Some Sanitary Problems in the Ice Cream Industry*

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The policy established by your Association several years ago of having representatives of the different branches of the dairy industry appear on your program to give their views in regard to sanitary regulations is indeed very constructive. It is this spirit of cooperation on the part of both the officials in charge of dairy sanitation and the industry that has made for the progress that has been accomplished in the dairy industry which has resulted in great benefits to the consumer in offering him a safer healthful product.

As we look back over one, two, and three decades, the ice cream industry has become not only a large but a very modern food industry and this modernization has gone forward hand in hand with the advancement of the science of sanitation. It is the duty of the ice cream industry to produce a wholesome quality product at a reasonable cost. If the price goes too high consumption falls, with the result of loss to the industry and the dairy and fruit farmers. Sanitation costs money and, therefore, it is the duty of your group to see that only sound practical sanitation requirements are promulgated, so that we can go forward in a practical cooperative manner and produce a wholesome ice cream at a reasonable cost.

When I was invited to appear on this program I sent a letter out to about one hundred ice cream manufacturers, both large and small, in practically every state. I believe that you will be interested in the reactions I received from this group. There has been an increasing tendency to promulgate arbitrary regulations in the different states which have interfered with the free flow of cream and other dairy products in interstate commerce and actually built up artificial tariff walls which has been very detrimental to the farming interests, both in dairying and non-dairying sections. As you study this situation, it would seem to be caused by a lack of uniformity in the different state and city health regulations. Because of this lack of uniformity in these regulations, one state will not accept the inspection of the dairy products of another state. It narrows down even to city health departments not accepting the inspection of their own state department, and in some places it is county against county. This naturally increases the cost of manufacturers doing business. From a purely economic standpoint it will hinder the future growth of the industry, for no manufacturing industry can progress unless it has a free and abundant flow of the required raw products and a broad consumer outlet.

Allow me to set forth a few examples of this serious situation in the ice cream industry at the present time, of course, deleting all company identities and locations:

The problem is stated in a nutshell in the following paragraph from a midwestern manufacturer:

"I feel that the greatest problem confronting the health regulations in the various localities throughout the United States is the lack of uniformity in the regulations on the parts of the various health authorities in the different cities. They do not seem to be able to agree on what regulations should be adopted, making it very difficult for ice cream manufacturers to sell ice cream in the different cities. In many instances, they give entirely different views regarding sanitation as far as certain specifications are con-

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cerned. Either one of the two is correct, leaving the ice cream manufacturer in the middle. If some middle ground could be reached that would produce a safe product to be used in the manufacturing of ice cream, it would certainly save the ice cream industry a great deal of money and at the same time enable the manufacturer to produce a product that is safe for the public."

From the South one manufacturer writes:

"Our city ordinances prohibit the shipment of cream into our city unless the source of supply is personally inspected by the Health Inspectors of the city. This inspection is made on a mileage basis and the local department interprets the law to mean that they must not only inspect the creamery producing the cream but each individual dairyman or farmer producing the milk. For example, one of the best sources of supply of cream for us is a creamery in an adjacent state. They are supplied by about two thousand farmers, and in order to meet the requirements of our City Health Department these two thousand farms would have to be inspected once a month by our local inspector, which of course makes the cost on a mileage basis prohibitive. Occasionally they have permitted us to ship in some cream providing we color it or sweeten it at the source of supply, but you can appreciate this is not very satisfactory. Our contention is that they should admit any cream that has been passed by State inspection, and from a source that bears a certificate of the State inspector."

Again from the South:

"At present State A is inspecting our state plants which ship into State A because our state sanitary laws are different. State A's periodical inspections of course add an additional burden on our state manufacturers shipping into State A."

From the West:

"If uniform methods of inspection were developed this should, in itself, eliminate expensive and time-consuming 'duplicate' inspection. For instance, in one small town in which we operate there is a city inspector. The city is so small it represents only a small portion of the county. Therefore, we have to submit to county inspection. The county inspector goes over the same things as the city inspector—each having different ideas on what we should do to comply. Many times their opinions have been contradictory, and as a result the city and county inspector in that particular area do not get along. To add to the inconvenience, the city is near the county line and we do business over the county line, therefore being subjected to inspection by the neighboring county. To this is added the general inspection by the state."

