese is all mounded and drained, change whey removal configuration so that whey (which will be salty) drains into the drain.
15. Measure 4 pounds salt per 1000 pounds. Sprinkle salt on in 3 batches, mixing thoroughly, while salty whey is draining. (Try to keep curds away from the drain.)
16. When curd pH is about 5.6-5.75, curds can be transferred to molds.
17. Press down heavily when filling molds. Fill full, leaving just enough space to place insert on top. Add round of cheesecloth. Then place inserts if necessary to bring total volume over the top of mold; Put on top.
18. Press for 30 minutes at 10 psi per mold; remove from press, push down plastic hoop and pull up cheese cloth, pressing onto the round on the top as neat as possible. Pull up hoop again to brim, add inserts if necessary and put on top.
19. Put in press again and press overnight at 20 psi per mold (2 molds in a stack, 40 psi; 3 molds in stack, 60 psi; 4-5 molds in stack, 80 psi)
20. Next day, remove molds, transfer to aging on dry clean boards
21. On day 4 or 5, turn and smear lard.
22. Turn cheese frequently.
23. At day 60, take core sample and test for pH. Record results on 60-day pH sheet

#### WHEY DISPOSAL

1. Whey drained from cheese vat and cheese table is pumped out to the whey tank on south side of building
2. At a later time, the whey tank is taken to the pigs so that whey can be fed to the pigs.

## **MAKING BLUE CHEESE & DREAMY CREAMY**

### **FILLING VAT AND HEATING MILK**

1. Fill vat with pump at 25 Hz
2. Chase last milk with a gallon of water; turn pump off immediately;
3. Make sure cylinder is ready with sample dipper and yardstick.
4. Take 5 samples in vials of milk marked and placed as follows:
  - a. Wearing gloves, place sample in green-top container (for coliform testing) and place in ice bath in lab sink.
  - b. "Temp," and put in lab ice bath
  - c. "Date and three-days later date" and put in lab ice bath for Appendix N testing
  - d. "pH" to test pH of milk, keep in make room
  - e. "P A Bowen and date" put in freezer
5. Have another vial ready marked pH for pH reading before addition of rennet..
6. Measure height of milk in tank and figure pounds of milk and amounts of cultures. (1000 pounds is 17.5 inches); record on make sheet.
7. Turn on agitator to 20 Hz, heat and blue valve on wall, set at 3.
8. Heat milk to 92 degrees (takes about 30 minutes). Watch carefully! The milk heats quickly and it should not get too hot. Turn off when digital gets to about 90, and temp will gradually rise to 92.
9. Measure pH and record on make sheet.

### **ADDING CULTURES**

1. Set out cultures as soon as you get to the milk room, so they can warm.
2. With agitator on, sprinkle on cultures; for penicillin mold (added only to blue cheese, not Dreamy Creamy), mix with milk in vial, shake and add in thin stream. Can add cultures when getting close to temp.
3. Agitate slowly for one hour. (Do Appendix N testing during this period)

### **ADDING RENNET**

1. Check temp of milk, if too low CAREFULLY heat back up but not over 93 degrees (91 on the wall thermometer)
2. Measure rennet and add 1 quart water (half of container)
3. Note, NEVER sanitize the cylinders for rennet, use for rennet only
4. Add rennet - make sure milk is moving before rennet is added.; agitate at 20 Hz for 2 minutes, NO more. Turn off agitators.
5. Remove agitators. Rinse then wash agitators using detergent and white brush, rinse and spray sanitize
6. Leave rennet about 30-60 minutes. (Do salting and turning in aging room during this hour.) Begin checking for break at 40 minutes. Want a firm set with a clean break.

### **CUTTING CURDS AND MAKING CHEESE**

1. Check for right gel, set, in the milk. Remove top. Set should be firm.
2. Warm cheese knives with warm water before cutting. Spray with sanitizer.
3. Cut curds in three directions, horizontal knife first crossways; then vertical knife lengthwise and crosswise.

