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International Association of Milk and Food Sanitarians, Inc.

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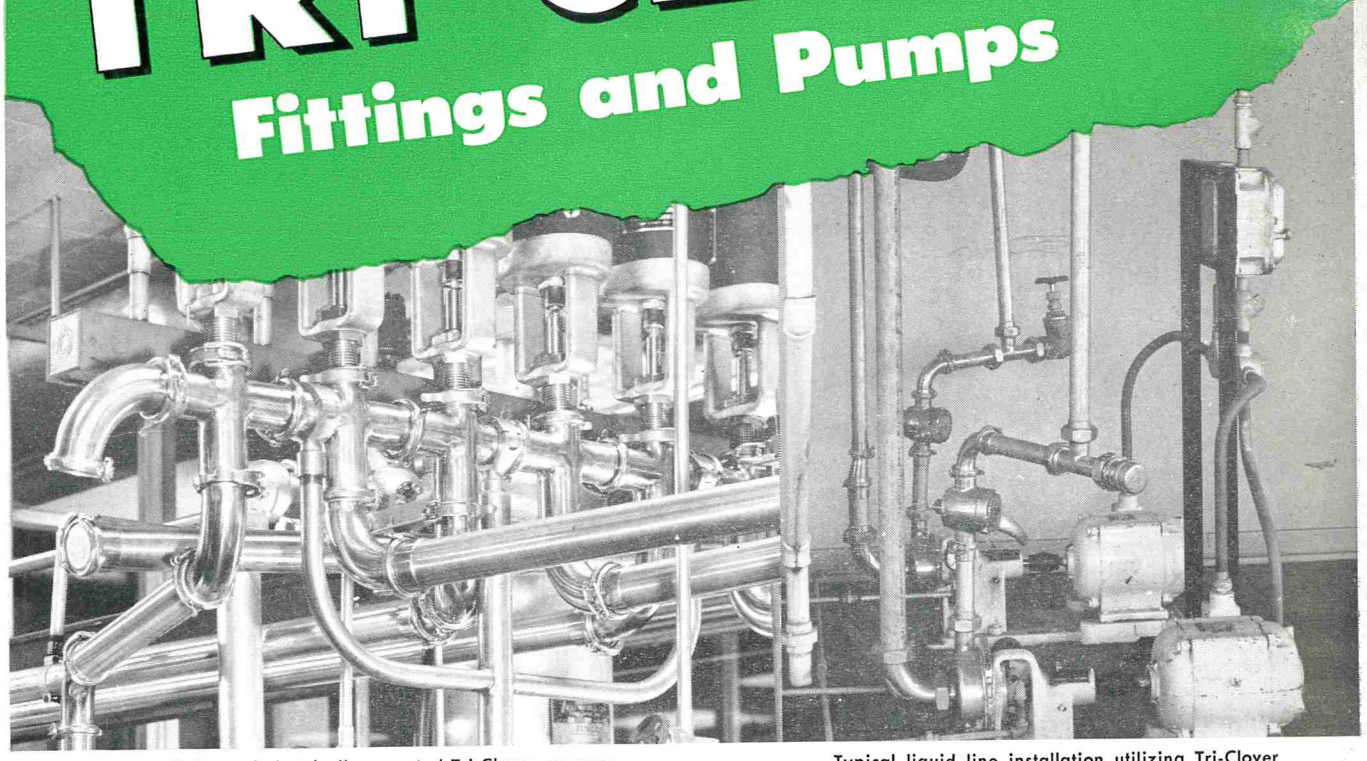

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DRIVER TRAINING AND LABORATORY PROBLEMS IN THE BULK TANK PICK-UP OPERATION[1]

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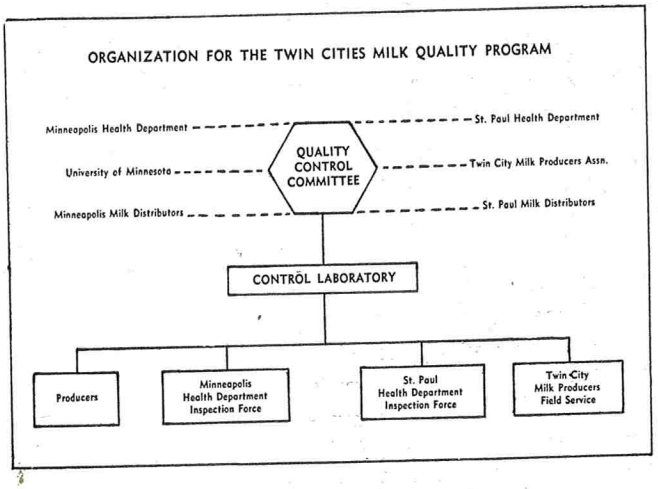
Much has been published relative to the bulk tank system of milk procurement. Certain aspects of this system such as costs, every other day *vs.* daily pick-up, fat tests, methods of financing and many others have been emphasized. While many groups have recognized the importance of the tank truck driver or hauler, little has been published relative to a comprehensive training procedure. To ensure the collection of proper samples and proper operation of a bulk tank route, the man holding the job must be reliable and be thoroughly trained. In this article an outline and discussion of a training procedure that has proven to be satisfactory is presented.

Organization of the Quality Program

Since the nature of the laboratory which is responsible for collection and analysis of samples and reporting results in the Twin City area is unique in its organizational structure, a brief summary of its relationship to the general program of the two city health departments follows. The laboratory is sponsored by a Quality Control Committee consisting of representatives of six organizations: The St. Paul Milk Distributors; the Minneapolis Milk Distributors; the Twin City Milk Producers Association; the Minneapolis Health Department; the St. Paul Health Department; and the Dairy Department, University of Minnesota. The accompanying chart illustrates the organization of this committee, its relationship to the control laboratory and the inspection and field service program. The basic role of the Quality Control Committee is to assist in coordinating milk quality control efforts of producers, distributors and health departments. Financial support for the operation of the laboratory is provided by the Twin City Milk Producers Association and the Minneapolis and St. Paul Milk Distributors. It should be emphasized that the committee is a coordinating one and the autonomy of the health departments or any other organization involved in the Twin City milk supply is not impaired in any manner. The program is simply a cooperative effort designed to supply the citizens of St. Paul and Minneapolis with a high quality milk supply. A more complete discussion of the organization and work of this program has been published elsewhere (*1, 2*).



Dr. W. C. Lawton received the B.S.A. degree from the University of Saskatchewan and the M.S. degree from the same institution. He received the Ph.D. degree in dairy bacteriology from Iowa State College in 1954. Dr. Lawton is a member of the Minnesota Association and is a member of the Applied Laboratory Procedures Committee and the Committee on Research Needs and Applications of the International Association. His present position is Director, Minneapolis and St. Paul Quality Control Laboratory.

Development of the Training Program

In the fall of 1954 the members of the Twin City Milk Producers Association, who ship the major share of fluid milk into the Twin City market, voted to

[1]Presented at the 44th Annual Meeting of the International Association of Milk and Food Sanitarians, Inc., at Louisville, Kentucky, October 7-10, 1957.

convert 100% to bulk tank pick up of milk. This change in system of milk procurement brought with it many problems not previously encountered under the can delivery system. The problem of most concern to laboratory personnel and the health departments was the method to be used for securing proper samples and keeping them in satisfactory condition until they could be analysed. Under the can delivery system, samples were obtained at the receiving platform of the plants and were taken directly to the laboratory. With the introduction of the bulk tank pick-up system this procedure was no longer possible, therefore, an alternative system was developed for use in this area. The Quality Control Laboratory was assigned the responsibility for training drivers in all procedures involving the weighing, sampling, and pick-up of milk.

In cooperation with the field service department of the Twin City Milk Producers Association, a comprehensive step by step procedure of pick-up to be followed by all haulers was worked out. A copy of this detailed procedure was given to each hauler on the first day that he began to pick up milk. A representative from the laboratory was assigned to ride with each hauler for three days. During this period the hauler was trained in each step of the pick-up procedure. Particular attention was paid to measuring, agitation, sampling, and the following of a routine procedure from the time he left the cab of his truck at the farm until he returned to the truck to drive to the next stop.

A plan also was set up to enable a laboratory representative to ride with each hauler at least once every two or three months and report on the manner in which the hauler was following instructions.

MILK PICK-UP PROCEDURE

The pick-up procedure was mimeographed and given to each hauler on the first day the laboratory representative rode with him; also, included with the procedure sheet was a copy of the question and answer bulletin issued by the Minnesota State Department of Agriculture. The latter was used in preparation of haulers for an examination for a graders and testers license. The first three days were spent with each hauler to familiarize him with procedures and to supervise the carrying out of his duties. The following is a summary of the instruction sheet given to the haulers.

INSTRUCTIONS TO BULK TANK TRUCK DRIVERS

1. Before starting in the morning, check to see that sample cases are properly iced.
2. At the first stop tighten all connections. Pu hose and electrical connecions into the milk house. Take dipper and sample bottle into the milk house.
3. Shut off agitator switch to avoid switching on during
4. Smell milk and measure quantity. If the agitator is measuring.

   running on entering the milk house, it is necessary to wait until milk stops surging before measurement can be made. Turn on agitator.
5. Convert inches to pounds and record.
6. Connect hose and electrical cord.
7. After three minutes agitation, take sample for fat test (this sample is also used for baceriological examination as will be be discussed later), and sediment test if required. This step may be performed prior to step 4 if the agitator is running when the hauler enters the milk house.
8. Pump milk into the tank house.
9. Rinse tank with cold water, reaching all areas where milk is left on the walls of the tank.
10. Put away hose and samples and proceed to next stop.
11. Deliver milk to designated plant.
12. Agitate complete load for at least five minutes, by circulation, and take a butterfat sample.
13. After last load of the day, proceed to the wash-up center to leave sample and to wash the tank.
14. Follow a regular routine.

METHODS OF OBTAINING SAMPLES

The bulk milk hauler must take all samples of individual producers milk. Therefore, procedures for obtaining samples must be carefully worked out and presented to the hauler in a clear and concise manner.

It was decided that a sample should be taken at the time of each pick-up for use in the preparation of a composite butterfat sample, and that a separate sample should be taken for bacterial analysis, using sterile equipment, on those days designated by the laboratory. This procedure produced many problems, as outlined later, so an alternate procedure was adopted. All sample equipment now used each day is sterile; thus a sample can be used for bacteriological anaylsis at any time, with the balance of the samples being used for butterfat test. The sediment test is made directly from the bulk tank.

In order to ensure that samples would remain in good condition, it was decided to ice all samples every day of the year. To accomplish this an ice cube maker was provided at each wash-up center. This provided an adequate supply of ice for all haulers. The required racks, sample bottles, and storage cabinets also were provided at the wash-up centers. A sample dipper was provided for each truck and was held in a stainless steel tube on the truck compartment door, the tube could be filled with sanitizing solution if desired. In order to avoid freezing during

cold weather it was necessary to add alcohol to the sanitizing solution. The addition of alcohol is costly and causes a white film to form on the dipper. To avoid this a carrying bracket is being added to the dipper tube so that the tube and dipper can be carried into the milk house and carried into the cab of the truck, if necessary, to prevent freezing. The arrangement is presently under test and will be adopted if it proves satisfactory.

Sampling Procedure

In cooperation with the health departments, a procedure was developed for taking a single sample each day which could be used for butterfat or bacteriological analysis as required.

The hauler is required to take a sample for butterfat each time he picks up milk. The hauler takes his dipper from the tube on the compartment door and a large, sterile, screw cap test tube from the rack. After a minimum of three minutes agitation, a 20-ml. sample is taken and placed in the tube, the tube is shaken and sample discarded, and a second sample then is placed in the tube for use as a test sample. This step is required to avoid the possibility of including water from the dipper or condensate from the tube to the producers sample. When the sample has been taken, the producers number is placed on the bottle and it is returned to the ice chest for transport to the wash-up center. On arrival at the station the samples are warmed, agitated and added to the producers composite bottle. If they are to be used for bacteriological analysis they are transported to the laboratory in ice chests, prior to warming. Bottles are then washed, dried, capped and sterilized for use the next day.

Each hauler was thoroughly instructed in the methods of sampling; an additional day was spent with each hauler for this phase of the operation.

Each hauler is required to obtain a state grader's and tester's license. This also is required of relief drivers. The license now being used is a special license, valid for bulk tank haulers only and must be obtained prior to starting the pick-up of milk.

Sediment testing

The sediment test is not required for grade A milk in the Twin City market but the test has been used and has been found to be of considerable value to the fieldmn. Consquently it was decided to continue using it on bulk milk. The sample is taken by the hauler after agitation of the milk for at least three minutes. A gun type sediment tester is used to force a one pint sample through a standard size sediment disc. The disc is then removed from the gun and placed in a folder, identified with the producers number and returned to the wash-up center for pick-up and grading by the laboratory. Grading of sediment pads is done according to a set of U.S.D.A. standard photographs and the severity of the grading is in accordance with the wishes of the Quality Control Committee. The grading is somewhat more severe than for a mixed sample of can handled milk. Unsatisfactory sediment pads are returned to the producer for his information, good pads are destroyed after the producer has been notified of the results.

POINTS TO BE CONSIDERED IN SETTING UP A TRAINING PROGRAM

In spite of the efforts expended in thoroughly training drivers, problems arise. The following problems concerning the mechanics of setting up a program should be considered:

Initial Contact with the Hauler

There must be some way that the driver can get in touch with the instructor at any time and arrange a meeting place. He must be able to call at any time and the instructor must be prepared to ride with him at any time of the day. During the transition from hauling milk in cans to that of driving a bulk tank truck, it must be remembered that if a man has been hauling milk in cans he must continue to do so until all his producers receive bulk tanks. Some haulers will have to take care of their can route first, thus it will be necessary to ride with them in the late afternoon. On the other hand, if he gets a replacement for his can route he will be available for his tank truck route in the early morning. The instructor must be prepared to work on Saturday and Sunday if necessary, although, in many cases weekend work may be avoided by proper planning.

