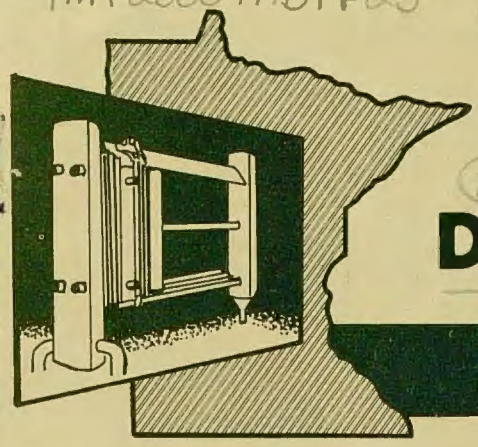


Minnesota

Dairy Products Processor

AGRICULTURAL EXTENSION SERVICE • INSTITUTE OF AGRICULTURE
UNIVERSITY OF MINNESOTA • ST. PAUL, MINNESOTA 55101

Editor - V. S. Packard February 1967 No. 25

FDA WORKSHOPS

At the recent Food and Drug Administration Salmonella Workshops, Mr. Joe Durham, District Director, FDA, commented on the FDA's Salmonella surveillance program. We would like to pass this information on to all of our industry people. He said the FDA will continue to collect and examine samples in making inspections of plants. The plants will get reports of FDA findings, and when Salmonellae are found the plant will be the first to be notified.

Presence of Salmonellae constitutes adulteration under the amended Food, Drug, and Cosmetic Act of 1938. The law forbids the interstate movement of adulterated and misbranded foods, drugs, devices, and cosmetics. Under the act an adulterated food is considered to be one which bears or contains poisonous or deleterious substances which render the food injurious to health or which has been prepared, packed, or held under unsanitary conditions which may have rendered it injurious to health.

Mr. Durham said that demonstration of Salmonellae in foods calls for protection of the consumer whether through federal seizure action, securing assistance from local and state health agencies in many instances, or by encouraging the manufacturer or distributor to recall the offending foods from consumer channels. The goods must be recovered promptly and effectively. If full public protection cannot be achieved otherwise, he said, then press statements will be issued warning all of the hazardous food.

Mr. Durham noted that contamination has been observed in an increasing variety of foods. Ordinary visual cleanliness is not enough to prevent contamination, and it is not always a simple matter for the trained expert to spot the point where contamination enters the product. He said FDA was reluctant to invoke prosecution or injunction actions against shippers in view of the newness of the problems facing industry today and until industry has had an opportunity to initiate necessary controls to correct the problem. Such action would be taken, he said, where the manufacturing plant has either failed to practice ordinary effective sanitation or to meet its responsibilities to the consumer.

The FDA recognizes that Salmonella detection, control, and prevention is difficult, but it is willing to work with the food industries to discover sources of contamination and recommend ways of eliminating them. According to Durham, the FDA expects industry to take the lead and initiative because basically it is industry's responsibility to comply with the law and to produce a clean, wholesome product. FDA's responsibility, he said, was to bring about compliance.

It seems pertinent to note that Durham said the FDA has not considered prosecution of any firm on the basis of Salmonella contamination where the firm has followed acceptable sanitation standards, or, once contamination was found, has taken prompt remedial measures. He stressed the need for eliminating points of contamination, particularly after pasteurization, for training plant personnel in both plant and personal sanitation, and for encouraging and supporting scientific research in the problem.

WASTE DISPOSAL

The Federal Water Quality Act of 1965 required states to establish quality standards on interstate waters by June 30, 1967. This act serves to emphasize the need for an evaluation of waste disposal systems in general. Some aspects will be presented in this issue of the newsletter.

ANALYSIS OF DAIRY PLANT WASTES

There are several tests that may be applied to dairy plant wastes. They can tell you much about the needs and effectiveness of your disposal system. These are:

1. Biochemical Oxygen Demand (BOD) -- The presence of sewage in water provides food for bacterial growth. When bacteria grow in water, they use up the oxygen needed for aquatic life. The BOD test is a means of determining the amount of oxygen used up by a test sample under standard conditions, usually 5 days storage at 68° F. The greater the BOD, the more polluted the sample. Results are expressed as milligrams of BOD per liter (parts per million BOD).

Pollution is a matter of degree. Interpretation of BOD results depends upon the demands of treatment or the way in which treated or untreated sewage is to be handled. For example, if you spray your sewage onto agricultural land (a spray irrigation system), 200 to 500 parts per million of BOD is considered a low concentration acceptable for such use. But a BOD in this range would be considered high if the sample were an effluent from a treatment system.

It is also possible to calculate pounds of BOD. This is a measure of the total organic waste. This value can be useful as an indicator of product loss in the plant.