4. Leave 10 minutes (heal); curds should sink out of sight.
5. Break up curds gently with hands and remove from corners
6. Return agitators and agitate at 20 Hz , checking pH frequently, keeping temperature around 93 degrees, no more, and gently breaking up curds with hands
7. When curd pH is at about 6.3, (no more) remove agitators,
8. **Check outside to make sure that whey hose is in tank, and tank valve is closed (turned to the right or starboard.)**
9. Push curds away from drain. Spray cylinder with sanitizer and place over drain. Use hand to remove any curds from the cylinder. Put pump at 16 Hz. Open vat drain, then turn on pump, then turn whey removal lever (yellow lever on wall) down (for “down and out.”)
10. Drain to just below top of curds. Remove cylinder.
11. Add fine salt (1 gram per pound of milk) in two batches, mixing thoroughly with hands
12. Close vat valve and remove whey removal pipe from vat.
13. Attach whey pipe to drain table, and place strainer over drain to catch cheese curds.
14. When curd pH is 6.2, lift out curds with colanders, allow whey to drain slightly and transfer to molds while draining whey from drain table with pump set at 6 Hz. Pour whey through curds in the molds. NOTE: Do not press curds into the molds. NOTE: do not let pump run with nothing running through it. Turn off if necessary. Use one mold per about 1 inch of milk. Curds should be mounded to 1-inch over the top of the mold
15. Remove all curds and whey from the vat.
16. Remove whey pipe from drain table and put bucket to catch remaining whey. Change bucket as necessary. Take whey out of room (or suction out) when buckets are full.
17. Turn cheeses (first turn), record time.

### **SALTING AND TURNING**

1. Five hours after addition of rennet, take pH of cheese, should be 5.2, Turn cheeses (second turn)
2. Ten hours after addition of rennet (in the evening), turn cheeses.
3. Next morning, take pH, roll cheeses in salt, brush off and put back in molds and on shelves in aging room; put about 1 tablespoon salt on top; make label
4. Next day, remove cheese from molds. Salt all over, brush off, but leave thick salt on top
5. Next day salt all over, brush off.
6. Salt on next two days, brushing off
7. Blue cheese gets punched one day after salting is finished (only if exterior is dry, do not punch if wet, may need to move to different location in aging room to dry better)
8. Turn cheeses frequently, usually on cheese-making days.

### **FINAL STEPS**

1. At 60 days, transfer to cold storage if ready
2. At 60 days, take pH of interior and rind and record

### **WHEY DISPOSAL**

1. Whey drained from cheese vat and cheese table is pumped out to the whey tank on south side of building
2. At a later time, the whey tank is taken to the pigs so that whey can be fed to the pigs.

## **CLEAN UP AFTER CHEESE IS MADE AND PUT IN MOLDS**

1. Rinse all equipment off with warm water to get curds off before washing including vat. Use WHITE BRUSHES FOR CLEANING FOOD SURFACES
2. Fill right sink with 6 " cold water and 2.5 ounces Acid San.
3. Wash all small equipment by applying Expedite detergent to white pad. Clean all surfaces thoroughly with pad, using brushes occasionally if necessary; rinse with warm water; immerse in right hand sink a few minutes; remove and put away.
4. Use cleaning powder and warm to hot water and a new scouring pad, wash vat. Rinse with hot water. Check for cleanliness and rewash and rinse again if necessary.
5. Wash lid to vat in same manner as vat. Rinse and Sanitize
6. Put equipment in appropriate places
7. Before putting on lid, Sanitize Vat.
8. Put lid and paddles on, spray on sanitizer.
9. Put drain plug on plug to vat
10. Wash Floor with spray foamer and RED brushes
11. Rinse
12. Squeegee floor dry.
13. Take drain traps out and wash
14. Wash drain with soapy water using black/red drain brush
15. Rinse Drain
16. Put hydrogen peroxide into drains and leave
17. Disconnect whey hose from drain table; run water through hose to push whey out. When finished, turn off and take the end of hose that is outside and put into the ground drain. Put end of hose that is inside into soapy water and turn pump on to 35-40 Hz, draining soapy water. Then put into sanitizer sink and pump out right hand sink. Turn off pump when empty.
18. Turn valve to the closed position and reconnect loop to funnel.
19. Disconnect whey hose and recap end of pipe where you took the hose off.
20. Reconnect pipe circuit to wash transfer line.
21. Wash transfer line. (See instructions for after transferring milk)
22. With every cheesemaking, do floors and drains in aging room.
23. Once a month wash entire make room.

