

must be met if the foods to which they relate are to be safe and wholesome when processing has been completed. They have generally been promulgated to cope with an identified food-borne disease problem, for example typhoid fever in milk and shellfish, staphylococcal food poisoning in food service establishments and botulism from improperly processed fish. Their widespread adoption now constitutes an invisible framework within the structure of public health protection that is used by enforcement agencies and industry to prevent food-borne illness in the United States. Recent outbreaks of salmonellosis from eggs have prompted the service to develop a model ordinance and code, designed to eliminate this source of human illness, is currently nearing completion and has already in its draft form been used by the United States Department of Agriculture and State and local agencies in the development and implementation of their respective laws and regulations and control programs.

Since the close of World War II, the Public Health Service has maintained a modest intramural research effort in Cincinnati. Formerly under the auspices of the Robert Taft Sanitary Engineering Center, it was transferred in 1967 to the National Center for Urban and Industrial Health.

Substantial contributions have been made by this group to the detection, identification, and reduction of such potential health hazards as radionuclides in milk, pesticide residues in drinking water and foods, and several types of microbial food poisoning including staphylococcal food poisoning, botulism, and salmonellosis. Extensive research on time-temperature relationships of bacteria and their toxins, as well as viruses, has resulted in improved refrigeration, pasteurization, and other heat treatments of foods. Pilot plant studies have revealed sanitary deficiencies in commercial equipment and processes that have been overcome through experimental engineering.

In recent years, requests from other Federal agencies for research by this group have resulted in the negotiation of direct-reimbursement or interagency agreements within the National Aeronautics and Space Administration, Department of the Army, National Cancer Institute, and National Center for Radiological Health.

A limited number of research contracts have also been negotiated to obtain the help of selected State, municipal, and private laboratories. These studies have mainly related to the detection and prevention of food contamination with *Clostridium botulinum*, because funds were allocated specifically for this purpose. A much broader contract program would be desirable to foster the application of laboratory and pilot plant studies to actual field problems.

One of the Service's major contributions in the prevention of food-borne illness has been its technical and consultative assistance program. This assistance has taken the form of, (1) interpretations of Service model ordinance and code provisions to assure uniform application in adopting jurisdictions, (2) epidemiological investigations of suspected outbreaks to determine the causative agents and modes of transmission so that preventive measures may be developed and applied, (3) evaluation of State and local programs, including laboratory programs with subsequent recommendations for changes in program direction or emphasis, (4) field and laboratory investigation of special food protection problems which exceed the resources of the States or communities to resolve, (5) the standardization and certification of State survey officers whose job it is to evaluate State and local programs to assure coordination of program efforts within their respective States, (6) participation with governmental agencies health related organizations and the food industries in the conduct of special studies, equipment standards development and coordination activities designed to assure a uniform nationwide approach to problems of mutual concern, (7) surveillance over market foods to identify potentially hazardous processing, serving, and marketing practices so that preventive measures may be instituted before illnesses occur, and (8) training of health agency and industry personnel in the principles of food protection.

Some examples of the activities undertaken include studies and field investigations relating to the control of salmonellae in dry milk, eggs, poultry, meats and fish, provision of technical assistance to the Association of Food and Drug Officials of the United States in development of a frozen food code, cooperative development with the Bureau of Commercial Fisheries, Department of Interior, of a sanitary standard for smoked fish processing, development in cooperation with the U.S. Department of Agriculture and the Food and Drug Administration, of criteria for the pasteurization of eggs and egg products, and the establishment by the National Communicable Disease Center of a salmonellae surveillance system.