



## FOOD SCIENCE AND INDUSTRIES NO. 9

V. S. PACKARD

Cleaning and Sanitizing  
on the Dairy Farm

Quality milk production is an investment in the future of dairying. And clean sanitary milking equipment is basic to the production of high quality milk. Requirements for proper cleaning vary according to type of equipment--let's look at each separately.

METAL MILKER UNIT PARTS

Follow these steps when cleaning metal milker unit parts:

1. Immediately after milking, rinse equipment with lukewarm water. Don't let milk solids dry on equipment--they'll be more difficult to remove later.

2. Dismantle equipment. Wash in dairy cleaning solution prepared according to manufacturer's recommendations. Then wash equipment using proper size hard-bristled brushes or plastic sponges. Never use metal or even stainless steel sponges because they scratch surfaces.

3. Immediately after brush-washing, place all parts in second tank containing 5 gallons cold water and an acid detergent made according to label instructions. This procedure eliminates spotting and the need for special acid washes to remove milkstone.

4. Remove equipment from acid rinse and store inverted, drained, and dry. Bacteria cannot multiply on a dry surface.

5. Just prior to use, sanitize with a dairy sanitizer made according to manufacturer's instructions. Drain well.

Note: if initial clean-up requires removal of milkstone, dismantle and soak in acid cleaner. Brush thoroughly. Complete cleaning using steps 1 - 4 above.

INFLATIONS AND OTHER RUBBER PARTS

Always use two sets of inflations, alternating a week of use with a week of "rest." Two sets treated in this manner outlive three sets used continuously.

For routine cleaning of rubber parts following milking, rinse with lukewarm water, wash with cleaning compound, and rinse with acid. Store

parts dry or in an acid soak; acid soaking prevents the formation of mineral deposits.

During rest periods, wash and soak inflations in special compounds commercially prepared for this purpose. Rinse with tap water, then rinse with acid, and store them dry. Or, to assist in preserving life of rubber, store in lye. Butterfat absorbed by rubber is removed in this process.

To prepare lye solution, use  $\frac{1}{2}$  pound of caustic to 5 gallons of water. Keep solution in a crock or stainless steel or plastic pail--OUT OF REACH OF CHILDREN!

After 7 days storage, remove inflations. Rinse them with water and wash in concentrated acid to neutralize them. They are then ready for use.

VACUUM LINES

Vacuum lines often are ignored as sources of milk contamination. But not only can lines contribute to production of poor quality milk, clogged lines cause vacuum changes that lead to mastitis. Clean vacuum lines at regular intervals or whenever an upset pail or broken inflation indicates that milk may have been drawn into the line.

1. Prepare solution of 4 ounces of caustic to 2 gallons of water. Use or prepare a quantity no greater than the volume of the trap or half the volume of the vacuum reserve tank. This precaution is necessary to prevent overflow of solution into the vacuum pump.

2. Draw solution through stanchion hose into the line, starting at stallcock nearest the trap. Draw 1 quart through each stallcock working away from trap; allow air to enter each time.

3. When finished, empty trap and discard solution. An extremely dirty line requires a second cleaning.

4. Draw 2 gallons of hot water through line, starting at farthest stallcock.

5. Prepare an acid detergent solution according to label instructions. Draw this solution through line from farthest stallcock in order to neutralize the line.

6. Draw 2 gallons of hot water through the line. Leave the stallcock open and vacuum pump running a while to dry the line.

### PIPELINE MILKERS

Three mechanical methods for cleaning pipelines are currently used: (1) vacuum circulating method, (2) pressure or pump circulation, and (3) vacuum flush system.

Good cleaning requires proper control of circulation time, detergent concentration, solution temperature, water hardness, and air admission. No step can be slighted. Cleaning must be begun immediately following milking.

Use only detergents or cleaners prepared specifically for pipelines. Requirements for cleaning are different than those for manual cleaning of milking machines. Stronger compounds with low foaming properties are essential.

Follow label instructions on cleaner. In general the procedure is:

1. Preflush system immediately after milking with a large volume of lukewarm water.
2. Prepare cleaning solution. Measure amount of water needed. Be sure water is at proper temperature, usually 160°F., and maintain it above 120°F. during circulation.
3. Circulate 10-20 minutes as specified.
4. Rinse with large volume of tap water.
5. Prepare acid detergent and circulate.
6. Drain well.
7. Before using pipeline, sanitize by circulating recommended strength of dairy sanitizer. Drain well.

### BULK TANKS

Bulk tanks may be cleaned either mechanically or manually but the job must be done each time the tank is emptied. The fact that grade I milk can be produced some of the time without cleaning after each use is no reason for slighting this task. Finished product quality problems can and do arise.

Manual cleaning requires use of a concentrated solution of bulk tank cleaner prepared in the tank. To prevent corrosion, always add water first and then detergent. With a hard bristled long-handled brush, scrub the entire surface. Use an acid rinse to eliminate milkstone deposits.

Solution temperatures for bulk tank cleaning are usually held below 115°F.

For mechanical cleaning:

1. Rinse with cool water immediately after emptying (hauler usually performs this operation).
2. Prepare detergent solution according to directions.
3. Spray solution 10-15 minutes.
4. Drain and rinse thoroughly with tap water.
5. Finish with an acid rinse using foamless organic acid.
6. Drain well.
7. Sanitize just before using tank.

### PLASTIC TUBING

Plastic tubing requires care if opaqueness or discoloration is to be avoided.

Opaqueness is caused by moisture absorption. Drying, particularly in direct sunlight, returns plastic to normal transparency but conditions that permit moisture absorption soon cause the problem to reoccur. Always store plastic tubes in a drying position. Preferably, use mechanical forced air driers.

Red or pink discoloration is caused in several ways:

1. Water high in iron content -- prevent by using acid rinse after washing.
2. Improper use of iodine sanitizer -- use only as directed.
3. Rubber migration -- rubber in contact with plastic over an extended period of time migrates into the plastic.
4. Bacteria -- prevent growth by good cleaning and sanitizing.

### OTHER CONSIDERATIONS

Never use household detergents on dairy equipment -- cleaning demands are different. Also, many household cleaners have odors or flavors that may be imparted to milk.

Minor variations in cleaning techniques from those listed here may be required depending upon the specific compound used. Always read the label!