## APPENDIX N ANTI-BIOTIC RESIDUE TESTING (SNAP TESTS)

### THE FINAL PRODUCT WILL BE 5 PRINTOUTS:

- 2 FOR TEST KITS
- 1 FOR POSITIVE CONTROL
- 1 FOR NEGATIVE CONTROL
- 1 FOR SAMPLE

### I. TAKING SAMPLE

1. Wash hands
2. Add about a teaspoon sanitizer to tall cylinder and fill with water, or take water plus sanitizer from funnel.
3. Dip sample taker into sanitizer, stir around. Let set.
4. Label two vials
  - a. Temp. This is your temperature control
  - b. Date + Exp and date three days later (This is your Sample)
5. Take sample taker out of sanitizer. Dip sampler into milk. Pour milk out into vat three times. This rinses out sanitizer. Then take sample.
6. Put milk from sample taker into vials while holding over the floor, not the vat.
7. Rinse sample taker well and put back in cylinder, to use for taking pH sample before adding rennet.
8. Close the sample vial and put both into measuring cup in the lab. Surround with ice water bath. Put cold thermometer into the temperature sample

### II POSITIVE CONTROL

1. Remove a small brown positive control bottle from fridge, add date and exp date (one day later), tap on counter to make sure all powder is on the bottom and carefully remove top
2. Shake the negative control sample (which is kept in fridge) 25 times in 7 seconds through a 1-foot arc.
3. Using the long pipette, remove 2 ml milk from the negative control, being careful to avoid bubbles.
4. Put milk into positive control bottle, return lid and place bottle on counter.
5. Set timer for 10 minutes
6. WASH HANDS. Throw away pipette

### III. RUN TEST KITS AND OTHER PRELIMINARIES

1. During the 10 minutes, you can do the test kits and other tasks
2. Fill in columns 1-3 on Daily Record Form
3. To run the two kits, be sure to start at "Beta-Lactum"
4. Fill in Lot number on test kits
5. Fill in date
6. Run test for negative (#1) and then positive (#2)
7. Fill in column 4
8. Check fridge temperatures (top and bottom) and fill in form on fridge In Morning and Afternoon on make days.
9. Check temperature in block. Heater should be  $45 \pm 5$ . Fill in column 5

#### **IV. POSITIVE AND NEGATIVE CONTROLS**

1. While positive control is still incubating (during the 10 minutes), prepare other tests
2. Remove three test kits from fridge, open with scissors.
3. Remove small clear vial from one, check for presence of blue pellet and shake vial to make sure it is not stuck, label with a minus sign, and label snap device with a minus sign. Place in heater block.
4. Remove small clear vial from another package, check for presence of blue pellet and make sure it is not stuck, and label with a + sign, and label snap device with a + sign. Place in heater block.
5. Remove the negative control (which was your sample the previous time of making cheese). Shake the negative control 25 times in 7 seconds through a 1-foot arc. Let the bubbles subside (you can tap the container on the counter to hasten this process.)
6. Fill small pipette to line (1 ml) with negative control (tilt the container so you can draw from an area without bubbles) Add the negative control milk to vial with - sign, making sure you don't get any bubbles.
7. Agitate gently so the blue tablet disappears, put on appropriate spot on heater unit and set timer for 5 min
8. By now the positive control should be ready. Invert the positive control carefully a few times to mix—do not shake.
9. Remove top carefully and use small pipette to remove 1/2 ml milk and put it in the clear vial labeled with the +.
10. Wash hands.
11. Wait until blue pellets to disappear, agitating gently and place positive vial next to its respective devices on the heater block.
12. Run for 5 minutes.
13. After 5 minutes, pour each vial into the respective device. Watch until blue dot begins to disappear and then Snap shut.
14. Run for 4 minutes in heater
15. Get reader ready, putting in information for negative control (lot number, number of tester and 0 for negative control)
16. As soon as 4 minutes passed, read negative control and then quickly put in information for positive control and read that.
17. Fill in columns on negative and positive controls

