REGULATORY PROBLEMS RESULTING FROM PIPELINE MILKING*

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The wider utilization of pipeline milking on the farm has resulted in the adaptation of cleaning-in-place procedures for these types of installations. The problems involved in such procedures have led many health departments to issue special regulations. The new developments in equipment design and cleaning procedures should not be hindered by stagnate regulations. The 1953 edition of the Milk Ordinance and Code Recommended by The Public Health Service **accepts the principle of pipeline milking and the cleaning-in-place procedures, but acknowledges that design and construction standards should be flexible. The cleaning and bactericidal treatment of this equipment must be determined by the usual standards of inspection.**

The development of a Cleaning-In-Place procedure applicable to the operation of milking equipment on the farm is evolving gradually but as yet has not crystallized into a standard for general adoption. The 1953 edition of the *Milk Ordinance and Code* recommended by the Public Health Service recognizes the potentials for Cleaning-In-Place standards by the statement in Section 6, Item 8r, subitem 3 "None of the milk house operations are conducted elsewhere. An exception may be made in the case of pipe-line milkers which are cleaned and given bactericidal treatment in place in such a manner as to comply with the provisions of items 13r and 14r and are approved by the health officer."

Further the milk ordinance states under Section 7, Item 15r, in part, "However, if approved by the health officer, (See Item 8r) those parts of pipe-line milkers which are cleaned in place may be stored in place."

The advancement in the manufacture of detergents and the methods of their application is rapid. Several cleaning procedures have been developed which give satisfactory results. The milk sanitarian must take into consideration the final results of these processes as evidenced by his observation and by official laboratory examinations.

ENGINEERING FEATURES

Permanent pipe lines should be constructed of smooth, easily cleaned, noncorrodible material. Stainless steel and glass have proven the most satisfactory materials although ordinances generally do not stipulate the fabrication material. Gaskets made of Neoprene, Buna rubber, hycar or teflan have been suggested as nontoxic materials with low absorption qualities. They are relatively self-positioning in the lines. All interior surfaces including joints must be flush and all lines must drain readily. Welded joints on metal piping must be polished and must present a surface free of recesses or high points.

Inspection openings on all milk lines must be provided at all points where the direction of milk flow is changed. A thermometer should be installed on the return line near the outlet.

The return line or solution line should be of the same diameter and material as the milk line and should be so installed as to minimize foaming at the solution tank. The solution line and the milk line should not be permanently connected, but should be so constructed as to be easily disconnected from the milk line during the milking operation.

The solution tank should be located in the milk house. This tank should be large enough to fill the lines completely when using a recirculating system. When air brush friction is used the solution must be sufficient to provide full-time friction for at least 15 minutes.

Generally speaking the solution pump used for recirculation of the cleaning solution should deliver an average of 30 gallons of solution per minute at the discharge end of the return line.

The advisability of cleaning the teat cups in place has not been fully resolved. It is the general opinion of milk sanitation personnel that brushing should follow the flushing process. However, a special teat cup cleaning attachment located on the wash tank is desirable so that the units can be hooked into the circulating system.

All dead ends must be eliminated on the milk and the solution lines. All ells and vertical risers should be reduced to a minimum, with all lines having a minimum of one-sixteenth inch drop per foot toward the milk house. A trap of sufficient capacity provided with an automatic shutoff should be installed ahead of the milk pump or releaser in the vacuum line.

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He entered his official work from the Phenix Cheese Company where he held the position of an Assistant to the Vice President in Charge of Production.

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CLEANING

Although modifications of the cleaning process will of necessity be made to meet the water conditions at the farm, generally speaking, the following process is adequate to produce clean and properly bactericidal treated equipment.

1. Immediately after milking with vacuum pump still operating, open the end milk valves intermittently to push out any milk left in the line.