Procedure of Training

Explanations to the hauler do much to get across to him the tasks he has to do, the instruction sheet also helps, but it has been found that the best method of instruction is by demonstration. This is accomplished by having the instructor pick up the first couple of stops and while doing so, explain to the hauler why the various steps are done. The rest of the time can be spent advising the hauler and checking accuracy. With proper instruction the hauler should have a good grasp of his job by the end of three days.

Making Clear the Importance of the Job.

Some haulers have spent years hauling milk in cans, and they feel that there is nothing further to learn

about milk hauling. It is important to point out to new bulk milk haulers that they are undertaking an entirely new type of job, with increased responsibility and much more rigorous performance requirements. The hauler must now act as a grader, sampler and measurer, in addition to hauling milk. These operations affect the economics of both producer and processor. Therefore, extreme care must be used by every hauler at all times. The hauler must make advance provision for a relief man during vacation and during periods of illness. This advance preparation is necessary, for his relief man must be trained and licensed. He can no longer pick up a local boy the night before and tell him to go and pick up a load of milk and deliver it to the plant, and feel reasonably sure that the job will be done.

Regulatory Aspects of the Job

The Quality Control Laboratory does all testing of producers milk for St. Paul and Minneapolis Health Departments, and the results are used officially for grading purposes. Since the bulk tank driver takes all samples, he indirectly becomes part of the regulatory mechanism. He, on the other hand, is employed by the producer. He must, therefore, be thoroughly trained and cognizant of his responsibilities.

SOME PROBLEMS ENCOUNTERED IN THE PICK-UP OPERATION AND HOW THEY WERE HANDLED

As each new hauler was instructed and as the program got under way, problems began to crop up. It became obvious that certain points required more emphasis than others. The first thing that became obvious was that each point of the procedure had to be demonstrated in the minutest detail and careful attention had to be given to seeing that the prescribed routine was followed. This is necessary, for each man often thinks he has a better way of doing the job. When the program first started, a separate sample was taken for bacteriological analysis, using a single service milk thief. As most haulers had no previous laboratory experience, the reason for each step in taking samples had to be thoroughly explained. It was found necessary to show each man how to handle test bottles and milk thiefs; how to remove and replace the screw cap on sample bottles without contaminating the sample; even how to properly ice a sample, record the number and temperature and handle all equipment in an aseptic manner.

The picking up of sterile equipment presented a problem, as most haulers had no other reason to come to the laboratory. This was taken care of by maintaining a supply of sterile equipment at the wash-up station. A list of dates when samples were to be taken by the haulers was posted and each hauler picked up the required equipment on the indicated day. The supply was replenished by the laboratory representative when he picked up samples. This procedure required cooperation with the haulers so that they did not divulge the date when samples were to be taken. This point presented some problems making it necessary to modify this procedure somewhat. The man responsible for washing the tank trucks was given the list and he notified each hauler the evening prior to his sampling day. This eliminated the need for posting sampling dates in advance. Because of the variety of problems incidental to taking a special sample, the universal sampling procedure previously discussed was worked out and is now used.

As the program started in the fall it soon became necessary to heat the compartments of the truck tank to prevent freezing of hose and samples when temperatures dropped below freezing. This was accomplished by running copper tubing, connected to the truck cooling system, under the floor of the compartments.

Experience has shown that a month should elapse, after conversion to the bulk tank system, before the first samples are taken for bacteriological examination. This allows time for the hauler to become completely familiar with his job and allows time for the producer to develop a routine for cleaning and looking after his tank properly. This procedure tends to avoid accidental high counts and thus encourages confidence in the system.

The following list of some of the specific problems encountered in the past two years and the corrections or alterations that were made might be of interest.

1. Some haulers are resentful at first of having to take bacterial and sediment samples. Constant education eventually convinces them that this is an integral part of their job.
2. There is often a change over of helpers that makes it difficult to keep them trained and checked. This has been overcome by making it the responsibility of the hauler to train his own helper with the understanding that he will be checked at a later date by the laboratory. This system has worked very well.
3. Some haulers are more careless than others in recording weights, in identifying samples and in properly icing samples. They have to be

watched carefully and reprimanded occasionally. It was found desirable to continue icing for 12 months to avoid excuses in the spring and fall if the hauler decided the temperature did not indicate that ice would be necessary. It also was found necessary to stop the practice of recording temperatures on the bottles as there was continual confusion between temperature figures and producer's numbers.

4. Instead of having only a few people picking up samples, as under the can system, a much larger group is involved in picking up samples of bulk milk. Communication, supplies, and the establishment of a uniform procedure became very important.
5. Because of the large number of people involved, it is more difficult to supervise them and see that they wear clean clothes, have clean hands and do a careful job when they are taking samples.
6. When a special sample was used for bacterial analysis, samples were frequently missed. It was difficult to get additional samples, for it was necessary to contact the hauler, find out which day he was picking up the milk of the missed patron and have a man at the plant to receive the sample. This type of procedure is costly, therefore, missed samples must be kept at a minimum. Some difficulty was encountered with producers knowing when samples were to be taken for bacterial analysis. This resulted in a tendancy to slack up in wash-up of equipment for a period between sampling dates. It was finally decided to take a single sterile sample each day to overcome the many problems. This enables the laboratory to test on dates unknown to hauler or producer. Also, missed samples can be quickly replaced. This procedure is now working very well.
7. The most difficult problem concerns communication. Haulers come into plants at varied times and, of course, live in all parts of the production area. If it becomes necessary to relay a message or contact the haulers, it can only be done indirectly through the wash-up centers. If sampling is not done each day, posted notices of sample dates and instructions are not always followed unless someone at the wash-up center follows through to make sure that the haulers observe the notices; also, the operator of the wash-up station must see that each hauler obtains sampling equipment and turns in the sample on the correct day.
8. Constant supervision is necessary to be certain that samples are handled in such a manner that they can be considered representative of the producers milk supply. Proper mixing, numbering, handling of equipment to ensure sterility, icing samples, refrigeration after removal from ice, all are important in obtaining a representative sample.
9. There has been some concern about the measuring of producers milk in the tanks. Pick-up tankers tend to be short of milk when weighed in at the plants. There is a strong indication that the increased reading on the sticks is due to incomplete cleaning, although they are washed with hot water and dried just prior to use. Experience with cleaning the sticks with Bon Ami has shown closer agreement with the weigh scale and is now part of each haulers regular routine. There is also some variation obtained in the scale weights when different people weigh the loads. Extreme care must be exercised in the operation of weight scales, if proper weights are to be obtained.

This is a summary of the many problems encountered and does not mean that all haulers will present all of the problems. The large majority of haulers, if properly trained, will do a good job and seldom give cause for concern.

In conclusion, it should be pointed out that this type of operation, when begun, requires the utmost cooperation of all concerned. The plants, wash-up centers and the haulers must work together. During the past two years an excellent spirit of cooperation has existed in the Twin City area. A transition period which otherwise might have been difficult, has passed with little difficulty, and a new, smooth functioning system of milk pick-up is operating in the Twin City area.

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THE CLEANABILITY OF MATERIALS IN CONTACT WITH DAIRY PRODUCTS[1]

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The removal of air dried soil (dairy products contaminated with E. coli) from the surface of disks of several possible dairy equipment construction materials was determined by both radioactive tracer techniques and bacteriological methods. Both methods showed that cleaning the disks with any of the four types of cleaning compounds effected essentially complete removal of the contaminating soil from the surface of the molded plastics and various finishes of stainless steel which were tested.

An almost daily problem presented to sanitarians is the cleaning and sanitizing of surfaces which contact food and milk. Methods for determining the cleanability of eating surfaces and the results obtained by these methods have been reported by Hucker (*1*), Hucker, Emery and Winkler (*2*), Mallmann, Kahler and Butt (*3*) and Ridenour and Armbruster (*4*). Similarly, methods for assessing the cleanability of surfaces in contact with dairy products should be valuable aids in devising specifications for 3A Standards.

These methods also must be suitable for testing new materials such as plastics considered for use for molded parts, as well as stainless steel finishes other than 120 grit.

A plastic must possess certain general characteristics before it can even be considered for use in dairy equipment. In general, it must be (*a*) non-toxic, (*b*) readily cleanable, (*c*) relatively non-absorbent, (*d*) non-reactive to mild acids and alkalis, (*e*) of adequate strength and (*f*) able to resist distortion at temperatures as high as 212°F. Stainless steels with finishes other than 120 grit must be as cleanable as the present finish to be satisfactory for equipment parts. Data is needed, therefore, which compares the cleanability of suitable molded plastics and of various stainless steel finishes with that of the 120 grit finish 18-8 stainless steel which has long been the standard construction material.

Both radioactive tracer techniques and bacteriological methods have been employed in this study. The materials tested were:

1. Zytel No. 31, a polyamide
2. Genetron HL and Genetron VK, polychlorotrifluorethylenes
3. 18-8 Stainless Steels with the following finishes
   - A. 120 grit
   - B. 100 grit
   - C. 80 grit
   - D. No. 7 mill finish
   - E. Vapo Blast (VB) method of producing a pebble-like finish
   - F. 2B or cold rolled finish

[1]Presented at the 44th annual meeting of the International Association of Milk and Food Sanitarians, Inc., at Louisville, Kentucky, October 7-10, 1957.

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Experimental

For the purposes of these studies, disks approximately two inches in diameter were used as the test specimen of each material. The general experimental plan consisted of soiling these disks with dairy products which had previously been contaminated with *Escherichia coli.* The milk products used were cream,

buttermilk, homogenized milk, and chocolate milk. On each disk, 0.4 ml. of the product was spread evenly on one side only and allowed to air dry. The soiled disks were then cleaned by scrubbing with a test tube brush for about 15 seconds in one of the following cleaners:

1. 0.25 per cent solution of an alkaline cleaning compound.
2. 0.25 per cent solution of an anionic detergent.
3. 0.25 per cent solution of a nonionic detergent.
4. 6.7 per cent solution of an acid cleaning compound.

After being scrubbed, the disks were rinsed in tap water.

Radioactive Tracer Technique

The *E. coli* suspension used to inoculate the dairy products for the radioactive tracer procedure for determining cleanability was prepared by the method of Ridenour and Armbruster (*4*). Briefly, this consisted of growing *E. coli* in a broth medium containing 10 microcuries per ml. of radioactive phosphorus. After 24 hours incubation at 37°C. the cells were washed three times to eliminate any radioactive phosphorus not taken up by the cells. The colony count of the dairy products used to soil the disks after contamination with the radioactive *E. coli* suspension was 56 x 10^6 per ml.

After the disks were dry, the amount of radioactivity of each was determined by counting in an end window "Sugarman" type proportional counter. The scrubbing procedure described above was then carried out, after which any residual radioactivity was recorded.

Bacteriological Technique

The *E. coli* suspensions used in the bacteriological phase of this study were centrifuged, washed cells of 24-hour nutrient broth cultures. The washed cells were suspended in sterile water and were kept refrigerated until used. Three ml. of suspension were added to each 25 ml. of dairy product to prepare the soiling medium. The inital coliform count was determined by plating dilutions of each of the inoculated milk products. These samples and all those described below were cultured in Brilliant Green Bile Agar to which 0.5 per cent agar had been added so that 5 ml. aliquots could be plated in a single petri dish.

Each variable of disks with dried milk product on them was then subjected to the procedures described below:

(1) Two disks were placed in 25 ml. of sterile water so that the recovery coliform count, or count at time of cleaning, could be determined. After the disks were soaked and swabbed clean of all visible soil, dilutions of the soak water were cultured.

(2) Eight disks (two for each of the four cleaner variables) were scrubbed and rinsed as described above, then placed in 25 ml. of sterile water for approximately 5 minutes. This water was then cultured

TABLE 1 — RECOVERABILITY OF *E. coli* FROM SOILED DISKS (ALL FIGURES x 10^6)

		Dairy products in which E. coli was suspended							
		Cream		Buttermilk		Homogenized milk		Chocolate milk	
Materials		Initial[a] count	Recovery[b] count	Initial[a] count	Recovery[b] count	Initial[a] count	Recovery[b] count	Initial[a] count	Recovery[b] count
Zytel #31	Max.	230.0	22.0	120.0	2.0	170.0	92.0	160.0	31.0
	Min.	62.0	9.7	27.0	1.8	60.0	7.5	72.0	4.9
18-8 (120)	Max.	200.0	94.0	96.0	2.1	170.0	40.0	190.0	29.0
	Min.	62.0	8.2	49.0	0.069	60.0	7.7	72.0	5.1
18-8 (100)	Max.	230.0	22.0	128.0	1.2	170.0	19.0	260.0	21.0
	Min.	47.0	9.5	27.0	.019	33.0	4.7	59.0	17.0
18-8 (80)	Max.	130.0	39.7	68.0	3.1	176.0	7.8	88.0	20.0
	Min.	58.0	8.1	64.0	.35	40.0	2.6	65.6	12.0
18-8 (#7)	Max.	180.0	21.7	104.0	2.2	200.0	13.0	180.0	86.0
	Min.	43.2	5.0	49.0	.127	140.0	1.8	99.0	1.8
18-8 (VB)	Max.	180.0	25.6	124.0	1.6	172.0	56.0	120.0	37.0
	Min.	58.0	6.0	44.0	.27	33.0	6.1	80.0	5.5
18-8 (2B)	Max.	180.0	50.0	104.0	.987	172.0	10.6	192.0	26.0
	Min.	47.0	8.1	49.0	.102	40.0	2.6	84.0	9.37
Genetron HL	Max.	204.0	90.0	96.0	1.5	172.0	16.0	220.0	66.0
	Min.	47.0	13.0	44.0	.025	59.0	5.9	84.0	27.0
Genetron VK	Max.	64.0	30.2	66.8	9.1	176.0	27.5	192.0	23.5
	Min.	50.8	14.5	64.0	.036	34.0	7.5	59.0	11.7

[a]Initial counts are the calculated number of *E. coli* added to each disk when the disks were soiled with the contaminated dairy products.