#### **V. TEST SAMPLE**

1. Shake the sample milk container 25 times in 7 seconds through a 1-foot arc .
2. Take sample milk with pipette, avoiding bubbles.
3. Use small pipette to get milk from sample vial and add to small vial with blue dot
4. Agitate gently to make sure blue dot is dissolved.
5. Place on heater block and heat vial 5 minutes
6. Put milk on device. When blue dot disappears, Snap the device. Heat 4 minutes
7. Program reader with Lot number and date. Read device and fill in columns 12-14.
8. Put things away and tidy up lab.

## **CHEESE CUTTING AND PACKAGING**

### **ENTERING THE PACKING ROOM**

1. Remove jewelry
2. Put on smock, hairnet and crocs
3. Leave cell phone in locker

### **IN PACKING ROOM**

1. Check that foot bath has water
2. If foot bath low in water, add 1 ml Extract 2 and water to fill
3. Step into foot bath
4. Thoroughly wash hands
5. Dry hands and wipe with sanitary wipe

### **CUTTING AND PACKING**

1. Spray counters with sanitizer-water mix, wipe with paper towels
2. Spray knives, cutting boards, pans, wire cutter, etc. with sanitizer-water mix
3. Adjust scale/labeler as needed
4. Wipe hands with sanitizer towels
5. Remove cheese to be packaged from cold storage or (in case of cheddar) from aging room
6. Cut using knives or wire cutter
7. Wrap in plastic wrap
8. Weigh and attach label
9. Return packaged cheese to cold storage or store display cooler
10. Wash boards, utensils, etc with hot, soapy water; rinse with warm water
11. Spray with sanitizer and allow to drain and dry on sink board.

## CHEESE MITE CHECK

1. About once per week (when making cheese) use magnifying glass to check for cheese mites
2. Record findings on form
3. If cheese mites found, contact MDHMH for advice

## RODENT CHECK

1. Place rodent traps around inside and outside of cheese facility and milking parlor (but not inside transfer room, make room, aging room, storage room, packing room or cold storage room)
2. Check rodent traps about once per week.
3. Record findings on form
4. If a rodent is in a trap, remove and replace trap
5. If rodents consistently trapped in one area, check that there are no openings for rodents to get in, nothing that would attract them, and put out multiple traps.

## MONTHLY CLEANING AND MAINTENANCE

1. Once a month, in addition to cleaning pipes, floors and equipment, the walls should be washed in transfer room, make room and aging room.
2. Wash walls in make room using spray foam
3. In aging room and transfer room, use spray foam in a bucket with water. Be very careful in aging room not to get cheese wet.
4. Rinse walls with warm water, again being very careful in aging room not to get cheese wet.
5. Inspect the 3 air handling units and clean, using hot soapy water, then rinse and spray sanitize.
6. Wash all drains in facility as per instructions
7. Wash and rinse floors of storage room, packaging room and cold storage room as per instructions
8. Acid wash milk vat with Sheen-ezey and all stainless steel surfaces
9. Inspect Jabsco pump impeller and clean if necessary (Mike)
10. Lubricate agitator gears. (Mike)

# BEFORE ENTERING MAKE ROOM

1. Remove all jewelry
2. Put on smock, crocs and hairnet
3. Leave your cell phone outside
4. If you have been with pigs and chickens, you must shower and change clothes before entering cheese-making area.

Thank you for keeping the cheese facility clean and sanitary!

## BEFORE ENTERING PACKAGING ROOM

1. Remove all jewelry
2. Put on smock, crocs and hairnet
3. Leave your cell phone outside

NOTE: If you have been with pigs and chickens, you must shower and change clothes before entering cheese-making area.

Thank you for keeping the  
cheese facility clean and sanitary!

