PRINCIPLES GOVERNING SANITARY MILK REGULATIONS' RECOMMENDED BY THE ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS

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I am very pleased to speak to you today on certain principles which the Association of State and Territorial Health Officers have recommended with respect to the sanitary control of milk-moving, both intrastate and interstate. The Association of State and Territorial Health Officers is an organization of the Commissioners of Health of the fifty states. I am Chairman of the Environmental Sanitation Committee of the Association, and also Chairman of the Special Subcommittee on Milk Sanitation of the Committee on Environmental Sanitation. This special Subcommittee was established in 1957 to (a) study problems relating to the movement of milk of high sanitary quality in interstate commerce; (b) review the actions being taken by some official agencies to impede or restrict both the intrastate and interstate movement of milk of high sanitary quality through the use of health regulations as economic trade barriers; and (c) study the various bills introduced in the Congress for the sanitary control of milk shipped interstate to determine the need, if any, for Federal legislation on this subject.

The Association of State and Territorial Health Officers during the entire period of its existence has been interested in milk. This interest stems from the nutritional importance of milk to the proper growth and development of our children and to the maintenance of health in all age groups, and from the role that milk has played in the spread of disease. As has been pointed out by many health authorities, it is certainly paradoxical that a food which is so important to the maintenance of good health should have such a great potential for the spread of disease.

Today, many of us are prone to forget the milkborne disease outbreaks, and the high infant mortality resulting from the consumption of contaminated milk, which constituted a major problem for public health authorities during the first quarter of this century. In the literature for the period 1900 to 1925 there are recorded 891 milkborne disease outbreaks involving 42,327 cases and 65 deaths. Since 1925, the U. S. Public Health Service has recorded an additional 1,036 milkborne disease outbreaks involving 40,973 cases and 65 deaths.

There is no question that the incidence of milkborne disease in the United States has been sharply reduced in recent years. This is an achievement to which public health workers can point with pride since it was brought about by the unremitting efforts of health agencies, at times often in the face of determined resistance by certain segments of the dairy industry and by those agencies which supported their interest. However, the occasional milkborne disease outbreaks which still occur—such as the 1955 para-typhoid fever outbreak in Lancaster, Pennsylvania—serve to remind us that it is a measure of control through constant vigilance rather than elimination of disease which has been achieved. If this were not so, then there would be no need whatsoever for the maintenance of expensive state and local programs for the sanitary control of milk which are designed solely to protect the public against disease. Such problems, and the sanitary regulations governing their conduct, were not designed as economic controls. I wish to make this distinction since it relates directly to one of the principles recommended by the Association of State and Territorial Health Officers which I will discuss later.

I am sure you are all aware that one of the primary responsibilities of public health agencies—local, state and federal—is the prevention of disease and the protection of the public against hazardous and harmful substances. Whenever outbreaks of disease occur, public health agencies become responsible for locating the failures of preventive measures, and for halting the spread and recurrence of such outbreaks. Because the public health agency has the primary legal and moral responsibility for preventing disease, the State and Territorial Health Officers, more than fifty years ago, initiated preventive measures to deal with the problems of milkborne disease outbreaks and of high infant mortality resulting from the consumption of contaminated milk. After thorough review of the evidence presented in such classics as Rossenau's studies of milk and its relation to disease, the State and Territorial Health Officers took the firm position that effective control of milkborne disease requires the application by health departments of sanitation measures throughout the production, handling, pasteurization and distribution of milk. This position has been borne out by the intimate

experiences of health officers with milkborne disease outbreaks which occurred in communities with inadequate or poorly conducted programs, or with no milk sanitation program at all.

During the past thirty-five years the State and Territorial Health Officers have given active attention to various problems related to the sanitary control of milk. They stimulated the establishment of effective milk sanitation programs at state and local levels throughout the nation. They urged the U.S. Public Health Service to develop a model milk ordinance and code for state and local adoption and, in the interest of uniformity, the Association recommended that all states and municipalities throughout the United States adopt this model standard. Also, in cognizance of the expensive and wasteful practice of duplicate inspections of the same milk supply, the Association has strongly recommended the consummation of reciprocal inspection agreements between cities and between states.