2. pH -- The acidity or alkalinity of wastes is important because bacterial growth is influenced by changes in pH. A highly alkaline pH may mean excessive use of detergents or alkaline cleaners. This can be corrected. Be sure the cleanup crew follows label directions in mixing cleaning compounds. You can also release acid and alkaline waste at the same time or, if necessary, dilute the alkaline waste with clean water.

3. Residues -- Residues in waste water are usually classified as "total residue" and "filterable residue." Total residue is that which is left over after the moisture is removed. Filterable residue implies the presence of material which can be removed by suitable filters. Presence of solids in water can affect its appearance, flavor, and ability to sustain fish life.

There are other tests that can be run, but those listed are the ones commonly applied to dairy wastes. Of course it is necessary to get representative samples. A number of methods and devices are available.

TYPES OF DISPOSAL SYSTEMS

Some attempt should be made to separate wastes. Toilet and washroom wastes are best handled in septic tanks and underground drain fields if municipal systems are unavailable. Strong wastes (if present) such as buttermilk and whey must be treated or sprayed onto a field. Clean water can be run down storm sewers.

It is often desirable to pass floor wastes through a pre-treatment system. Such systems might include a sand trap, fat trap, screen tank, and measuring and sampling tank. Then, several systems are acceptable for handling wastes:

1. Spray irrigation -- In a spray irrigation system the waste is run out to a suitable field with cover crop and sprayed onto the field. Eventually pore space is reduced in the field and capacity to accept waste is lowered. Most land will take 6,000 gallons per acre per day the first year. The initial cost of such a system may be low, but cold weather problems can occur. Maintenance and sludge removal can be costly. "Winter" spray nozzles are available.

Ridge and furrow or seepage trench systems may handle 3 to 5 gallons of waste per day per square foot for 2 or 3 years. After that the capacity may be lowered to 1 to 1.5 gallons per square foot per day even though sludge is removed.

2. Trickling filters -- In these systems waste is distributed over a filtration bed. There are two types: "low-rate" and "high-rate." Low-rate systems are fed periodically by gravity from a siphon tank or by a float operated pump. The high-rate systems re-cycle the waste. Larger pumps and more power are required, but the method is more effective than low-rate filtration. The initial cost may be high. Cost of operation is usually low. Clarifiers and sludge disposal systems are necessary.

3. Lagoons -- Wastes may be disposed of in lagoons (ditches dug in the ground). Commonly such systems required primary and secondary ditches--two-stage treatment. They are in use in Minnesota and operate best where the ground is very porous.

4. Aeration tanks (activated sludge) -- Many types of aeration tanks systems are in use. Here, the waste is aerated in a tank and BOD lowered by bacterial action. Dairy plant sewage may have to be retained in the tank from one to five days depending upon the strength of the sewage. Aeration devices vary. Clogging problems crop up sometimes when both liquid and air are fed through the aerating system. Many plants feed only air with apparent success.

5. Municipal waste disposal -- While costs vary from one municipality to another, usually it is most satisfactory to use municipal systems where available. Charges may be assessed on the basis of water usage with volume discounts. Sometimes the charge is based on BOD, stronger wastes being assessed higher charges. Or the cost may be assessed according to the volume of product handled, certain fixed costs, or combinations of these plans.

Summary

1. Prevent excessive wastes.

2. Test periodically to determine effectiveness of disposal system and waste control programs.

3. Segregate waste materials.

4. Use municipal systems where available and when cost is reasonable.

5. Spray irrigation is the cheapest method, but problems may occur in the winter.

6. Aeration and trickling filters have high initial cost, but relatively low cost of operation.

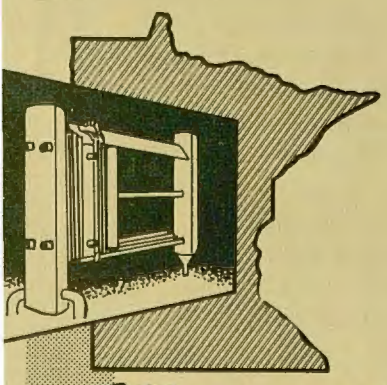
7. Have a systematic planned program of waste prevention and cost accounting.

For more information see:

Manual for Milk Plant Operators, Milk Industry Foundation, Washington, D. C.

Water Quality Act of 1965 -- Impact on the Dairy and Food Industry, copy of talk by H. G. Harding, National Dairy Products Corporation, Glenview, Illinois, presented at the 53rd Annual Meeting, International Association of Milk, Food, and Environmental Sanitarians, August 17, 1966.

Write the editor for reprints of "This Problem of Waste Disposal, An Analysis of Systems Used by Selected Dairy Plants," M. E. Anderson and H. A. Morris, University of Minnesota, Manufactured Milk Products Journal, August, September, and October 1966.



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Cooperative Extension Work
Acts of May 8 and June 30, 1914

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