## BEFORE HANDLING CHEESE

Please wipe hands with  
Sanitary Wipes

### BOARD CLEANING PROCEDURE

1. Rinse boards with hot water
2. If necessary, brush off debris sticking to boards, then rinse again with hot water
3. Scrubb with pads
4. Rinse again and squeegee dry
5. Spray on hydrogen peroxide
6. If bubbles form, rewash and rinse and repeat until no bubbles form
7. Spray with 5% vinegar
8. Spray with hydrogen peroxide
9. Let boards dry individually in storage room, then put aside to wait for sanitizer treatment
10. When you have about 10 or more dry, cleaned boards, brush on both sides with mixture of sanitizer and water, at 200 ppm. Allow to dry and put back with ready boards.

## PUMP SPEEDS

Wash Water	45
Acid Rinse/Plain Water	35
Sanitizer	35
Milk Transfer	25
Whey Removal	16-17
Whey Table	6-8

## PADDLE SPEEDS

Milk	18
Adding Cultures	20
After Adding Cultures	10
Adding Rennet	20
Cheddar Heat/Cure	26-30
Jack Cure	22
Blue Cure	20

## RECALL PROTOCOL

1. Label each batch of cheese with date; affix date to shelf holding cheese in aging room
2. When transferring cheese to cold storage, keep label with that batch of cheese
3. When packaging cheese, place date on the package (as the Lot Number)
4. Keep records of when each batch goes for sale and to whom.
5. If a potential problem with a cheese is reported, send an email to our customer email list warning them about that particular batch of cheese.
6. Post on website, Facebook page and on sign board at farmers markets.

## PETRI DISH SPC TESTING

1. Wearing sterile gloves, use dipper to place milk into cup with green top. Try to minimize bubbles.
2. Using sterile pipette, add 1/2 mm (first line on the pipette) of milk to the Easygel medium. Screw top and invert a few times, very slowly.
3. Take a petri dish and place with the small side DOWN. Open lid slightly and gently pour whole bottle into dish. Close lid. Gently swirl. Leave for 40 minutes
4. Turn petri dish over so small side is UP. Incubate for 24 hours at 35 C plus or minus 2 degrees.
5. After 24 hours, should see nothing on the dish.
6. If bacteria on dish, read color:
  - a. e.coli                      dark blue and will fluoresce
  - b. coliform                    bluish grey
  - c. salmonella                green
  - d. aeromonous    pink
7. If bacteria present, use pen to count
8. If bacteria present, kill by putting bleach in the petri dish.
9. Record results on chart

## COLIFORM TESTING USING 3M PETRI PAPERS

1. Wearing sterile gloves, use dipper to place milk into cup with green top. Try to minimize bubbles.
2. Close top and place up in ice water bath until you do the test.
3. Using sterile pipette, lift paper and add 1mm (second line on the pipette) of milk to the middle of circle, holding pipette vertical.
4. Slowly put down the paper, to minimize bubbles.
5. Press with smooth side of plastic presser.
6. Place in incubator at 31-33 degrees C.
7. Read and record at 24 hours. Count only red dots with gas.

## PRE-CHEESEMAKING CHECK LIST

Read all temperatures

- Freezers
- Store Units
- Aging and Storage Rooms
- Lab Freezer and Fridge

Clear and fill funnel as per instructions.

From funnel take water with sanitizer for

- Mat in transfer room
- 2 buckets for mats in storage and packaging rooms
- Cylinder
- Bucket with clamps
- Sanitizer bottles

Prepare transfer pipes and install filter

Get out cultures

Change temperature wheel (Mondays only); mark the dates cheese made on the chart and store in the lab file box.

Prepare ice baths for sterile sample and SNAP tests

Prepare vials and sample cup

Fill in culture serial numbers

## DURING CHEESEMAKING CHECK LIST

- Turn cheeses (Monday only)
- Wash boards, sanitize as needed
- Dump water by Aging Room air handler
- Spray H<sub>2</sub>O<sub>2</sub> in difficult places
- Make labels
- Test 60-day pH values
- Cheese mite check