2. Shut off the vacuum pump and rinse the entire system with clean, cool water until the return water is clear.

3. The washing solution should be made up of a good alkaline cleaner and the temperature maintained at the detergent manufacturer's recommendation. Extremely high temperatures have resulted in the formation of deposits on the interior of the pipe lines. The terms of "mushroom" and marshmallow" have been used to describe this white, featherylike deposit. The choice of a detergent that is compatible with the individual water condition seems to be the deciding factor in the successful results of this type of cleaning. The solution is circulated from 15 to 30 minutes. All caps, plugs and special fittings should be removed and brushed clean. Valve seats, cross ends and tie ends should also be brushed.

4. After the solution has been run off onto the floor, the pipes should be rinsed with lukewarm or cool water until all trace of the solution has been removed.

5. The bactericidal treatment should consist of a chlorine solution containing an initial concentration of 200 ppm of available chlorine which is circulated for at least 10 minutes. It is recommended that the circulation of the bactericidal solution take place just prior to the beginning of the milking operation.

6. Such parts as the releaser, milk pump, receiving vessel, inflations, and rubber hoses should be dismantled once a day and hand brushed.

7. The use of organic acids at regular intervals is recommended.

Experimentation is now being conducted which utilizes organic acids daily. A 1½ percent organic acid solution is circulated throughout the system for about 10 minutes following a clear rinse. An alkaline detergent is then added directly to the acid solution until the Ph has been raised to 11 or 12. The sequestration prevents the precipitation of the water hardness components by a chelating process.

CONCLUSION

The 1953 edition of the *Milk Ordinance and Code* recommended by the Public Health Service recognizes the use of pipe-line milkers and the cleaning in place of such equipment.

The *Milk Ordinance and Code* recommended by the Public Health Service contains design and construction standards that are applicable to all dairy equipment. These standards are equally applicable to pipe-line milking as to construction, cleaning, and bactericidal treatment. The final result of the process of cleaning in place must be determined by sight or touch and by laboratory examination by swabs or rinses of the cleaned and treated equipment.

FOOD FOR LIFE

Eating the right foods will add years to your life and life to your years.

This is the theme of a dramatic new educational exhibit "Food for Life" in the Museum of Science and Industry, Jackson Park, Chicago.

The exhibit, a public service contribution by Swift & Company, portrays the extent of man's knowledge of foods. It emphasizes that right eating helps people of all ages.

John Holmes, President of Swift & Companys, says that the purpose of the exhibit is to "dramatize the important story of nutrition in an understandable manner so that all persons who see it will realize that they can benefit themselves by proper eating." Holmes says the exhibit provides basic information to guide visitors in selecting their daily diets.

Major Lenox R. Lohr, Museum President, says that the "Food for Life" exhibit marks the first time the nutrition story has ever been told in a Museum on such a large scale. "Therefore, it is a really unique exhibit," Major Lohr says.

Almost two million people will see the exhibit annually. It has educational features of special interest to school, home economics, women's and agricultural groups.

The exhibit describes how each visitor to the Museum can benefit from proper eating practices, including the selection of the right foods in the right amounts. The role of the soil, plants and livestock in providing proper food for human beings is explained. The story of food processing and distribution also is told.

The soil section illustrates how proper nutrients are necessary in the soil to produce plants which properly nourish human beings and livestock. The plant section describes how plants convert nutrients derived from soil, water and air into food. The livestock section describes how meat animals consume plants which human beings cannot eat; how animals concentrate and store this food for human use and make it possible for human beings to have foods which are rich in the necessary nutrients.

Another section shows how human beings assimilate food and why proper balance of all nutrients is necessary for health. There also is a section on the selection, storage, preparation and serving of food.

A feature of the exhibit is a display of live baby pigs, lambs and other young farm animals in an air-conditioned "nursery."

The live animal display illustrates the nutrition of livestock in actual practice. The young farm animals are fed scientifically balanced rations such as are available in regular commercial feeds, which provide all the essential food nutrients for healthy vigor, vitality and growth. In this display visitors also see hatching of chicks in a glass enclosed incubator.