[b]Recovery counts are the *E. coli* colony count obtained by soaking and swabbing the air dried disks in sterile distilled water.

TABLE 2 — PER CENT REMOVAL OF *E. coli* FROM VARIOUS SURFACES WITH AN ALKALINE CLEANER AT ROOM TEMPERATURE

Surface cleaned	Dairy products in which E. coli was suspended: Cream — Radio. technic.	Cream — Bact. technic.	Buttermilk — Radio. technic.	Buttermilk — Bact. technic.	Homogenized milk — Bact. technic.	Chocolate milk — Radio. technic.	Chocolate milk — Bact. technic.
Zytel #31	100.00	99.99	100.00	99 99	99.99	99.99	99.99
"		99.99		99.99	99.99		99.99
18-8 (120)	100.00	99.99	99.99	100.00	99.99	99.98	99.99
"		99.99		99.99	99.99		99.99
18-8 (100)		99.99		100.00	99.99		99.99
"		99.86		100.00	99.99		99.99
18-8 (80)	99.99	99.99	100.00	100.00	99.99		100.00
"		99.99		99.99	99.99		99.99
18-8 (#7)		99.99		100.00	100.00		99.99
"		99.99		99.99	99.99		99.99
18-8 (VB)		100.00		99.99	99.99		99.99
"		99.99		99.95	99.99		99.99
18-8 (2B)		100.00		99.99	99.99		99.99
"		99.99		99.99	99.99		99.99
Genetron HL	100.00	99.99	100.00	100 00	100.00		99.99
"		99.99		100.00	99.99		99.99
Genetron VK	100.00	100.00	100.00	100.00	99.99		99.99
"		99.99		99.99	99.99		99.99

Note: Each value represents two test disks.

TABLE 3 — PER CENT REMOVAL OF *E. coli* FROM VARIOUS SURFACES WITH AN ANIONIC DETERGENT AT ROOM TEMPERATURE

Surface cleaned	Dairy products in which E. coli was suspended: Cream — Radio. technic.	Cream — Bact. technic.	Buttermilk — Radio. technic.	Buttermilk — Bact. technic.	Homogenized milk — Bact. technic.	Chocolate milk — Bact. technic.
Zytel #31	99.82	99.99	99.98	100.00	99.99	100.00
18-8 (200)	99.88	99.99	99.96	100.00	99.99	99.99
18-8 (100)		99.99		100.00	99.99	99.99
18-8 (80)	99.86	100.00	99.95	100.00	100.00	99.99
18-8 (#7)		99.99		100.00	99.99	99.99
18-8 (VB)		99.99		99.99	99.99	99.99
18-8 (2B)		99.99		100.00	99.99	99.99
Genetron HL	99.80	100.00	99.99	100.00	99.99	99.99
Genetron VK	99.81	99.99	99.97	100.00	99.99	99.99

Note: Each value represents two test disks.

in 5 aliquots, and each disk was cultured by pouring agar over it in a petri dish with the previously soiled side up.

(3) Eighteen disks (six each for the alkaline, nonionic, and acid cleaning compounds) were scrubbed and rinsed as in (2). Then two disks of each cleaner variable were placed in 25 ml. each of the following germicidal solutions for one minute to sanitize them: (a) hypochlorite solution with 100 ppm available chlorine, (b) solution of an iodophor with 25 ppm iodine concentration, (c) solution of a quaternary ammonium compound containing 200 ppm active ingredients prepared in water with a natural hardness in the range of 200 to 250 ppm.

Germicidal tests also were run on disks cleaned with anionic detergent. However, only four disks, two each for germicides (a) and (b), were used, since this detergent is not compatible with a quaternary ammonium compound.

If any *E. coli* were found to survive the one minute sanitizing period, this test was repeated increasing the exposure time in one minute steps. At the end of the exposure period, the germicidal solution was inactivated, and the entire amount was cultured in 5 aliquots of 5 ml. each. Each disk was also subjected to the culture technique as in (2). The disks were considered sanitized if no coliform colonies were observed in these cultures.

The inactivation of the hypochlorite and iodophor solutions was accomplished with sodium thiosulfate. The quaternary ammonium compound solution was inactivated with an anionic detergent. In a previous study, this anionic solution inactivated the quaternary while not materially depressing the coliform count. In that study the following colony counts were observed when 1 ml. aliquots of an *E. coli* suspension were added to 9 ml. portions of:

1. Distilled water .....8.7 x 10^6 per ml.
2. Quaternary (200 ppm) 0.0
3. Anionic solution (400 ppm) ....7.2 x 10^6 per ml.
4. Anionic solution (400 ppm) plus Quaternary (200 ppm) ....8.5 x 10^6 per ml.

TABLE 4 — PER CENT REMOVAL OF *E. coli* FROM VARIOUS SURFACES WITH A NONIONIC DETERGENT AT ROOM TEMPERATURE

Surface cleaned	Dairy products in which E. coli was suspended					
	Cream		Buttermilk		Homogenized milk	Chocolate milk
	Radio. technic.	Bact. technic.	Radio. technic.	Bact. technic.	Bact. technic.	Bact. technic.
Zytel #31	99.95	99.99	100.00	100.00	99.99	99.99
"		99.99		99.00	99.99	99.99
18-8 (120)	99.92	99.99	99.99	100.00	99.99	99.99
"		99.99		96.86	99.99	99.99
18-8 (100)		99.99		99.99	99.99	99.99
"		99.99		99.99	99.99	99.99
18-8 (80)	99.97	100.00	100.00	100.00	99.99	99.99
"		99.99		99.99	99.99	99.99
18-8 (#7)		99.99		100.00	99.99	99.99
"		99.99		99.99	99.99	99.99
18-8 (VB)		99.99		99.99	99.99	99.99
"		99.99		99.99	99.99	99.99
18-8 (2B)		99.99		99.99	99.99	99.99
"		99.99		99.99	99.99	99.99
Genetron HL	99.97	99.99	99.99	99.99	100.00	99.99
"		99.99		100.00	99.99	100.00
Genetron VK	99.97	99.99	99.98	100.00	100.00	99.99
"		100.00		99.99	99.99	100.00

Note: Each value represents two test disks.

RESULTS

The results of this study are shown in the accompanying five tables. Table 1 gives the range of concentrations of *E. coli* encountered in the various runs needed to complete the bacteriological technique data.

Tables 2 through 5 show the percent removal of *E. coli* from the surface of the test materials as determined by both the radioactive tracer method and bacteriological culture techniques. Each table covers the results with one cleaning material on all surfaces with each of the soil carriers.

As noted in Tables 2, 3, 4 and 5 both residual radioactivity and the residual coliform counts indicated that 96.86 per cent or more of the contaminating soil was removed by scrubbing the disks in any of the detergents and cleaning compounds used.

With few exceptions, the cleaned disks were sanitized within one minute upon exposure to the germicidal solutions at room temperature. None of the cultures was positive for *E. coli* after the disks had been held in the germicidal solution for three minutes. These results are, therefore, not shown in detail.

DISCUSSION

During the course of this study numerous suspensions of *E. coli* were prepared. These suspensions were not standardized to a given colony count. Although a uniform quantity of inoculated dairy products was used to soil the disks, the number of coliform organisms placed on the disks varied from 2.7×10^7 to 23×10^7 (see Table 1). Even with the great reduction in the coliform count noted during drying, well over a million organisms were recovered from the disks soiled with all the diary products except some soiled with buttermilk. Colony counts as low at 1.9×10^4 were obtained from a number of the disks soiled with buttermilk Apparently some of the buttermilk used contained a substance that was toxic for *E. coli* as there was no visual evidence that buttermilk was more difficult to remove from the disks than the other dairy products.

An *E. coli* colony count of less than 10 per disk was observed in approximately 80 per cent of the cultures of the cleaned disks. About 4 per cent had a colony count greater than 100 per disk. Perhaps the colony count of the cleaned disks would have been more uniform if the disks had been scrubbed mechanically rather than by hand.

SUMMARY AND CONCLUSIONS

Completeness of removal of soil from the surface of several possible dairy equipment construction materials was determined by both radioactive tracer techniques and bacteriological methods. Molded disks of the plastics Zytel, Genetron HL and Genetron VK, and similar disks of 18-8 stainless steel with six surface finishes, were soiled with milk products inoculated with *E. coli* suspensions. The disks were then cleaned with four different major types of dairy cleaning materials.

Residual radioactivity and the residual *E. coli* colony counts show that cleaning the disks with any of the types of cleaning compounds effected essentially complete removal of the contaminating soil from the surface of all materials tested.

In a further experiment, the cleaned disks were sanitized within one minute, with very few exceptions, by the hypochlorite, iodophor and quaternary ammonium compound solutions at the concentration

TABLE 5 — PER CENT REMOVAL OF *E. coli* FROM VARIOUS SURFACES WITH AN ACID CLEANER AT ROOM TEMPERATURE

	Dairy products in which **E. coli** was suspended					
	Cream		Buttermilk		Homogenized milk	Chocolate milk
Surface cleaned	Radio. technic.	Bact. technic.	Radio. technic.	Bact. technic.	Bact. technic.	Bact. technic.
Zytel #31	99.92	99.99	99.96	100.00	99.99	99.99
"		99.99		99.99	99.99	99.99
18-8 (120)	99.90	100.00	99.97	100.00	100.00	100.00
"		99.99		100.00	100.00	100.00
18-8 (100)		100.00		99.99	99.99	99.99
"		99.99		99.99	99.99	99.99
18-8 (80)	99.92	100.00	99.94	100.00	99.99	100.00
"		99.99		99.99	99.98	100.00
18-8 (#7)		100.00		100.00	99.99	99.99
"		99.99		99.99	100.00	99.99
18-8 (VB)		100.00		100.00	99.99	100.00
"		100.00		99.99	99.99	99.99
18-8 (2B)		100.00		100.00	99.99	100.00
"		99.99		99.99	99.99	100.00
Genetron HL	99.86	100.00	99.90	99.99	99.99	100.00
"		99.99		100.00	99.99	99.99
Genetron VK	99.80	100.00	99.95	100.00	99.99	100.00
"		99.99		99.99	99.99	99.99

Note: Each value represents two test disks.

used. All disks were sanitized within three minutes.

It may be concluded from these data that the plastics and the several finishes of the stainless steel tested are as readily cleanable as is 18-8 stainless steel with 120 grit finish.

ACKNOWLEDGMENT

The authors wish to thank Dr. Evan Wheaton of the American Can Company, Research and Development Center, Barrington, Illinois for preparing the culture of radioactive *E. coli* used in this study.

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REPORT OF THE COMMITTEE ON RECOGNITION AND AWARDS — 1957[1]

Two awards for distinguished service - *The Citation Award* and *The Sanitarians Award* - are presented annually by the International Association of Milk and Food Sanitarians, Inc. It is the responsibility of the Committee on Recognition and Awards to conduct those activities of this Association concerned with selection of the recipients, presentation of the awards, publicity, and related matters.

The purpose of *The Citation Award,* which was formally established in 1952, is to bestow well-deserved recognition upon members of this Association who, through long and distinguished service, have contributed greatly to the professional advancement, growth, and reputation of the International Association of Milk and Food Sanitarians, Inc. The rules for this Award state that a suitably framed citation shall be presented each year to the member whose past services have been judged to be the most outstanding.

Any member of the Association, or an Affiliate Association, may nominate an individual for *The Citation Award.* Such nomination must be accompanied by a statement listing the individual's past contributions and services to the Association, and it must be mailed prior to April 15th if the candidate is to receive consideration for the current year's award. All nominations are reviewed and rated by the Committee on Recognition and Awards, and the names of the two candidates rated the highest are then submitted to the Executive Board who selects the recipient. This year only two nominations were received by the Committee. Fred C. Baselt, Assistant to the General Manager of the Research and Technical Department, American Can Company, New York, whose services to this Association have been so outstanding, was selected as the recipient of the *1957 Citation Award.* It was presented to him formally at the Annual Meeting Banquet.

The second of these two awrds, *The Sanitarians Award,* is, in the opinion of the Committee, one of the most important honors that can be conferred upon a professional public health worker. It was created for the purpose of bestowing long overdue recognition upon the local sanitarian — the man whose contributions to public health have been so great. *The Sanitarians* Award is sponsored jointly by five manufacturers of sanitation chemicals, the Diversey Corporation, Klenzade Products, Inc., Oakite Products, Inc., Pennsylvania Salt Manufacturing Company, and the Olin Mathieson Chemical Corporation, and is administered by our Association. It consists of a framed citation and one thousand dollars in cash, and is conferred annually upon a local sanitarian from the United States or Canada who within the past five years has made a meritorious contribution in the field of milk and food sanitation to the public health and welfare of his community.