"This entire duplicate inspection problem would be eliminated if uniform methods of inspection were developed and made mandatory by the inspectors, and if the inspectors would accept one another's honesty. This, I believe, would make our operations more consistent. In some places the inspector is very lax, and I think this is not only bad for us but for the entire industry. Uniform inspection would undoubtedly build confidence."

An Eastern manufacturer writes:

"For example, adjacent State A must have its ice cream made out of raw materials from approved sources. They should be agreeable to accepting inspections made by our State inspectors unless they can immediately send one of their own inspectors. I believe that an exchange of inspection service between states would save the states some money and would be just as fruitful in its results. I believe that the states should work towards a uniform inspection blank or service that could be interchangeable. Certainly there seems to be no necessity for a good many trips from one state to another when the inspection is available at the source."

From the Central East comes an example of considerable confusion between city and state inspection:

"As an illustration, at one plant we are shipping cream into State A and we must have the inspection of State A, which is quite thorough. From this same plant we are shipping to City A in our own state, which will not recognize State A inspection and have one of their own. Furthermore, the local department will not accept the inspection of City A or State A—which in my opinion are both more severe than our city inspection requirements."
"We just could not have three inspectors bothering our producers—it was bad enough having two; therefore, we are not permitted to sell anything in our own city from this plant; although in my opinion the products from this plant are of higher quality than the products from 95% of the plants in our city.

"I think that if we were to ship into State B we would be required to have another inspection."

Another Eastern manufacturer points out how the regulations have cut down the source of supply:

"The greatest problem confronting us, and no doubt all other manufacturers selling their ice cream in several states and numerous incorporated municipalities, is that each Health Officer has his own requirements—in some cases conflicting requirements with other Health Officers—which limits, of course, sources of supply to those meeting the requirements of all Health Officers. This naturally sharply cuts down the sources of supply to a very small number, and does not encourage, nor does it maintain a strictly fair competitive basis for prices charged for supplies, because these sources are practically assured of the sale of their output. Because of these conflicting requirements, these Health Officers are unwittingly a party to a 'hold-up.'"

This is also voiced from another Eastern ice cream manufacturer from another state:

"The problem of procuring dairy products during the peak of the season especially disturbs us a good deal when the local or even nearby sources of supplies are inadequate to take care of our demands. Where we are located, in our particular center, most of the milk is being bought for bottling which pays a higher rate than the manufacturing price. This, of course, draws all the milk in that direction so that we can not get what we want. The Sanitation Boards require that you buy all cream approved by our state (State A). This we found to be impossible because there were times when we even tried to procure cream from sources in State B which have been State A approved but not being able to get it. I do not see why we could not have some kind of a reciprocating sanitary law which would enable other states which had the same sanitary laws shipping this cream in and conforming with our State A requirements."

I could continue with such examples and it is obvious that there is considerable confusion arising because of this situation in this industry. These gentlemen are not theorizing, but actually are being harmed from a cost standpoint. One example was brought out where, because of requirements of one city health department which will not accept the farm inspection of an adjacent state department, the ice cream manufacturers are required to pay twenty-two cents over Chicago Extras for cream where ninety miles from this city the same cream was selling in that city for seven cents over Chicago Extras.

It is useless to criticise without giving a constructive thought on how to overcome the problem thus criticised. Your Association could accomplish a great deal if working with similar organizations and the industry the following could be established:

1. Uniform method of farm inspection.
2. Uniform requirements of quality of cream and other dairy products used in ice cream that is shipped in interstate commerce.
3. After a state has adopted these uniform requirements, the state inspection of one state would be accepted by other states; furthermore, that the cities within a state having such uniform requirements accept state inspection for the products used in ice cream in that city.

Another problem confronting the ice cream industry is the matter of inspection of equipment in ice cream plants. There is great lack of uniformity of requirements of the different health departments in the various states covering such requirements. Let me quote from just two of the manufacturers heard from:

(a) "One outstanding problem is obtaining equipment that will be approved by all health officers. One health officer in our section requires that he approve all equipment before it is installed. Some firms now are ordering equipment subject to the approval of 'so and so' health officer. Regard-
less of what some people say, this man is gradually being recognized as doing a needed job and doing it well. Many equipment houses, of course, object to changing equipment to meet his sanitary specifications because only a small portion of their sales are in his territory. If cooperation between the equipment manufacturers and health officers could be gotten under way, real progress could be made toward building equipment that would be satisfactory to all. Perhaps this is too much to ever hope for, but if equipment could be sold with the approval of the 'Milk Sanitarians' which would prevent individual health officers from condemning it, a big load would be lifted from many ice cream manufacturers."