We all know that as our population has expanded, it has been necessary for many communities to import milk from distant sources to meet consumer demand. This problem first became critical from the public health point of view during World War II when large volumes of milk of poor or questionable sanitary quality were shipped interstate. In 1944, the Association recommended to the Surgeon General of the U.S. Public Health Service that he develop with the states a voluntary certification system for milk shipped interstate, with certification to be based on compliance with the sanitary provisions of the U.S. Public Health Service Model Milk Ordinance and Code. Because the problem did not diminish following World War II, this request was repeated and led the Surgeon General in 1950 to call the First National Conference on Interstate Milk Shipments. As a result of this National Conference, the voluntary State-USPHS Program for certification of interstate milk shippers was established in 1951. This cooperative program, which provides reliable information on the sanitary quality of milk offered for interstate shipment, has had the full backing of our Association.

As the volume of milk of high sanitary quality moving in both intrastate and interstate commerce increased, it became apparent that a number of jurisdictions were using their health regulations in such a way as to impede or obstruct the movement of such milk. In many instances the requirement or practice used to impede interstate movement is of little or no public health significance. Because of this practice a number of bills were introduced in the Congress during the period 1954-1958 to establish Federal control over milk shipped interstate. Certain of these bills proposed a degree of federal sanitary control so far reaching as to pre-empt the rights of states and municipalities to exercise sanitary control over their own intrastate supplies. Some of these bills would have also removed the sanitary control of milk from health agencies. The Association of State and Territorial Health Officers expressed its opposition to these early bills, and on Bill H.R. 7794, which was titled the "National Milk Sanitation Act" (1957), the Association forwarded a letter of opposition to the Congressional Committee hearing on this Bill.

The Association's opposition to H.R. 7794 was based primarily on those sections of the Bill which would provide for direct Federal control and supervision, and the extension of Federal sanitary control to all milk supplies "Affecting Interstate Commerce." It was felt by the Association that direct Federal supervision would unnecessarily superimpose another layer of control on existing state and local systems, and that the "Affects Interstate Commerce" provisions would result in the Federal Government's pre-empting the right of States and their political subdivisions to control their intrastate supplies. At the same time, the Association recognized the authority of the Congress to regulate all aspects of interstate commerce and agreed with the authors of the bills that health regulations in some instances were being deliberately used as trade barriers. Thus, the Association found itself in a position of being in opposition to a bill whose objectives it favored in general. Therefore, it was decided by the Association that it should make a thorough study of the need for Federal legislation in the field of sanitary control of milk shipped interstate. It was felt that such a study would enable the Association to advise the Congress and the Secretary of Health, Education, and Welfare, as to an appropriate type of legislation if it was determined that Federal legislation was required. In other words, it was felt that the Association should take a positive rather than a negative position on a matter of such public health importance.

The Special Subcommittee on Milk Sanitation Legislation, to which I referred in my opening remarks, was established in 1958 to study the matter of Federal milk sanitation and related problems. In this study thorough consideration was given to the sanitary control of milk, including modern day means of safely transporting milk of high sanitary quality. The question of duplication of inspection services, and the practice of using health regulations as economic barriers to the free movement of milk both in intrastate and interstate commerce, were also thoroughly considered. In addition, the study included an evaluation of the progress achieved through
the voluntary State-USPHS Program for certification of interstate milk shippers, and an evaluation of the merits of the various bills previously introduced in the Congress for the Federal sanitary regulation of fluid milk and fluid milk products shipped interstate.

On the question of the use of health regulations as economic trade barriers, it was found that there was considerable evidence that milk sanitation regulations of States and municipalities are frequently used to obstruct the movement of high quality safe milk both in intrastate and interstate commerce, or to limit acceptance of such milk to periods of seasonal shortage. Among the techniques used for this purpose, which appear to have little or no public health significance, were the following: (a) the charging of high inspection fees which distant shippers feel they do not wish to pay considering the volume of milk likely to be sold; (b) inclusion of certain detailed specifications in regulations which have little or no effect on the sanitary quality of milk, and which are not required by the producing State or outside municipality; (c) refusal to accept milk from an out-of-State source, or even an intrastate source, because the producing jurisdiction did not have an identical bacterial standard in its regulations, regardless of whether or not the milk itself met the bacterial standards required by the receiving jurisdiction; (d) refusal, or unwillingness, to inspect dairy farms or milk plants located beyond an arbitrarily fixed distance; and (e) more stringent application of sanitary standards to "outside" sources than are enforced within the receiving jurisdiction.

The Association recognized that States and their political subdivisions have the right to exclude milk of questionable quality, but unanimously agreed on the basic principle that health regulations should not be used to restrict either the intrastate or interstate movement of milk of high sanitary quality. It was strongly felt that milk sanitation regulations were for the express purpose of protecting the public health, and should not be used as a means of regulating the economic aspects of milk marketing nor should they be subject to economic pressures. It was further felt that health agencies at all levels of government have a responsibility to avoid taking actions which cannot be sustained on public health grounds, and which have an adverse economic effect on the dairy industry as a whole.