The rules governing the eligibility of candidates for *The Sanitarians Award,* method of nomination and method of selection, are published each year in the December or January issue of the Journal of Milk and Food Technology. The Committee on Recognition and Awards has sole responsibility of the selection of the recipient, and the Executive Board has no voice in the selection. This year three nominations for *The Sanitarians Award* were received by the Committee. All of the nominees were outstanding men, and had made significant contributions to the health and welfare of their communities. Selection of the recipient from among these men was a difficult task; however, the Committee judged the over-all contributions of Mr. Harold J. Barnum, Chief of the Milk Sanitation Services of the Department of Health and Hospitals, Denver, Colorado, to be the most outstanding, and he was selected as the recipient of *The Sanitarians Award* for 1957.

Last year in its report, this Committee called attention to: (a) the need for Affiliate Associations establishing their own committee on awards to consider the nomination of well-qualified sanitarians from within their own States for both *The Sanitarians Award* and *The Citation Award;* (b) the desirability of utilizing a nomination form which would enable the sponsors of candidates to specifically set forth the work and accomplishments of the nominees in a uniform manner; and (3) the need for clarifying the instructions as to the procedure to be followed in submitting nominations.

Inasmuch as our previous Chairman did such a magnificent job in straightening out the affairs of this Committee, there was very little improvement in methods of operation, this year.

Your Committee Chairman wishes to acknowledge the support of committee members and the rapidity

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[1]Presented at the 44th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., Louisville, Kentucky, October 7-10, 1957.

in taking care of the selection of the candidates. It should be hereby recorded that the committee was unanimous in its approval of the recipients.

I. E. Parkin, *Chairman*

W. V. Hickey
C. G. Leonard
H. S. Adams
John H. McCutchen
Richard Parry

REPORT OF THE COMMITTEE ON FOOD EQUIPMENT SANITARY STANDARDS, 1957[1]

Your Committee has many new and interesting activities to report for the twelve month period which has elapsed since the Seattle meeting.

In chronological order, the first activity of note for the past year has been our new association with the National Automatic Merchandising Association (referred to as N.A.M.A. in this report) and its Automatic Merchandising Health-Industry Council (A.M.H.I.C.) In December of 1956 our Executive Board was requested by N.A.M.A. to participate in an industry-health meeting in Chicago for the announced purpose of (a) setting up a vending machine evaluation program to be based on the forthcoming requirements of the P.H.S. Vending Machine Ordinance and Code, and (6) planning an industry sanitation program. The co-chairmen, Wm. Hickey and David Hartley attended the meeting in Chicago as did representatives of the Public Health Service, the Navy, the National Association of Sanitarians, and the American Public Health Association.

This initial meeting with the industry gave indication that our Association would be well advised to continue in the organization of a joint industry-health council. In May 1957 another meeting was held in Chicago and the A.M.H.I.C. was officially founded. The activities of the new Council will include the review and guidance of the vending machine evaluation program to be conducted by the Indiana University Research Foundation, by Dr. W. L. Mallmann at Michigan State College, and by other university agencies which may be selected later, and the review and supervision of sanitary procedures and training materials used by the industry.

Upon the recommendation of both Co-Chairmen, your Executive Board agreed to participate in the A.M.H.I.C. organizational meetings in order to help foster the upgrading of sanitation standards in this growing industry. It is interesting to note that the American Public Health Association (A.P.H.A.), National Association of Sanitarians (N.A.S.), Association of Food and Drug Officials, Association of State and Territorial Health Officers, Conference of Municipal Public Health Engineers, the Armed Forces, and the Public Health Service have also participated in A.M.H.I.C.'s founding and were represented at its organizational meeting.

The vending machine evaluation program is not envisioned as an "approval" program but rather as one based upon a written statement of compliance with the appropriate requirements of the P.H.S. Ordinance and Code. Machines will be examined at various university facilities according to a check-list and protocol approved by A.M.H.I.C. A letter indicating compliance will be issued for each machine which meets the established criteria and such letters will be kept on file at each Regional Office of the Public Health Service and in the office of N.A.M.A. in Chicago. Your Committee feels that this procedure will give local health agencies ample opportunity to know which vending machines have been examined and found to be in compliance with construction standards of the Ordinance and Code. To this end your Committee recommends that our membership utilize and accept the evaluation program of A.M.H.I.C. in the same manner in which the programs of the 3-A Sanitary Standards, National Sanitation Foundation (N.S.F.), Baking Industry Sanitation Standard Committee (B.I.S.S.C.) and other improvement programs have been accepted. Your Committee further recommends that I.A.M.F.S., through its Executive Board, formally accept a voting membership on A.M.H.I.C.

The activities of the National Sanitation Foundation have continued on an undiminished level during the past year. Standard No. 4 "Commercial Cooking and Warming Equipment", which was adopted last year, has been mimeographed for distribution and the

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[1]Presented at the 44th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Louisville, Kentucky, October 7-10, 1957.

Foundation plans to begin issuance of the Seal of Approval under this new Standard beginning on January 1, 1958. While there is still some divergent opinion as to the coverage and completeness of this Standard, it is the opinion of this Committee that the adopted Standard No. 4 represents the best effort of those involved and that the Standard should be given a chance to prove itself in the field. Future amendments to this Standard can be proposed by any sanitarian or interested party through written proposal to the N.S.F.

Continuing in chronological fashion, the N.S.F. activities in the ice cream freezer field should next be reported. During the past year, the N.S.F. entered into an agreement with the manufacturers of retail-type ice cream freezers, or "counter freezers" as they are known by some of us. This agreement included the assembly of a proposed Standard for such freezers. Your Executive Board, therefore, has arranged for informal liaison in this matter between the Food Equipment Sanitary Standards Committee and the Committee on Sanitary Procedures, so that the development of the proposed standards for retail-type freezers will be compatible with the thinking of the Sanitary Procedures Committee members on wholesale-type or large size ice cream freezers. Mr. E. B. Buchanan of the Cleveland Health Department will work with the Food Equipment Committee in its activities in the small ice cream freezer field.

The Annual Meeting of the Joint Committee on Food Equipment and the N.S.F. staff at Ann Arbor produced two important administrative procedures which should assist the N.S.F. in implementing its equipment evaluation and Seal of Approval program. The first policy deals with a procedure for amending existing standards. This is a procedure which is needed in order to bring minor and some major changes into those Standards which have been tried in the field for several years. Your Committee feels that this new procedure will permit improvements in the standards which some of our members have indicated the need for and, for this reason, this procedure was given our hearty approval.

The second administrative policy deals with the "Special Device" testing program. Some of our Committee members and others have shown concern over the relative slowness in the development of additional standards and the increase in the activities of the special device program. At the recent Ann Arbor meeting a policy was developed by the Joint Committee and staff whereby the N.S.F. will not accept an item for testing as a "special device" without first viewing the market for similar items of equipment and drawing up proposed criteria which will cover the entire category of similar items. In this way, basic criteria for single-service dispensers would be drawn up and approved before a straw dispenser would be accepted for examination as a "special device". Your Committee feels that this new policy of establishing basic criteria where possible will be a step forward in the eventual development of additional standards, and that the interim criteria will well serve as "junior" standards when properly planned. The basic criteria program should also serve to relieve the N.S.F. staff of much of its present workload of written data on individual devices and should materially reduce the lapsed time between acceptance of an item and issuance of the Seal of Approval - where warranted in the opinion of the laboratory.

The new standard for commercial hot water generating equipment, Standard No. 5, was studied at length and approved by the Joint Committee at the June meeting. Upon approval by the Council of Consultants, and the drafting of a different set of tables and charts, this Standard will be ready for distribution in mimeographed form. While the Standard in some respects is more a guide than a sanitary standard *per se*, it should prove to be of immense value to the sanitarian in the field and to the food industry.

In conclusion, this report should pay tribute to the unstinting co-operation which each and every committee member has given to the Chairman. It is with regret that the Committee learns that Co-Chairman David Hartley finds it necessary to resign from this Committee.

Wm. V. Hickey, *Co-Chairman*
David E. Hartley, *Co-Chairman*
Col. F. H. Downs, Jr.
Lewis Dodson
J. H. McCutchen
W. R. McLean
J. A. Stalbird
Jerome Trichter
James Westbrook

REPORT OF THE COMMITTEE ON BAKING INDUSTRY EQUIPMENT — 1957[1]

Since the 1956 report of this Committee there has been three meetings with the Baking Industry Sanitation Standard Committee (B.I.S.S.C.)

At these meetings the following proposed standards were reviewed; necessary changes and additions were made and returned to respective committees for further study and editing

The proposed standards reviewed were:

1. Bread and roll slicers and wrappers.
2. Racks, pan trucks, skid, pallets and dollies.
3. Doughnut equipment.
4. Mechanical ovens.
5. Bulk ingredient containers, refined granular and liquid sweetening products.
6. Bulk ingredient containers - flour.

The casters and assemblies standard was adopted by B.I.S.S.C. effective January 1, 1957.

DANGERS IN BULK HANDLING

Bulk handling of materials as was reported in 1955 and 1956 continues to monopolize the spotlight. Increased competition plus company growth places a premium on efficient handling of materials. Consequently, we find many changes taking place in the handling of bakery ingredients. The use of bulk transportation facilities is now common practice, as is also bulk storage facilities. New methods are being proposed and used. We, as sanitarians, must stay abreast of the many changes taking place in our food industries today. Industry looks to the sanitarian for guidance and leadership and it is our duty and our obligation to act accordingly. We must be firm in our beliefs, which must be substantiated by provable public health concepts and we must not bend to the winds of compromise.

To accept a standard that is not the best possible standard capable of being written and used is wrong.

It is true that quality in any form costs more than inferior materials and products. It is also true that while initially this cost is higher, it is often repaid many times over by increased savings through longer serviceability and lower maintenance and cleaning costs.

The drafting of standards is a difficult and arduous task. There are many personalities involved with many divergent and various opinions. While the vast majority of the interested parties are sincere in their efforts to write a good standard, there is at times a short sighted individual who is more interested in drafting a standard to suit his own particular machine or who would weaken the wording so that an inferior product may be used. Invariably there will be a financial gain to these individuals if they are successful in their efforts to sabotage the standard. It is to these individuals and on these occasions that we must be firm and unwavering.

At the B.I.S.S.C. meeting in New York City in April of this year, a representative of a large contract trucking concern volunteered information that should be of vital interest, not only to bakery sanitarians, but to all health officials.

It evidently is common practice among the trucking concerns in the larger metropolitan areas to lease tank trucks by the day or load as the occasion demands. It was brought out that there was no restriction as to the liquid hauled, nor was there any designation of trucks as to hauling of food products or nonfood products. In other words, a tank truck could take a load of highly poisonous chemicals or insecticides to a customer, deliver it, return to the plant, and then be sent out to haul a load of corn syrup to a bakery. While it is true that the tank trucks should be cleaned on their return to the plant, it is equally true that the possibility of a mass chemical poisoning outbreak exists. Also, the pumps frequently do not conform to 3A standards and are not always easily cleanable. The practice of hauling food products and nonfood products in the same tank trucks is being brought to the Association's attention for study, evaluation and future action.

It is the recommendation of this committee that the casters and assemblies standard as published by B.I.S.S.C. effective January 1, 1957, be approved by this association.

Vincent Foley, *Chairman*, Missouri Association
A. E. Abrahamson, New York Association
James H. Burrows, Michigan Association
Richard S. Doughty, New York State Association
W. R. McLean, Georgia Association
Louis W. Pickles, Associated Illinois Milk Sanitarians
Armin Roth, Michigan Association

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[1]Presented at the 44th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Louisville, Kentucky, October 7-10, 1957.

REPORT OF THE COMMITTEE ON COMMUNICABLE DISEASES AFFECTING MAN — 1957[1]

Foodborne illness continues to be a serious public health problem in the United States. In 1955, there was a total of 196 outbreaks involving 9,935 cases of diseases attributed to milk and food, and in 1956, there were 231 such outbreaks involving 12,006 cases. However, it has been authoritatively estimated that several hundred thousand cases of foodborne illiness occur annually in the United States. As an indication of the incompleteness of reportig, it will be noted that in 1955 only three States, all of which have strong public health programs, reported more than 5 outbreaks each but accounted for approximately 45 per cent of the total number of outbreaks reported, while 18 States did not report a single outbreak. Reporting of foodborne disease appeared slightly improved in 1956 as there were 10 States which reported more than 5 outbreaks each accounting for 60 per cent of the total number reported, and the number of States which did not report any outbreak was reduced to 13.

One of the major reasons for the poor reporting of foodborne disease outbreaks is the failure of health officials to investigate all illness suspected of being foodborne and to report data on their findings to the State health department for transmission to the Public Health Service. The problem is not lack of interest in carrying out this aspect of public health control but rather the lack of adequate guidelines for those not specifically trained in epidemiology to conduct an investigation of a possible outbreak and submit a report which will be meaningful even though not entirely conclusive.

In order to conduct effective food protection programs, it is important to know what conditions contribute to foodborne disease and what precautions can be taken by the individual establishments and by the health departments to prevent such disease. A program has been developed by the Public Health Service for accumulating and summarizing on a nationwide basis, the number of outbreaks reported, the foods involved and contributing factors. Under this program outbreaks which have been investigated by either the State or local health departments are reported immediately by the State health departments to the National Office of Vital Statistics, Public Service, Washington 25, D.C. According to the NOVS Manual of Procedures, the kind of information which should be reported is as follows:

"In Preliminary reports, the location, the extent or approximate number of cases, and the general nature or type of outbreak should be included. When preparing a final report of an epidemic, the number of cases should be estimated when an accurate count is not possible. The number of exposed persons should also be estimated. It is important that the length of the incubation period be stated as accurately as possible, that symptoms exhibited by a majority of the cases be described briefly, and that the location of the outbreak or place of exposure be given. Special effort should always be made to include reports of laboratory examination of specimens from persons who were ill or of samples of suspected vehicles of infection (food, water, etc.). The number of cases confirmed by laboratory tests should be given, especially in outbreaks of typhoid fever, salmonellosis, and shigellosis."

