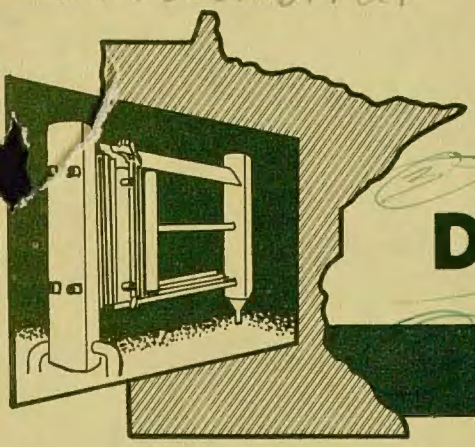


Minnesota Dairy Products Processor

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

Editor - V. S. Packard October 1966 No. 24

Bulk tanks continue to increase in numbers throughout the state. The quality of construction as established by the 3-A Sanitary Standards Committee is good. But the purpose is often defeated by the use of inadequate refrigeration. Compressor sizes are sometimes too small, and poor cooling is the result.

GUIDELINES FOR BULK TANK COMPRESSOR SIZE

Cornell University has established some guidelines for compressor size. The following table lists these requirements for various types of tanks and operating conditions.

Every-Other-Day Pickup

Size of tank, gallons	Maximum gallons each milking	Horsepower rating		
		Ice bank, air-cooled	Direct expansion	
			Air-cooled	Water-cooled
200	50	1/3	1½	1
300	75	½	1	1½
400	100	3/4	3	2
500	125	1	3	3
600	150	1	5	3
700	175	1½	5	5
800	200	1½	5	5
1,000	250	2	7½	5

Every-Day Pickup

Size of tank, gallons	Maximum gallons each milking	Horsepower rating		
		Ice bank, air-cooled	Direct expansion	
			Air-cooled	Water-cooled
200	100	3/4	3	2
300	150	1	5	3
400	200	1½	5	5
500	250	2	7½	5
600	300	2	7½	7½
700	350	3	10	7½
800	400	3	10	10
1,000	500	3	15	10

If you had quality problems this summer, you might do well to check compressor size of all bulk installations.

SOME COMMENTS ON SALMONELLAE

1. Salmonellae are widespread among animal life, both domestic (including pets) and wildlife. Over 800 different species have been isolated.

2. Carriers of salmonellae may include: fowl, hogs, cattle, rodents, man, sheep, horses, cats, parakeets, wild birds, and wild animals. Insects, such as flies, may mechanically transport infected material.

3. Man may become infected in two ways: (1) eating feces of a carrier and (2) eating contaminated foods.

4. All foods are potential sources of salmonellae. Some foods, by their nature, processing and handling requirements, and mode of consumption, are more subject to salmonellae contamination than are others. But no food handler should feel exempt from the problem.

5. Pasteurization as applied in the dairy industry will destroy all salmonellae. This, in itself, will not assure freedom from a problem as long as opportunity for post-pasteurization contamination exists.

6. Quite often in the past the cycle of infection has started with contaminated feeds and fertilizer. Many dealers now offer assurances that their products are salmonellae-free. If feeds are contaminated, farm animals and poultry may contract the disease. Products and foods prepared from infected animals may spread the disease to man.

7. Some control considerations for dairy operations:

a) Farm

Control must start on the farm even though pasteurization is an effective means of killing salmonellae. To interrupt the cycle of infections and to decrease the number of carriers, farm control is essential.

On dairy farms, milk handling and storage areas must be separated from other animal and/or poultry housing units. Good sanitary practices must be used continually.

b) Dairy Plant

While evidence of specific sources is far from complete, it is possible to point out some problem areas at this time. At our Dairy Products Institute this year many important factors were considered. Let's draw some of these again to light.

* Rodents, flies, birds, and humans may carry salmonellae into the plant environment. Salmonellae can be tracked in on shoes, left from the excreta of carriers, and can be carried in the air or in water.

* One of the simplest and best ways of controlling possible airborne contamination is through effective filtration at air intakes. Also, air intakes should be located high up, removed as far as possible from areas of heavy bacterial load.

* Following pasteurization there is opportunity for contamination while milk is liquid and during drying and subsequent handling. During liquid handling (in the pan, pumps, and tubing) presence of coliforms can be taken as evidence that salmonellae may have gained entrance. Absence of coliforms does not imply freedom from salmonellae.

* For sanitizing a vacuum pan, a chlorine bath is perhaps more effective than fogging. CIP can be successfully applied to vacuum pans.

* Bacteria may readily survive the drying process. Incoming hot air is not sterile, and powder-cooling air could be an important source of contamination.

* Air leaks in the dryer may pose a problem. If possible, operate under a slight positive pressure to force airflow out of dryer if a leak occurs.

* Use caution in disposing of vacuum cleaner wastes. Floor sweepings are likely sources of contamination.

* Have effective rodent and insect control.

* The health of personnel is particularly important in filling operations.

* If equipment cannot be cleaned-in-place, a greater burden falls on the cleanup crew. Augers must be cleaned with care, they are difficult to clean properly. The cleanup man's health, personal habits, and awareness of sanitation principles determines how well the job will be done.

* The processing room should be isolated from all unnecessary human traffic.

* Unless the laboratory is far removed from the processing area, testing for salmonellae probably should not be carried out in the plant. A buildup of the organism and possible source of contamination may result. It might be best to have testing for salmonellae carried on by an outside laboratory.

* Maintenance men, because they range widely through the plant, can be sources of contamination.

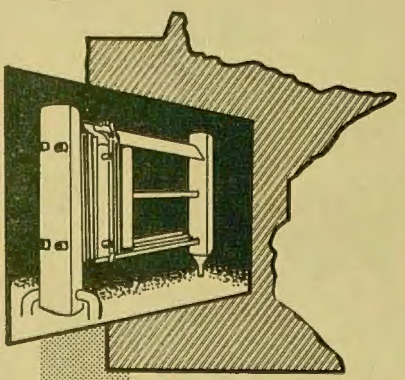
* Regulatory and inspection men should be aware that they constitute potential sources of salmonella contamination as a result of their wide travels. Sterile techniques in sampling are a must.

* There is need for equipment to be designed for CIP.

We recognize that potential problems exist. That such problems have been effectively controlled in the past is obvious. That they can be controlled in the future is certain.

NEW STAFF MEMBER

We would like to take this opportunity to introduce Edmund Zottola, a new member of the Extension staff. Dr. Zottola is an Extension food microbiologist in the Department of Food Science and Industries. He will specialize in process sanitation as related to food manufacture and distribution, as well as other microbiological problems concerned with food spoilage and public health safety of food supplies. He has indicated a desire to have you contact him concerning these problems. His address is: Edmund Zottola, Extension Food Microbiologist, University of Minnesota, St. Paul, Minnesota 55101.



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Luther J. Pickrel, Director
Cooperative Extension Work
Acts of May 8 and June 30, 1914

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