The changes which have taken place in the dairy industry during the past twenty-five years, and which have resulted in greatly increased volumes of safe, high quality milk being offered for sale in interstate commerce, were reviewed in order to determine whether or not the present system of State and local supervision could be utilized for the control of interstate milk shipments without creating an undue burden on interstate commerce. It was the consensus that the problems of the industry dairy can no longer be considered solely on a local milkshed basis, that the increased interstate movement of milk has complicated its control by State and local agencies, and that uniform sanitary standards and practices are necessary to insure the quality of milk shipped interstate and to eliminate the unjustified use of health regulations as trade barriers. It was also the consensus that developments in sanitation, farm refrigeration, processing techniques, and refrigerated transport now make possible the safe movement of high quality milk to any point in the nation. While the voluntary State-USPHS Program for the certification of interstate milk shippers, which as I mentioned was established at the request of our Association, has greatly facilitated interstate milk shipments, it has not been able to break down deliberate barriers toward which most of the Federal legislative proposals have been directed. For these reasons, it was agreed by our Association that some form of Federal legislation was needed.

The Association considered specific forms of Federal legislation that might be appropriate and which would overcome its objections to previous bills. An approach was desired which would utilize—not destroy—the existing State and municipal systems of sanitary control which have proven so effective in reducing the incidence of milkborne disease. Consideration was first given to an approach which would simply place a legislative base under the present voluntary State-USPHS milk certification program. It was recognized, however, that such an approach would not solve in its entirety the trade barrier problem, and thus would not be acceptable to the proponents of proposed Federal legislation. However, in view of the fact that the voluntary certification program, which utilizes State and local inspection services, has proven effective and practical in operation, the Association believed that the essential elements of this program should be incorporated into any Federal milk sanitation legislation enacted by the Congress for sanitary control of interstate milk supplies. It was the consensus that if these elements were coupled with a provision prohibiting a State or municipality from excluding milk from out-of-State sources, which complied with basic public health criteria for certification, such an approach would provide an effective and practical means of assuring high quality products for consumers in milk-importing areas and eliminating the use of health regulations as trade barriers, without abridging the rights of state and local agencies to control the sanitary quality of their intrastate sup-
Principles Governing Sanitary Milk Regulations

RECOMMENDATIONS AND PRINCIPLES

That the Association of State and Territorial Health Officers recommend to the Congress the adoption of Federal legislation pertaining to interstate milk shipments, incorporating the following principles:

A. Declare as Public Policy that the sanitary control of fluid milk and fluid milk products is necessary to protect the public health, and that the exercise of such sanitary control is primarily the responsibility of State and Local Health Departments, except that no State or Local Government has the right to obstruct the free movement in interstate commerce of fluid milk products of high sanitary quality by the use of unnecessary sanitary requirements or other health regulations;

B. Establish uniform sanitation standards and practices consistent with those contained in the unabridged form (Part III and Part IV) of the Milk Ordinance and Code—1953 Recommendations of the Public Health Service, for fluid milk and fluid milk products shipped in interstate commerce;

C. Authorize the Surgeon General of the Public Health Service to conduct, in cooperation with State milk sanitation authorities, a program for certification of interstate milk shippers, in which certification would be based on compliance ratings made by State Milk Sanitation Rating Officials in accordance with a rating method, criteria and procedures to be promulgated by the Surgeon General of the Public Health Service;

D. Authorize the Surgeon General to certify only those interstate sources of fluid milk and fluid milk products which are awarded a compliance rating of 90% or more by the State milk sanitation authority;

E. Authorize the Surgeon General:

(1) To make such ratings, inspections, laboratory examinations, studies and investigations as he may deem necessary to satisfy himself as to the validity of the sanitation compliance ratings submitted by the State milk sanitation authorities for certification;

(2) To provide for revocation or suspension of certifications for cause, and

(3) To disseminate information on certified sources;

F. Prohibit the use of State and local milk regulations as trade barriers to the interstate shipment of fluid milk and fluid milk products of high sanitary quality by providing that no State, Municipal, or County authority or official may exclude, on public health grounds, or because of varying sanitation requirements, any fluid milk and fluid milk products shipped in interstate commerce from sources certified by the Surgeon General as having a sanitation compliance rating of 90% or more, if, upon receipt, such fluid milk and fluid milk products comply with the bacterial standards, temperature requirements, composition standards, and other criteria specified in the prescribed sanitation standards and practices;