The information reported by the States is summarized and included in the "Communicable Disease Summary" published weekly by the National Office of Vital Statistics for distribution to Federal, State, and local health authorities, and such organizations or individuals who request this information. An annual summary of outbreaks reported is also prepared by NOVS and is given the same distribution as the weekly summaries. This material is particularly valuable to health officials because it provides information on what conditions contribute to individual outbreaks and suggests how repeated outbreaks can be prevented. The summaries also serve as an index of the public health problem associated with milk and food.

In view of the general need for a guide which could be used by health officials when confronted with a suspected food outbreak, the Committee on Communicable Diseases Affecting Man undertook the development of such a guide in 1952. With the assistance of a large number of nationally recognized epidemiologists, Association of State and Territorial Epidemiologists, the Public Health Service, and other national health organizations, this *Procedure*[2] was

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[1]Presented at the 44th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Louisville, Kentucky, October 7-10, 1957.

[2]*Procedure for the Investigation of Foodborne Disease Outbreaks* may be obtained by writing to the Executive Secretary, International Association of Milk and Sanitarians, Inc., Box 437, Shelbyville, Indiana.

published during the past year. This publication contains steps to be followed when investigating foodborne disease outbreaks, procedures for collecting food samples for laboratory examination, methods for identifying human sources of contamination, forms for use in tabulating and reporting data concerning the outbreak, classification chart of disease transmitted through foods, and references pertaining to investigations of foodborne disease outbreaks.

As indicated above, the purpose of developing this Procedure was to fill a definite need on the part of State and local health authorities engaged in milk and food sanitation activities, and food industry officials, for guidelines which can be followed when confronted with a possible foodborne disease outbreak. Under ideal circumstances, a fully trained epidemiologist would be available to conduct the investigation of such an outbreak. However, few local health departments are fortunate enough to have an epidemiologist on their staffs. Although the larger local and State health departments usually employ epidemiologists, their services often are available only when a preliminary investigation indicates that an outbreak of major importance has occurred. Thus, milk and food sanitarians, sanitary engineers, nurses, and others who are not specifically trained in epidemiology but who happen to be on the scene when an outbreak occurs, should begin immediately to collect pertinent data, and materials for laboratory examination. The *Procedure* is designed to provide such individuals with sufficient guidance to enable them to undertake the investigation. The epidemiologist can then take the data collected, together with whatever laboratory reports are available, and either identify the cause of the outbreak or seek further information as may be indicated.

It is the hope of this Committee that the new *Procedure* will serve as a valuable guild to all public health workers concerned with milk and food sanitation, and that they will investigate all possible foodborne disease outbreaks and submit their reports through their State health department to the National Office of Vital Statistics.

Raymond J. Helvig, *Chairman,*
Silver Spring Maryland
John Andrews, Raleigh, North Carolina
H. L. Bryson, Vancouver, B.C., Canada
Raymond Fagan, Kenneth Square, Pennsylvania
John H. Fritz, Washington, D.C.
Stanley L. Hendricks, Iowa Association
E. R. Price, Missouri Association
H. H. Rothe, Florida Association
T. E. Sullivan, Indiana Association

REPORT OF THE COMMITTEE ON EDUCATION AND PROFESSIONAL DEVELOPMENT — 1957[1]

The Committee on Education and Professional Development accomplished its tasks through the use of subcommittees. Three subcommittees functioned very actively. They were as follows: (a) Subcommittee on Scholarships; (b) Subcommittee on Curricula; and, (c) Subcommittee on Professional Standards and Registration.

Report of the Subcommittee on Scholarships

The Subcommitte on Scholarships had three major objectives: (a) to secure active participation of the various affiliates in supporting the scholarship program, (b) review the scholarship applications and make recommendations to the full committee, and (c) try to expand the scholarship program by securing funds to establish more scholarships.

The following affiliates have contributed to the scholarship program:

Date	*Affiliate Organization*	*Amount*
12- 5-55	Tennessee Association	$ 15.00
4- 2-56	Florida Association	25.00
6-20-56	Indiana Association	46.25
7-13-56	Kentucky Association	8.75
12-10-56	South Dakota Association	8.00
2- 2-57	Illinois Association	25.00
3-21-57	Florida Association	25.00
4-15-57	Georgia Association	21.75

Scholarship announcements were sent to fifteen universities and colleges offering degrees in sanitary science. Three applications for the scholarship were received.

The subcommittee was disappointed in the number of applications and doubted the need for the scholarship by the applicants. The subcommittee was also disappointed by the lack of cooperation among the affiliates in supporting the scholarship. It recommends that continued effort be made to get more participation of the affiliates in financing the scholarship program.

The Subcommittee members are W. Howard Brown, *Chairman,* Florida Association; Haynes Wright, Virginia; and Elmer Ninman, Oklahoma.

Report of the Subcommittee on Curricula

The objectives of the Subcommittee on Curricula were to prepare suggested curricula for degrees in Sanitary Science including the B.S. and M.S. degrees.

Thirteen colleges and universities that offered degrees in Sanitary Science or related fields were contacted. A review of their curricula indicated that in general, basic education in the fields of English, Chemistry, Biology, Humanities, Mathematics, Physics, Sociology and Economics was required at all schools. The third and fourth years are devoted to subjects which are either a continuation of the same basic courses or applied fields in Public Health. Some of the courses offered in the field of Public Health included the following: (a) Principles of Public Health, (b) Biometrics of Public Health Statistics, (c) Public Health Administration, (d) Public Health Education, (e) Public Health Problems, (f) Public Health Laws, (g) Epidemiology, (h) Communicable Disease Control, (i) Public Health Field Experience, and (k) Environmental Sanitation.

The members of the subcommittee felt that they would like the approval of the full committee and perhaps the association to continue this study and recommend so-called "required" and "elective" courses for the B.S. and M.S. degrees in Sanitary Science.

The subcommittee members are Dr. Samuel Lear, *Chairman,* New Jersey; Guy P. Stevens, Rocky Mountain Association; and Russell Cunningham, Indiana Association.

Report of the Subcommittee on Professional Standards and Registration

The objectives of the Subcommittee on Professional Standards and Registration were to investigate the progress of registration of sanitarians throughout the country, the feasibility of having a national registration program, and whether or not amalgamation with the National Association of Sanitarians would be advisable.

The Subcommittee received several registration bills. These were studied and are available for use by the various affiliates. The Georgia Association was able to get a registration bill approved by the Legislature in March 1957. Registration of Sanitarians under the provisions of the Act is in progress. Three of the five members of the State Board of Registration of Sanitarians are members of the Georgia Chapter of the I.A.M.F.S.

Some of the other affiliates made an effort to get a registration act passed but the subcommittee does not have a report on the success of those efforts

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[1]Presented at the 44th Annual Meeting of the International Association of Milk and Food Sanitarians, Inc., at Louisville, Kentucky, October 7-10, 1957.

A study of the possibility of having a national registration act was made but the subcommittee offers no recommendations at this time.

The possibility of merging the International Association of Milk and Food Sanitarians with the N.A.S. was discussed by representatives of both organizations and in general a favorable reaction was obtained. The subcommittee does not care to make any specific recommendations at this time concerning a merger.

The members of the Subcommittee on Professional Standards and Registration are Karl Jones, *Chairman*, Indiana Association; Raymond Summerlin, Iowa Association; Bernard Hartman, Missouri Association; and Thomas Laughlin, Wisconsin Association.

OTHER ACTION

The full committee also took the following action:

1. Endorsed the "Careers in Health" program of the North California Television Radio Council for Tuberculosis Education.
2. Endorsed Mr. John Faulkner's porposal of establishing the "William B. Palmer Scholarship Award".

The Committee believes that continued effort should be made to improve the effectiveness and professional qualifications of public health sanitarians. The Committee believes that Registration of Sanitarians is an important element in upgrading the professional standards of sanitarians and that every effort should be made to achieve professional status for qualified sanitarians.

John J. Sheuring, *Chairman*, Georgia Association
W. Howard Brown, Co-Chairman, Florida Association
Rusell B. Cunningham, Indiana Association
Bernard Hartman, Missouri Association
Karl Jones, Indiana Association
Samuel Lear, New Jersey Association
Thomas McLaughlin, Wisconsin Association
Elmer Ninman, Hobart, Oklahoma
Guy Stephens, Rocky Mountain Association
Raymond Summerlin, Iowa Association
Haynes Wright, Virginia Association

REPORT OF THE COMMITTEE ON DAIRY FARM METHODS - 1957[1]

SEDIMENT TEST ON MILK IN FARM BULK TANKS

With the advent of the farm bulk tank it is essential that a method be developed for sediment test on tank milk that is comparable to the sediment test on milk in cans or bottles. Much interest has been expressed in the need for the test, and it is anticipated that the eleventh edition of *Standard Methods for the Examination of Dairy Products* will contain at least a tentative method.

The sediment test is being made on farm tank milk by official agencies and industry. This report will list some of the more practical methods of making the test.

In preparing this report, it is realized that industry and regulatory officials should and do stress the importance of clean methods rather than filtering extraneous material from milk. However farm filtering of milk is of definite value (2), and is a universal practice. Moreover, the sediment test has proved to be a valuable educational and quality control tool when properly used and interpreted.

It is also recognized that some regulatory officials prefer to think of milk as being perfectly clean with no tolerance for sediment. The procedures listed herein will not prevent any official from using a clean disc as his grading standard if he is in a position to do so. However, experience in the field would indicate the need for some tolerance in grading just as in the case of bacterial counts and other quality tests. This is recognized by sediment test standards and the grading charts used by regulatory agencies at the federal, state and local levels.

In early work with farm tank milk, effort was made to apply the standard off-bottom sediment test as used on milk in 40-quart cans. However, the off-bottom test is not considered practical on tank milk. There is the problem of the large bottom area of the tank and the lack of a definite relation between bottom area and volume of milk. Differences in design and agitation of tanks preclude any uniformity as to location of sediment after it is allowed to settle. Also, with intermittent agitation in a tank, the sanitarian or fieldman would not know how long the milk had been quiescent when he arrived at the milk house. Therefore, it is rcommended that sample for bulk milk sediment testing be obtained from thoroughly mixed milk while the agitator is in motion.

The relation of 8 to 1 between the off-bottom and

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[1]Presented at the 44th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Louisville, Kentucky, October, 7-10, 1957.

mixed milk procedures for milk in 40-quart cans has been established in experimental work (*1, 3, 4*) and has been found applicable in the field (*3, 4*). In other words, the sediment recovered from 8 pints of mixed milk is equivalent, within the limits of the test procedure, to the sediment recovered from a one-pint sample taken by the standard off-bottom procedure from a 40-quart can.

The sediment test on mixed milk from a bulk tank may be made by one of the following procedures, using the same grading charts as in off-bottom testing:

1. Filter one pint of mixed milk through the 1⅛ inch diameter lintine disc as used in the off-bottom test. Grading must be more strict to compensate for the 8 to 1 relation between the off-bottom and mixed milk methods.
2. Filter one pint of mixed milk, either in the milk house or in the laboratory, through a 0.44 inch diameter lintine disc. Since the sediment is concentrated into an area approximately one-eighth the area of the 1¼ inch lintine disc, grading can be done with same charts as used for the off-bottom test. Slight warming of the milk may be necessary to permit filtering through the restricted area of the lintine disc.
3. Vacuum filter one gallon of mixed bulk milk through a 1⅛ inch diameter disc. Special equipment has been developed for this method (*4*).
4. Filter 8 pints of mixed milk, after slight warming, through the standard 1⅛ inch diameter lintine disc. Grade in the same manner as for the off-bottom method. Special equipment for sampling and slightly warming and testing the milk in the milk house has been developed. This procedure gives promise of being practical for farm tank milk.

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REVIEW OF CONTROL OF MASTITIS AND ANTIBIOTICS IN MILK SUPPLIES

Increased interest on the part of both regulatory officials and industry personnel in the incidence of mastitis and the presence of mastitis milk and antibiotics in milk supplies is evident. Consequently this Committee considered this problem during the past year.

There are wide differences existing today in all markets relative to regulatory control of mastitis. Some agencies rely on deck tests of milk alone; some require annual or periodic physical examinations of dairy herds; and some markets have no requirements whatever. With the rapid growth of bulk milk handling and the resultant elimination of individual cans on many farms mastitis detection is becoming a much greater problem.

Since present tests for detection of mastitis milk or antibiotics in our milk supplies appear to have their limitations, an alternative might be an educational program which would make dairy farmers more conscious of the problem and better aware of the importance of withholding milk from cows having clinical mastitis - both treated and not treated. This is more easily said than done.

A satisfactory method of controlling the antibiotics problem would be to get the dairyman to withhold milk for 72 or more hours following treatment. This practice, if adhered to, would solve the antibiotics problem. Unfortunately it is difficult to obtain full cooperation of farmers in this objective. Perhaps a better approach to the problem of mastitis milk and antibiotics in milk supplies would be to reduce the incidence of this disease and thereby reduce to a great extent the need of mastitis treatment. To accomplish this objective it would seem necessary to inaugurate educational work with dairy farmers which would make them conscious of the benefits they would achieve by reducing the incidence of bovine mastitis in their herds, resulting in sales of an improved quality milk and economic benefits through increased production and longer usefulness of the dairy cow. The method used might be one of instruction of all dairymen in better management and sanitation procedures. For those in serious trouble there should be a more specific approach to the problem through use of veterinary service and mastitis control programs when these are available.

The experiences of various groups working closely with the problem of bovine mastitis indicate that much can be accomplished in the elimination of bovine mastitis through preventive measures. When these preventive measures are used to the fullest extent, the need for treatment for mastitis decreases quite rapidly.