(b) "During the past year or so, particularly in the east, the various health departments have interested themselves more than ever before in the design of manufacturing equipment. This is something which, as you know, I have recommended for many years. In the past the departments have taken the attitude of refusing either to recommend or to prohibit the purchase of a piece of machinery. After the machinery has been installed and inspection is made then the company is told whether or not it satisfies the requirements of the department. I have always recommended that the department pass on machinery before it be offered for sale to the manufacturing companies.

"As stated above, the departments are now interesting themselves in equipment and suddenly, in many cases, have taken the arbitrary stand that a piece of equipment should be thrown out and replaced, even though they may have tacitly approved the old equipment for many years, by their inspectors failing to place any violations on the equipment. An arbitrary stand along these lines is apt to put a terrific burden on the manufacturing companies, causing them to replace a good portion of their entire equipment in one year. This stand I feel to be absolutely inconsistent with their former attitude and somewhat difficult for them to justify, looking back over the record of inspections.

"It certainly behooves the various health departments before a particular type of machine is recommended for the industry that at least two and preferably more companies manufacturing this type of machinery have been approved by said health departments. This procedure is only logical for if a department should recommend only a particular manufacturer's piece of machinery and no other, the industry would be at the mercy of the manufacturer who would be in a position to charge practically any price he saw fit. I believe the Milk Sanitarians cannot help but see the justice of the request that at least two manufacturers' products be approved before the industry is required to purchase the product of one."

I know that the members of the Dairy and Ice Cream Machinery and Supplies Association are willing to cooperate with your organization and I am sure the same will hold true of the Sanitary Control Committee of the International Association of Ice Cream Manufacturers. It would be very helpful if a joint committee of these three organizations, and any other organization deemed advisable by your Association, could set up a program for approval of equipment at its source of manufacture so that this stamp of approval would be acceptable to the different city, county, and state health departments.

Another problem which is prevalent in most health departments and one that the heads of such departments always regret (and in many cases can do nothing about) is the lack of properly trained inspectors to enforce adequately the city or state sanitary laws and regulations. I could give you many examples of this, but let me confine myself to two:

(x) "Several years ago we were able to get the Department to make a ruling that the maximum bacteria count would be 100,000 but this hasn't meant a thing as they do not have inspectors enough to check the bacteria or follow up in case they were to take counts. Frankly, this is a serious health menace and the only way a correction can be made is for an epidemic to take place, and then our Association or public opinion can pick it up and push some regulations through the Committee."

(y) "I believe that the official in charge of dairy inspection should be paid a suffici-
ent salary to enable him to give his entire
time to this business and that if it is found
that he is dabbling in "side issues" he
should be replaced. Likewise I think that
inspectors should be given a course of train­
ing and study by the health department be­
afore they are hired and that there should be
an end to broken down ward heelers receiv­
ing these appointments. These deputy in­
spectors should also receive reasonable liv­
ing wages."

This problem, as I previously stated, is
a budgetary problem in the different state
and city departments. However, I believe
we all agree that it is better to have simple
sanitary regulations adequately enforced
than a complicated set of sanitary regu­
lations without enforcement.

As the ice cream industry is set up at
the present time, there are three classes
of manufacturers—the wholesale manu­
ufacturer who sells to ice cream retailers,
the manufacturing retailer who manu­
factures and has his own stores, and the
retailer who manufactures in his shop
and sells over the counter. You as sani­
tary inspectors are charged with the equal
enforcement of the regulations governing
the product of all three types of plants.
From the survey I just made of the in­
dustry, I am led to believe that the larger
plants are the ones that receive the inspec­
tion and that, due in many cases to a
lack of an adequate inspection force, all
the plants are not covered. Let me quote
from just three sections of the country:

"We have observed for quite a number of
years, the tendency of inspectors to slide
over infringement of regulations on the part
of the smaller plants."

"With reference to sanitation, of course
it is the old story of inspectors who
thoroughly inspect a wholesale plant but
do not pay quite such close attention to the
smaller retail plants."

"The inequality of laws or enforcement of
sanitary requirements as regards the opera­
tion of what might be termed wholesale
manufacturers and retail manufacturers."