G. Authorize the Surgeon General to amend the prescribed sanitation standards and practices if, after consultation with State and Territorial Health Authorities, other State milk control agencies and the dairy industry, he finds amendments are necessary to either protect the public health or to eliminate obsolescent sanitation standards and practices;

H. Authorize the Surgeon General:

(1) To conduct research and investigations, and to support and aid in the conduct by State agencies, other public or private organizations and institutions of research and investigations, concerned with the sanitary quality of fluid milk and fluid milk products, and

(2) To make the results of such research studies and investigations available to State and Local agencies, public or private organizations and institutions, and the milk industry;

I. Authorize the Surgeon General to:

(1) Train State and Local personnel in milk sanitation methods and procedures,

(2) Provide technical assistance to State and Local milk sanitation authorities on specific problems,

(3) Conduct field studies and demonstrations, and

(4) Cooperate with State and Local Authorities, public and private institutions, and industry, in the development of improved programs for control of the sanitary quality of milk; and

J. Exclude from provisions of the legislation, manufactured dairy products such as butter, condensed milk and evaporated milk unless used in the preparation of fluid milk or fluid milk products, sterilized milk or milk products not requiring refrigeration, all types of cheese other than cottage cheese, and nonfat dry milk, dry whole milk and part fat dry milk un-

less used in the preparation of fluid milk or fluid milk products; and further

K. Authorize necessary appropriations for the Surgeon General to carry out his responsibilities under the legislation.

The official statement of the Association of State and Territorial Health Officers containing these recommendations and principles was submitted to the appropriate committees of the Congress, to individual members of the Congress who had previously introduced bills for sanitary control of interstate milk, to the Secretary of Health, Education and Welfare, and to other interested parties. As a result H.R. 3840, S. 988 and nineteen identical bills, all of which were titled "National Milk Sanitation Act," were introduced in the first session of the 86th Congress (1959). These bills embodied all of the principles and recommendations contained in our Association's official report on the need and principles of Federal milk sanitation legislation. I should like to emphasize that although these new bills carried the same title as those previously opposed by the Association i.e., "National Milk Sanitation Act," they contained a completely different approach to deal with the problem.

In 1960 hearings were held on H.R. 3840 and S. 988 by the appropriate committees of the Congress. Our Association testified at both hearings in favor of this form of Federal legislation. Neither of these bills was voted upon by the 86th Congress prior to the end of the second session and thus these bills "died." The Association, however, is pleased to note that similar bills, embodying its recommendations and principles, have already been introduced in this new session of the Congress. (H.R. 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 and 60, H.R. 1825 and S. 212). When hearings are held on these bills our Association proposes to testify in favor of their enactment.

I appreciate this opportunity to present to you the views of our Association on this important matter.

THE MEANING AND SIGNIFICANCE OF THE FREEZING POINT OF MILK

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The freezing point of milk is an indirect measure of the concentration of water soluble substances in the aqueous phase. It is independent of the concentration of water insoluble substances. By diluting milk with water the concentration of water soluble substances is reduced and consequently the freezing point is changed. The freezing point of water is higher than milk and therefore, the addition of water to milk raises the freezing point. The magnitude of the rise is approximately proportional to the amount of added water. This general relationship has been known for over sixty years, yet there is still some disagreement about the interpretation of freezing point data.

The disagreement centers around the question - What is the freezing point of undiluted milk? This question raises another question - Does all undiluted milk have the same freezing point? Obviously, we can not answer either of these questions unless we have an accurate method of determining the freezing point.

Before 1921, a number of cryoscopic methods and techniques were used. Since there is very little information concerning the accuracy of these earlier methods they will not be included in this discussion. In 1921 Hortvet (7) described a new cryoscopic method which he had developed because he felt that the methods used prior to that date lacked standardization. Hortvet pointed out that freezing point determinations are empirical, i.e., the results are dependent on the technique used. For this reason he gave a very detailed description of his apparatus and procedure. On the basis of his ability to obtain reproducible results in his own laboratory, Hortvet believed that his method was sufficiently accurate.

Collaborative studies conducted by Robertson in 1956 (10) and Shipe in 1958 (12) and 1960 (13) indicated that in most cases analysts could reproduce their own observations. However, there were significant differences between the freezing points reported by the different laboratories for identical milk samples. These observations emphasize the empirical nature of the Hortvet method. By using a consistent procedure, an analyst may be able to reproduce his own results, but this does not ensure that he will get the same results as other analysts. To obtain comparable results, all analysts must use comparable procedures. The lack of agreement between analysts.