The following is an outline of a practilal approach

to mastitis control through correction of environmental factors and the use of a well managed milking procedure at the dairy farm.

A. Desirable environmental conditions
   1. Stable
      a. Low door sills
      b. Stall beds of sufficient width and length, and in good repair.
      c. Partitions between cows
      d. Stall beds kept clean
         (It is well to routinely disinfect them each spring and fall) A steam Jenny is useful for this purpose.
      e. Sufficient clean, dry bedding
      f. Sufficient light and ventilation
   2. Yard
      a. Well graded and drained or paved
      b. Free from deep mud, junk or rubbish piles
   3. Pasture
      a. Free from swampy areas or stagnant pools of water. Such areas should be fenced off
      b. Free from rubbish piles
      c. Good Fences

B. Milking machine
   1. Good mechanical condition
   2. Correctly operated according to manufacturer's instructions
   3. Kept in the best sanitary condition
   4. Inflations kept in excellent condition. with two sets used and alternated weekly.
   5. Machine correctly used
      a. Minimum time of attachment
      b. Careful removal of teat cups from teats in order to prevent irritation to teat ends.
   6. Machine units rinsed and washed thoroughly in an approved dairy cleanser after each milking
   7. Sanitize units prior to each milking

C. Cows
   1. Cows should be frequently physically examined by a veterinarian. Active treatable cases of mastitis should be treated and milk from treated quarters should be kept out of the general supply for at least 72 hours or until all traces of antibiotics have disappeared. Chronic, incurable cases should be removed from the herd.
   2. A laboratory check of individual quarter samples is valuable in detecting infected quarters and identifying types of infectious organisms present where symptons have not appeared. This is especially important when initiating a program designed to eliminate *Streptococcus agalactiae* from a herd.
   3. A milking order should be established: Milking healthy cows first followed by suspicious cows and milking infected cows last. Every precaution should be taken when handling the latter to prevent either direct or indirect exposure of the teat ends of other cows to infectious organisms.
   4. Managed milking program
      a. Massage udder, with a single-service towel previously immersed in a warm sanitizing solution for 30 to 60 seconds.
         (1) Stimulates let-down
         (2) Cleans udder
         (3) Helps to sanitize udder and operators hands

         Note: Clipping of flanks, tails and udders during the stabling season facilities this procedure
      b. Use a strip plate or cup on every cow at every milking withdrawing 3 or 4 streams from each quarter.
         (1) Opens meatus, thus speeds the rate of machine milking.
         (2) Removes foremilk from the teat cistern which usually is low in butterfat and high in bacteria.
         (3) Keeps possible infected milk off the floor and bedding.
         (4) Further aids in stimulating the let-down.
         (5) Detects the presence of flakes, clots, watery, bloody, or other abnormal milk which might exist.
         (6) Milk last any animal showing abnormal milk.
         (7) Keep abnormal milk out of general supply.
      c. Attach unit within *one minute* after preparation never later.
      d. When the normal flow of milk ceases, machine strip, and promptly remove the unit from the cows, using care to break the vacuum seal at the teat cup mouth piece when doing so.
      e. Empty the bucket or use a type of transfer pail.
      f. Dip teat cups between cows - first in a bucket of lukewarm water in order to rinse

away the milk film from the inflations. (This water should be changed once it becomes milky.) Next dip in an approved sanitizing solution to sanitize the inflations. Attach to the next cow already prepared.

g. Dip teats after milking with a dipper of sanitizing solution: Such as 25 ppm. iodine, 2% No. 6 soluble pine oil, 200 ppm. hypochlorite solution or other approved sanitizer.
   (1) Removes milk film from teat end after milking.
   (2) Discourages presence of flies during the fly season.
   (3) Discourages bacterial growth and reduces the possibility of mastitis being spread via teat cups and the hands of the operator.

5. Balanced Feeding Program

D. Treatment

Selective treatment by a veterinarian together with a good preventive program is essential. "Treatment without prevention is of little lasting value."

LICENSING OF TANK TRUCK DRIVERS AND COLLECTION OF SAMPLES

Much study has been given in the past few years to the problem of driver training and licensing of non-official sampling personnel, but as yet no uniform procedure or recommendations have been developed. Extensive information on this subject is included in both the 1955 and 1956 reports of this committee.

In a recent study (*1*) by a special committee in connection with the Interstate Milk Shipment Program covering information related to 19 communities in 14 states where farm bulk tanks were extensively used, the committee chaired by Milton E. Held, reports as follows:

"Hauler training relating to milk collection and sampling procedures was utilized in all but one community. Training procedure varied widely. The State Department of Agriculture provided shortcourse training in three of the communities in two of the 14 States represented. State Health Department personnel provided a four-day hauler training short course in one community, and the Dairy Department of a State University provided a two-day short course for another community. Three local health departments reported on-the-job orientation training, and one local health department provided oral and written instructions followed by oral and written examinations. The remainder of the communities reported hauler training but did not delineate the procedures employed."

"Of the 11 communities which utilized haulers in the procurement of official samples, 55 percent required the hauler to obtain a local permit, and 45 percent were required to procure a State license from the Department of Agriculture. One community reported that its haulers were required to be licensed by the State Health Department in addition to the local permit requirement."

It is apparent from that committee's study that a wide difference exists in the thinking and enforcement of rules and regulations in relation to this problem. It is also evident that the rapid increase of bulk tank installations will more widely necessitate the use of the tank truck driver in the collection of samples for bacteriological analysis. The following instructions for securing bacterial samples from farm bulk tanks are suggested for use. It is anticipated that as more experience is gained in this method of milk procurement better procedures will evolve.

INSTRUCTIONS FOR SECURING SAMPLES FROM FARM BULK TANKS

General Considerations

The sampler and the milk dealer are responsible for proper care of samples until they are delivered to the laboratory. Special care should be taken to prevent contamination of bacterial samples and equipment (such as with the hands, or any foreign matter). The sampler's hands must be kept clean and dry during sampling operations. Sample vials should be kept protected in the sample box at all times except when the sample is being taken. Sterile sample vials should be protected enroute from laboratory to farms and until delivered at the laboratory. Unused vials should be returned to laboratory for resterilization after each set of samples is taken. Samples should be protected at all times from excessive temperatures. Frozen, partially frozen, lumpy, curdled or churned milk should not be sampled. Each individual sample container should be identified by number, tag, or otherwise.

Equipment

1. Rigid, single-service tubes with convenient cardboard case are preferred, but a properly sanitized dipper for bacterial sampling only may be used. (The use of laboratory-sterilized sampling equipment is preferred.) Laboratory sterilized metal thieves (tubes) that are corrosion resistant and readily cleanable are also acceptable.
2. Container for protection and transportation of sampling instruments; rack for tube containers as needed.
3. Sample vials or bottles heat sterilized. Clean, dry, wide-mouth vials, with satisfactory metal or plastic leak-proof screw caps and a capacity at least 13 ml. are satisfactory.

4. Case for transportation of farm tank sample, to maintain samples at 40°F. or less. This should be a suitable, rigid, insulated waterproof box, with adequate capacity for cracked ice and water, equipped with a tight fitting cover and with an overflow outlet at the milk level in the vial when single tier sample cases are used. The rack should hold vials vertically. Splash-proof shields designed to prevent contamination of samples should be provided.
5. Thermometer with approximate range 0 to 120° F. and with graduation interval not to exceed 2° F. (for checking temperature of samples in ice water in sample case). Thermometers should be checked periodically for accuracy.

Sampling

1. After contents of farm tank have been thoroughly mixed by mechanical agitation, secure bacterial sample according to standard methods.
2. Do not hold sampling vial over the milk in the tank. When the milk cap is removed, care must be taken to avoid contamination of the pouring lip of vial and interior surface of vial and cap. If the cap must be set down, it should be placed on a clean, fresh paper towel or equivalent. Vial should be closed immediately. If the vial cap is accidentally dropped or the milk contact surfaces are touched or contaminated in any other way the sample must be discarded and a new vial used.
3. Secure sample with sterile sampling device.
   a. When tube is used insert it vertically into the the tank, leaving top end open, until milk rises to about 4 in. from top. Place finger or thumb on top of tube (or in the case of the paper type, the end of the tube may be "pinched"between thumb and finger) and then transfer asceptically at least 10 ml. portion to sample vial so that it is about 3/4 full. Discard paper tubes as used, and do not reuse metal tubes until resterilized in laboratory.
   b. If sampling dippers (for bacterial samples *only*) are used, they must be cleaned and sanitized before each use. Practical field sterilization is accomplished by immersion of the dipper and milk contact surface of dipper handle into a suitable container of clean, cold water and then into water at 180°F. for one minute. Drain instrument, then remove residual water by rinsing dipper twice in milk to be sampled. Chemical sterilization of bacterial sampling dipper and milk contact surface of dipper handle should be used only where hot water or laboratory sterilized equipment is not available. For chemical sterilization immersion in hypochlorite solution of 200 ppm. concentration, or equivalent, for 10 seconds followed by at least 2 rinsings of the dipper in milk before taking samples may be used. Care must be used to properly and thoroughly milk-rinse the bactericidal solution from the dipper as presence of a bactericidal solution in the milk sample will greatly affect the bacterial population of the sample. Rinse out residual milk with water and then let dipper drain before treatment with bactericidal solution.
4. Store sample vials immediately at 32°F. to 40°F. in approved transportation case containing cracked ice and water (or equivalent refrigeration) keeping water level about 1/2 inch below vial cap, but above milk level.
5. The container for holding the bactericidal solution must be kept clean at all times.
6. Caution: Vials or any other sample containers, should not be sanitized in the field.
7. The use of the "vial-clamp" system of procuring samples is unsatisfactory.

It is the recommendation of this committee that these instructions be referred to the Standard Methods Committee for their consideration.

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NEWS AND EVENTS

SUMMARY OF REPORTS OF DISEASE OUTBREAKS

For many years the reports of the United States Public Health Service on Food and Water Disease Outbreaks were summarized in the Journal of Milk and Food Technology. However since 1952, these summaries have not appeared in our Journal and the last report summarized was that for the year 1950. It is believed that these summaries should be of interest to the membership and consequently an attempt will be made to follow the original idea of Dr. Paul B. Brooks and publish a summary of each year's report as soon as it is available.

To bring the information up to date, a tabular summary for the years 1950-1956 is given below:

Number of Outbreaks

	1950	1951	1952	1953	1954	1955	1956
Water	15	7	14	11	7	2	9
Milk and Milk Products	10	12	6	4	9	3	31
Other Foods	347	256	143	194	234	193	210

A review of the disease outbreak summaries for 1951-1955 as published in Public Health Reports was made to determine the vehicle of infection in outbreaks in which milk or milk products were involved. These are summarized in the following table:

Number of Outbreaks

	1951	1952	1953	1954	1955
Milk Products-Totals	12	6	4	9	3
Raw milk	3	1	—	3	—
Pasteurized milk	1	2	—	—	1
Ice cream	3	1	2	2	1
Egg nog	—	1	—	1	—
Cheese	2	1	—	1	1
Fruit Cottage cheese	1	—	—	—	—
Cream cheese	—	—	1	1	—
Home made cheese	—	—	1	—	—
Canned milk	1	—	—	—	—
Raw buttermilk	1	—	—	—	—
TB cows	—	—	—	1	—

The data regarding other food products incriminated in disease outbreaks does not lend itself to tabular summarizing. Over the five-year period, the following foods are mentioned most frequently: poultry (turkey and chicken), both meat and eggs, ham, beef, cream or custard filled pastry, salads, shell fish (oysters and crabs), and miscellaneous meats. Staphylococcal food poisoning by far accounted for the majority of the outbreaks.

The 1956 Summary of Disease Outbreaks was published in the August 1957 issue of Public Health Reports (Vol. 72, No. 8, pp. 735-742) and is summarized briefly as follows:

Waterbourne disease outbreaks — Nine outbreaks were reported affecting 1,719 persons; four were traced to city water supplies contaminated by raw water from streams or surface water; three occurred in camps where untreated water was used; one was in a family using water from a dug well; and one resulted from poison being dumped into a well. There were three other disease outbreaks reported in which water was suspected but definite evidence was lacking.

Milkborne disease outbreaks — Although 31 outbreaks were reported affecting 873 persons, 27 of these were outbreaks of staphylococcal food poisoning involving more than 700 persons resulting from the ingestion of milk reconstituted from dry milk. Of the remaining four outbreaks, one was of brucellosis resulting from the use of raw milk from infected cows; one was attributed to a cheese sauce in a restaurant; and two were traced to ice cream one of which was believed to have been caused by the use of raw milk in the ice cream.

Other foodborne disease outbreaks — There were 210 outbreaks reported involving 11,133 cases. The majority of the outbreaks were staphylococcal food poisoning. Illness or infection was found in food handlers in a few outbreaks but the sources of most of the outbreaks were not determined. Inadequate refrigeration was commonly a contributing factor in these outbreaks. Poultry meat was most often incriminated with turkeys accounting for a large proportion and chickens for only a few of the total outbreaks. Beef, ham, pastries, and potato salad were also mentioned.

The report also summarizes the outbreaks by type of infection and for this detailed information the full report should be consulted. The information presented in this summary has been taken from the following, *Public Health Reports*:

Issue of
1950-51 - Vol. 67 (11):1089-1095.
1952 - Vol. 68 (7):696-702. 1953
1953 - Vol. 69 (6):538-546. 1954
1954 - Vol. 70 (6):536-544. 1955
1955 - Vol. 71 (8):797-803. 1956
1956 - Vol. 72 (8):735-742. 1957

FDA RESEARCH PROGRAM EXTENSIVE

A joint conference between the Food Law Institute and top ranking officials of the Federal Food and Drug Administration was held at Washington, D.C., late in 1957.