Immediately you are thinking that this
is the old story of the big manufacturer
against the little fellow but I can assure
you that of the above quotations, two of
them come from small wholesale plants
which are below the average in size and
the third comes from a state where there
are no million gallon plants.

You are charged with the duty of pro­
tecting the public against any epidemic
or sickness caused through your citizens
eating unwholesome ice cream. If such
an epidemic breaks out it will make no
difference whether the ice cream is made
by a wholesaler, retailing manufacturer,
or retailer. It just isn't cricket not to do
a thorough job, and from the economic
standpoint I quote:

"Enforcement of regulations only on a
minority of manufacturers is equivalent to
the government subsidy for the majority,
thereby making it very difficult for the min­
ority to conduct a profitable business."

As I study the different food industries
the manufacturers fall into two classes—
those who are behind the food officials in
their laws and regulations, and others
who are not cooperating but endeavoring
through legal technicality and otherwise
to break down the system of control for
their own profit. In the dairy industry,
and I am not confining this to the ice
cream branch of the industry, we have
seen such elements endeavoring to break
down your regulations, standards, and
inspection, even to the extent of fighting
you through the courts. This is unfor­
tunate as it is against public interest.

It was in 1910 that I first entered the
creameries and ice cream plants of the
middlewest. Great progress has been
made in these twenty-seven years, both
in the science of manufacture and im­
provement in equipment. However, many
of the same fundamental principles of
sanitation hold as good today as nearly
three decades ago. No substitute has
been found for live steam for steriliza­
tion in every plant manufacturing any
dairy product nor for plenty of good
washing powders and hot water for
cleansing purposes. There is not now
and never will be any short cut to clean­
The ice cream industry has gone forward due to increased consumer acceptance. Formerly considered a confection with questionable standing, manufactured ice cream today is considered a wholesome food. It has public acceptance not only because of the efforts of the manufacturers to produce a wholesome product, but also due to the advances made in sanitary science by the members of your organization.

You are doing a splendid job and the industry is fortunate that it has men of your standing, sincerity, and talent to guide it in the manufacture of a wholesome product.

Mr. Putnam
Vice-President of Creamery Package Manufacturing Co.

Following the annual meeting on February 15, Mr. G. E. Wallis, president of the Creamery Package Manufacturing Co., announced the election of Mr. George W. Putnam as a vice-president.

Mr. Putnam, a graduate of the University of Minnesota Engineering School, was a state sanitary engineer, and then joined the milk control staff of the Chicago Health Department under Dr. Bundesen. During this incumbency, he discovered many of the mechanical defects of pasteurization machinery and worked out their correction. He joined the Creamery Package Manufacturing Co. as a research engineer in 1928, and after several years was made Director of Research. His new duties will be those of vice-president in charge of the company's extensive research and development program.

Mr. Putnam has been an interested and active member of the International Association of Milk Sanitarians for many years and has made many valuable contributions to its programs by papers and committee work. He is an Associate Editor of this Journal.


This study is of interest in view of the fact that it tends to confirm in part, at least, the Rahn foam substance theory of butter churning rather than the Fischer-Hooker phase reversal theory. The first step in churning is assumed to lead to the production of a foam containing a high concentration of fat globules followed by the second step wherein a large proportion of the milk serum drains from the foam. Whereas Rahn assumes that the next step is the irreversible coagulation of the "foam substance" resulting in the formation of a rigid structure containing globules of butterfat still stabilized by their original protein films, the authors are of the opinion that as a result of the mechanical action of the churn, the stabilizing films of some of the fat globules are broken, liberating the oil from the least stable globules, but leaving the more stable globules essentially unchanged. In other words, the free oil produced by the rupture of the least stable globules forms a cementing material for the stable globules in its immediate vicinity. In support of this view, the authors have been able to produce butter without churning by decreasing the concentration of serum solids and by raising the temperature which was achieved by proper dilution and warming of the cream followed by subsequent centrifuging. It was further demonstrated that the relative electrical potential on the butterfat globules and the viscosity of the interglobular solutions have little, if any effect on churning time.

M. E. PARKER

Editor's Note: In support of the author's theory of butter churning, we have the evidence of King [Kolloid, Z. 52, 319 (1930)] that the crystallization of fatty constituents, with high melting point, may be a factor in producing a stable globule, plus the additional evidence of Dr. Wm. Clayton et al. (Nature, Apr. 24, 1937) on the physical chemistry of butter churning as per Rahn's theory.