Among reports given was one by Robert S. Roe, Director, Bureau of Biological and Physical Sciences, FDA. Director Roe pointed to a number of new areas in food research which are being investigated at the Food and Drug Administration's laboratories and cited the following as current examples:

1. *Chemistry of food decomposition.*

Research has been conducted to identify products of decomposition and to develop objective methods of gauging the fitness of food. This research has been particularly fruitful in providing the basis for more effective regulatory appraisal of dairy and fishery products.

2. *Pesticide residues, and food additives.*

Research is being conduct in the chemistry of pesticide residues, preservatives, and other food additives, directed toward development of methods of analysis that can be depended upon to identify and accurately measure residues of such chemicals. This is essential in appraisal of petitions requesting the establishment of tolerances for various pesticide residues. It is of primary importance in setting a tolerance, to be certain of the identity of the residue and the magnitude likely to be incurred from the intended use of the pesticide chemical in order to judge the practicability of the tolerance.

3. *Peroxide bleaching of milk for cheese.*

A proposal recently has been made that the standards of identity for certain cheeses be amended to admit the use of a peroxide in bleaching the milk used in making the cheese. They are unable to determine whether the proposal would constitute fair dealing in the interest of consumers without knowing what effect, if any, the treatment may have on the nutritive value of the food. Accordingly, some research is under way to investigate the effects of this treatment.

4. *Growth promoting hormones.*

Certain hormones are used in the production of food animals. The addition of such substance to the feed of beef cattle or the injection into poultry to promote the growth of these animals has raised questions as to the effect of this treatment in terms of safety of the food products delivered to consumers. Research in this area has resulted in the development of a very sensitive method of assay, capable of detecting fractions of a part per billion of residual hormone activity.

5. *Microanalytical Methods.*

Extensive studies have been pursued and are being continued in developing data on the physical structure of insects to enable the interpretation of microscopical examination of foods. Investigations to establish microanalytical methods that are adequate in identification of plant products are also being pursued. In this there has been extensive cooperation of industry scientists. The collaboration has been helpful both to the Government scientists and to the industry in improving the handling and preparation of cereal foods and dairy products, particularly.

REPORT ISSUED ON SALARY AND JOB REQUIREMENTS IN SANITATION

A number of job requirements, among them education, experience and supervisory responsibility, fail in some cases to determine the salary level of environmental sanitation positions. This was disclosed in a survey of 371 full time local health departments, made by the Conference of Municipal Public Health Engineers. In the second report of a series, a detailed study was made of the relation between salaries, and job requirements in terms of education, total experience, supervisory and administrative experience, population served and supervisory and program responsibility.

According to the report, education and experience requirements play an important role in the salary level of engineering positions, but are not so definitive among sanitarian positions.

A total of 2,893 sanitarian positions were included in the study. This number included persons working in communities of 25,000 or less to those where the population was half a million or more. Number of personnel supervised varied from none to seventy-four. Salaries paid correlated rather directly with the number of persons supervised. Salaries ranged from a median of $4,776 to a high of above $8,000 when a large staff was supervised. Sanitarian directors in centers with a population of half a million or above received salaries of $10,000 as an average.

Men with a B.S. degree constituted the largest group percentage wise in positions where a four year college degree was required. Next in order, percentage wise, were graduates with a B.S. in sanitary science, or public health. Sanitarians with a Master's degree earned approximately $750 per year more

than men holding the bachelor's degree only.

Registration requirements had a noticeable effect upon sanitarian salaries. Sixteen per cent of the sanitarian positions covered in the study required registration or eligibility therefore. These positions had a maximum median salary level of nearly $1,000 above those positions which did not call for mandatory registration.

This report and one released in 1957 disclosed among other things that salaries of sanitation personnel, while rising, failed to match those paid to similar professional groups outside of official health agencies. Copies of the complete report entitled, "Salaries of Local Environmental Health Personnel in 1956", may be obtained by writing Walter A. Lyon, Pennsylvania Department of Health, Box 90, Harrisburg, Penn.

E. B. BUCHANAN TO RETIRE FROM CLEVELAND HEALTH POST

E. B. Buchanan, well known in the public health and sanitation fields has announced his retirement, effective March 1, 1958, as deputy health commissioner and chief of the food and drug division of the Cleveland, Ohio, City Health Department.

Mr. Buchanan joined the Ceveland Department in 1922 as an assistant in the laboratory and moved ahead in his field until he became chief of the food and drug division in 1933.

His retirement received editorial comment in the *Cleveland Plain Dealer,* when his retirement plans were announced. The editorial stated, "Politicians come and politcians go, but every city has its little group of dedicated men who remain on important, but relatively poorly paid jobs and keep the cities going. They refuse the blandishments of private enterprise, easier lives, fatter bank accounts, to stick with jobs which they know are vital to the community. Such a man is E. B. Buchanan, chief of the city's food and drug division since 1933 who will retire as of March 1 to take up residence in Florida and, "do a lot of resting".

In 1921 the bacteria count of milk sold in Cleveland was 210,000; in 1956 it was 12,000. In 1920 infant mortality was 85 per 1000; in 1956 it was 25 per 1,000. Cleveland today is a better, cleaner, healthier city because of the work of Mr. Buchanan. We all owe him a debt of gratitude; we all hope his playtime years will be many - and happy!"

Mr. Buchanan has been a member of IAMFS for a good many years and has had several important committee assignments. The membership of this Association joins the Press and his many other friends in wishing him good health and happiness in the years ahead.

ANNOUNCEMENT

WHO Technical Report No. 124, First Report - Joint FAO/WHO Expert Committee on Milk Hygiene, is now available to those interested.

Two well known milk specialists, C. K. Johns of Ontario, Canada, and John D. Faulkner, Chief, Milk and Food Section U.S. Public Health Service, served on this expert committee. Both Johns and Faulkner, are past president of IAMFS. The report sets forth fundamental principles of milk and dairy hygiene and is designed as a guide and model for countries throughout the world.

Copies of this report may be obtained from either of two sources; Sales Section, Palais des Nations, WHO, Geneva, Switzerland, or Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y. Price per copy, sixty cents.

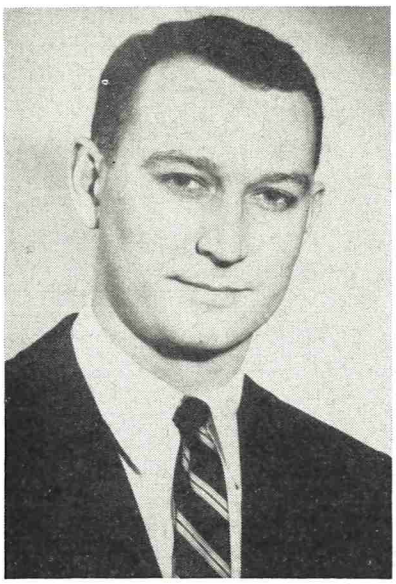
EMPTY MILK CARTONS MAKE IDEAL SAFETY FLARES

An Indiana State Trooper is using a unique new weapon in the unending war on needless nightime highway deaths - empty milk cartons. Sgt. John A. Cook, Indiana State Police has enlisted the aid of the Indiana Dairy Products Association to publicize the use of cartons for flares. One of the most common causes of highway deaths, according to State Police records is the careless motorist who parks on an unlighted highway while fixing a flat tire or hiking for a can of gas.

The idea was conceived one night a few months ago when Sgt. Cook was despatched to the scene of an accident. Upon arrival he found an enterprising motorist had set a flare in the middle of the highway to warn approaching drivers of the accident. On close examination, the flare, which could be seen a half mile, was a half gallon waxed paper milk carton, stuffed with several other crushed cartons.

With the cooperation of business and civic leaders, a series of TV film shorts, radio scripts, newspaper stories and ads have been prepared to help put the campaign over. Sgt. Cook is convinced the paper milk carton flare will aid materially in the reduction of night time accidents due to parking on the highway.

Members of IAMFS can set an example by keeping some cartons in the trunk of their cars, use them for their own safety when necessary, and tell others about this simple but effective safety measure.



Robert E. Mytinger

MYTINGER SUCCEEDS CALVER IN HEALTH POST AT PAPER CUP AND CONTAINER INSTITUTE

Robert E. Mytinger, Program Director of the Institute's Public Health Committee, succeeded Homer N. Calver, long time Secretary of that Committee on December 31, 1957 as Mr. Calver retired from the Institute under the associations mandatory retirement plan.

Mr. Mytinger was trained in sanitation and health education, taking the degree, Master of Public Health at the University of California in 1951. He is a Fellow of the American Public Health Association and Chairman of the Committe on Public Relations of the Engineering and Sanitation, APHA. He has been active as a speaker and writer, particularly on questions affecting the work of local public health officials. He is Regional Vice President of the National Association of Sanitarians and has been active with NAS as one time chairman of their committee on professional development and education.

Homer Calver

Mr. Calver has long been associated with public health. He received his education at the Massachusetts Institute of Technology graduating with a B.S. degree in Sanitary Engineering. Prior to becoming Secretary of the Institute he served as Executive Secretary of th American Public Helth Association. During the New York Worlds Fair, 1937-41 he served as Director, Public Health and Medical Exhibits. In 1934 he assumed the position from which he has now retired, as Secretary, Public Health Committee, Paper Cup and Container Institute.

A steady advocate of improving health practices through education rather than legislation, he was directly responsible for a wide range of industry projects in the public health field. Editor of the *Health Officers's News Digest* for more than 20 years, he helped establish the annual Samuel J. Crumbine Awards for local health departments and created the Institute's public health field service.

ANNOUNCEMENT

A one-week course in shellfish sanitation will begin May 12, 1958 at the Taft Engineering Center, Cincinnati, Ohio, primary environmental health research laboratory of the U.S. Public Health Service.

Representatives of both public agencies and the shellfish industry are invited to participate in the course. There is no tuition fee.

Material to be studied includes field practices and laboratory proceedures applicable in safeguarding the sanitary quality of oysters, clams, and other shellfish. The course is geared for sanitation personnel, scientists, and others actively engaged in shellfish sanitation control work.

About half of the training will be laboratory application. Bacteriological and chemical determinations will be made on samples of shellfish and sea water and results will be computed, interpreted and discussed.

Information on enrollment may be obtained from Chief of Training, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio.

Lee H. Hill

MINNESOTA ASSOCIATION HONORS HILL

The Minnestota Sanitarians Association presented its Achievement Award to Lee H. Hill, formerly Field Service Director for the Twin City Milk Producers Association, St. Paul, Minnesota. Presentation of the award was made at the 1957 annual meeting of the Association last fall. Mr. Hill has been associated with the quality control program of his organization for the past 32 years. During this period he has given generously of his time and experience in quality improvement work and has been a key individual in the development of the present quality program in effect for the Minneapolis and St. Paul milk shed. Many throughout the industry and among the regulatory personnel in the midwest join with the Minnesota Association in extending congratulations to him as recipient of this award.

DAIRY PRODUCTS INSTITUTE HOLDS ANNUAL MEETING

The Eleventh Annual Meeting of the Dairy Products Improvement Institute was held Thursday, February 13, 1958 at the Hotel Governor Clinton, New York City. After a noon luncheon, a series of papers were presented. The lead off paper was presented by William O. Skinner of the Westchester County, New York, Department of Health. Mr. Skinner is also president of the New York State Association of Milk Sanitarians. He reported on, *The New Industry Farm Sanitation Report Form.* The next paper was presented by Dr. Louis F. Herrmann, Agricultural Marketing Service of the USDA. He discussed, *Trade Barriers in the Dairy Industry.* Professor E. Wallenfeldt of the University of Wisconsin then gave a discussion on, *Quality Standard Developments and Achievements in Milk for Manufacturing in the Midwest.* Following Professor Wallenfeldt was a review by Mr. Harry Polikoff New York City Attorney on the subject, *Court Decisions Affecting Trade Barriers and Sanitation Regulations in the Dairy Industry.* The final speaker on the program was Dr. A. C. Dahlberg, Cornell University who discussed the recent study of the dating of pasteurized milk in New York City.

Institute President, A. C. Fisher General Ice Cream Corporation of Schenectady N.Y., presided.

27TH ANNUAL INSTITUTE OF DAIRYING HELD AT PULLMAN

The State College of Washington's 27th Annual Institute of Dairying was held at Pullman, Washington, March 10-13, 1958.

Problems of quality control, plant automation, dairy products merchandising, psychrophilic organisms, CIP, bulk tank cleaning, and problems associated with the manufacture and processing of dairy products were discussed.

Among dairy scientists who presented papers and lead discussions were the following: Dr. J. J. Jezeski, University of Minnesota, Dr. F. E. Nelson, Iowa State College, Dr. R. P. Tittsler, Agricultural Research Service, USDA, Dr. G. H. Wilster, Oregon State College, and Douglas C. Fisk, of the National Dairy Council.

1959 ANNUAL MEETING GLENWOOD SPRINGS, COLORADO AUGUST 27-29, 1959

Members of the Rocky Mountain Association of Milk and Food Sanitarians are making plans to entertain the I.A.M.F.S. at Glenwood Springs, Colorado during the week of August 25, 1959. Plans are to make this a combination vacation-educational meeting. The meeting will be a full week before Labor Day and in plenty of time for those attending to get the children back to school. It is hoped that those who can will begin planning their vacation now to include a trip to the Rockies and attendance at the Annual Meeting.

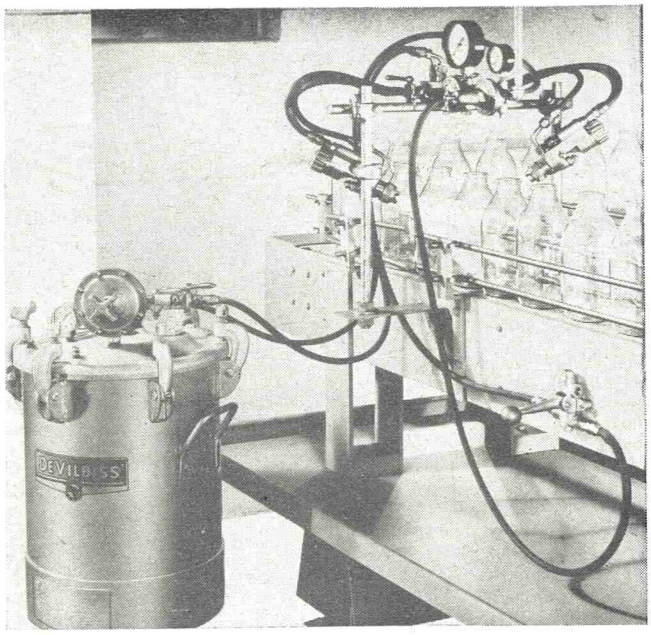
Many will remember the 1951 meeting in Glenwood Springs. Many pleasant outings and special events are being planned. The Committee will be prepared to forward you information on interesting places to visit while on your trip. We will keep you

informed from time to time of our plans. Committee Chairmen already making plans are: Harold J. Barnum, General Chairman, Dr. Summer Morrison, Colorado State Health Department, Finance and Charles Walton, Laramie, Wyoming, Publicity.

Plan now to bring your swim suits, golf clubs, fishing tackle, hiking and riding clothes, cameras and your vacation gear.

SILICONE SPRAY FOR MILK AND BEVERAGE BOTTLES

The Creamery Package Mfg. Company, offers a new system, *Glas-Spray*, for spraying a non-oily silicone film on milk and beverage bottles, to keep them sparkling, and to speed up filling operations. The system uses DeVilbiss compressed-air spraying equipment to apply a newly developed Dow-Corning silicone known as *Syl-Gard 17*. The fluid, when sprayed on glass, becomes a crystal-clear film which effectively hides the inevitable scuffs and scratches that appear on returned bottles.



DeVilbiss automatic spray equipment for use with CP "Glas-Spray" system includes pressure-feed material tank, header assembly and automatic guns. Tanks are available with 13.07 gallon or 7.97 gallon material supply capacity.

This process, which sprays the bottles automatically as they pass down the conveyer line, also speeds up the filling operation. Bottles have better "slip" so that they move along the line more smoothly, permitting filling equipment to operate at full speed.

Two precision spray guns are mounted on a single header which permits them to be moved, turned or tipped to any angle necessary to cover any required bottle area. The spray guns themselves have a precision, springlock, needle valve that maintains an ultra-fine adjustment of the spray pattern for proper coverage without waste. The shape of the spray can be adjusted from a small round area to a broad, soft fan pattern to cover different bottle sizes and shapes. Control of spray coverage in a sharply defined area to within a few hundredths of an inch is possible.

The silicone concentrate is supplied in 8-ounce bottles, 12 to a case. A single bottle, diluted with water, will treat as many as 70,000 quart milk bottles or 120,000 beverage bottles, according to the manufacturer.

AOAC SPONSORS NEW MANUAL

The Association of Official Agricultural Chemists is sponsoring for early publication, a new manual entitled, *Identification of Insect Contamination of Foods by the Micromorphology of Insect Fragments.* The Bureau of Biological and Physical Sciences of

the FDA is assembling material for this authoritative and comprehensive volume on insect fragments which cause the adulteration of foods and drugs. Persons interested in purchasing a copy of the manual, when published, should so indicate by writing to the Association of Offical Agricultural Chemists, Box 540, Benjamin Franklin Station, Washington 4, D.C.

POLLUTION OF WATER WELLS THREATENS HEALTH OF SUBURBAN AND FARM FAMILIES

Most serious hidden health hazard of millions of rural and suburban families is the possible pollution of raw, untreated water drawn from private well systems.

This problem is assuming greater proportions than ever before in the face of the growing exodus of more than 2,000,000 persons a year from dense urban population centers to newly developed suburban areas. America's modern city-to-country migration is putting thousands of families all over the nation beyond the reach of municipal water systems and is introducing private water wells to their lives for the first time.

Most of the new well-users, however, are following the dangerous pattern of as many as 9 out of 10 farm families today who are estimated to be risking contamination by not disinfecting their family water supply. A pilot survey of one local county by the Kentucky State Board of Health, for example, has revealed that three-fourths of all wells less than 20 feet deep were polluted, while one-fourth of all wells over 75 feet were also hazardous with pollution. Similar studies in other states are reflecting the same dangerous threat to the family health of private well-users.

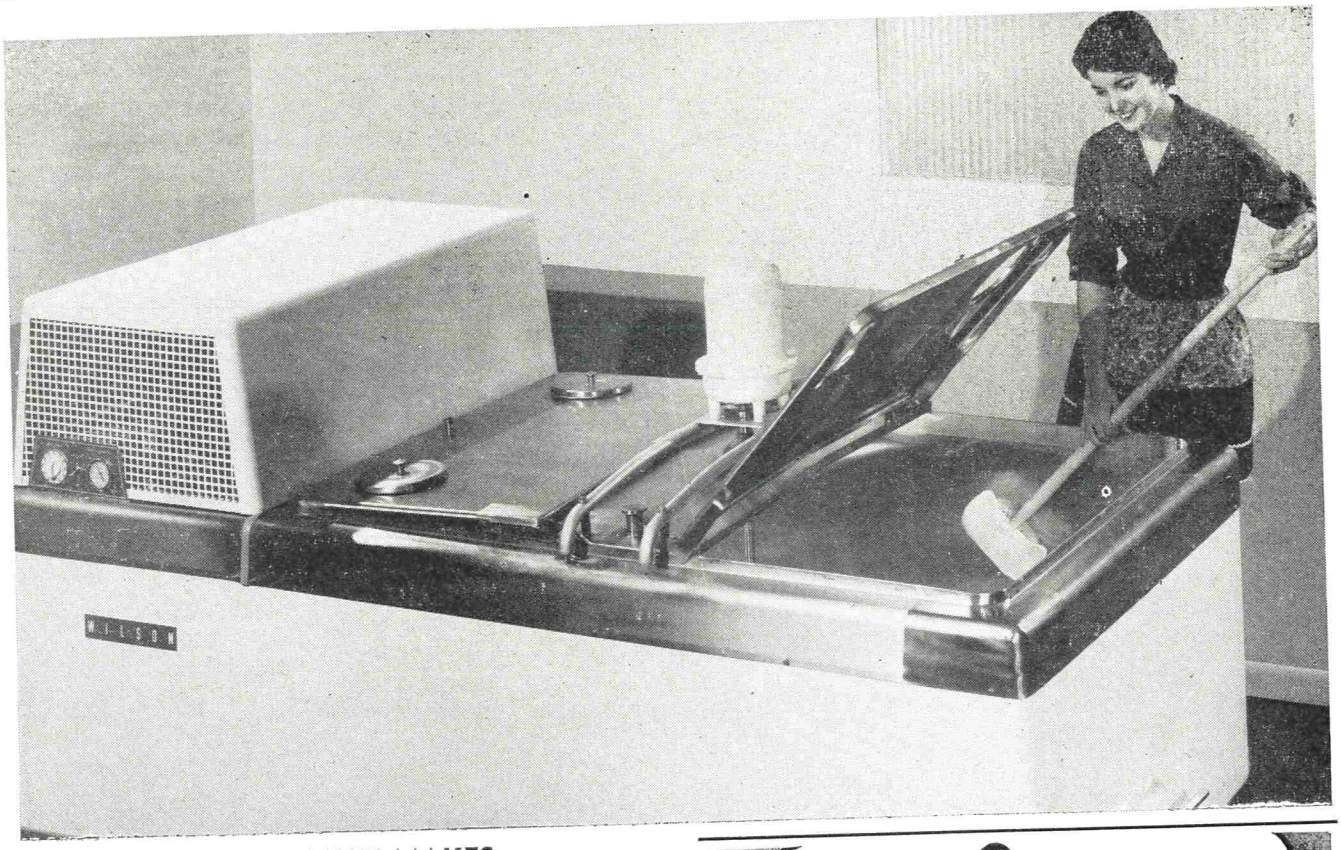
CLASSIFIED ADS

FOR SALE

Single service milk sampling tubes. For further information and a catalogue, please write Bacti-Kit Co., P. O. Box 101, Eugene, Oregon.

SANITARIAN

Unparalleled opportunity to join national organization rated AAA-1. Company provides sanitation inspection and consultation services to food processors. Following training, applicant selected will be assigned to headquarters office in Atlanta. B.S. in Sanitary Science or allied field. Experience with FDA or other regulatory agency desired. Starting salary open. Many company benefits, opportunity for advancement, secure future with old established firm. All replies confidential. Interviews by invitation. Send resume and recent photograph to Lee Zusman, Director, Orkin Institute of Industrial Sanitation, 713 W. Peachtree Street, Atlanta 8, Georgia.



MAGIC MIST MAKES COOLER CLEANING EASY

A "Magic Mist" that prevents formation of milkstone is Wilson's latest to make cooler cleaning easy. Farm girl Beverly Jo Larsen demonstrates with a nylon brush how the new, low, easy-reach bulk cooler swishes clean.

The exclusive Wilson Watchman "drop-in" refrigeration unit is a "Sentinel Who Never Sleeps," guarding milk with longlasting, faster-cooling Glacier Cold.

Anyone can drop in a standby emergency Watchman if ever needed. No refrigeration expert is required. The Watchman builds up a large reserve of Glacier Cold that can protect milk during a prolonged electric power failure.

Tne Wilson Watchman will be featured in an extensive four-color advertising program in farm publications, the largest in Wilson's history and the first four-color advertising in bulk cooler merchandising. A vast array of sales tools, including a slide film for farmer meetings, is available to help milk plants convert their producers to bulk.

Wilson offers a complete selection of sizes, from 100 gallon capacity up to 700 gallons. Cabinet finish is available in all stainless steel or plasticized white DuPont Dulux. A ten year warranty is optional with every Wilson cooler.

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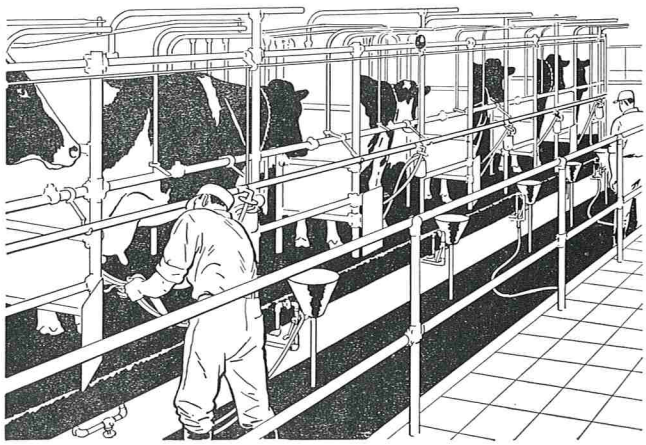

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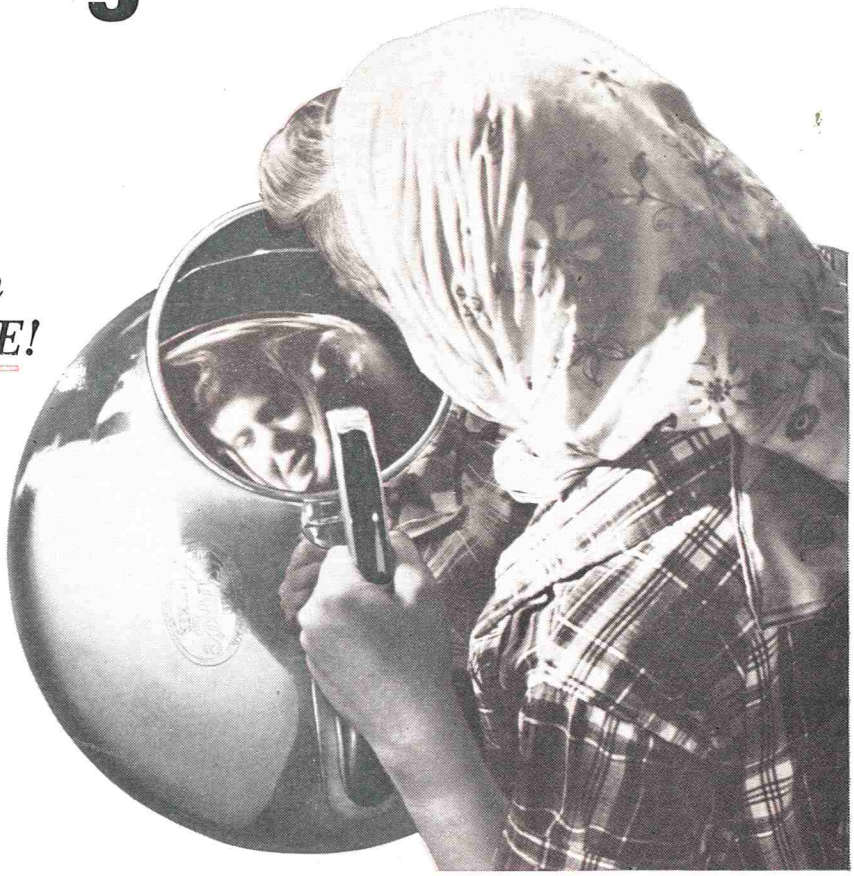

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