



PAN AMERICAN HEALTH ORGANIZATION
WORLD HEALTH ORGANIZATION



33rd SESSION OF THE SUBCOMMITTEE ON PLANNING AND PROGRAMMING OF THE EXECUTIVE COMMITTEE

Washington, D.C., 2-3 December 1999

Provisional Agenda Item 5

SPP33/5 (Eng.)
19 October 1999
ORIGINAL: SPANISH

FOOD PROTECTION

During the past 10 years serious outbreaks of foodborne disease (FBD) have occurred in the Americas that have alerted health authorities in the countries to the need for measures to eliminate these risks to the population. The creation of the World Trade Organization (WTO) has led the countries to review their policies, standards, and strategies on food protection in order to guarantee that the food consumed by the population meets the proper sanitary standards and to facilitate the international food trade.

This document analyzes food protection in the countries of the Region of the Americas and country activities in this area carried out with technical cooperation from the Pan American Health Organization (PAHO), pursuant to the mandates of its governing and advisory bodies.

The Subcommittee on Planning and Programming is requested to analyze the PAHO response to requests by the countries for cooperation and to issue recommendations that will be used to orient technical cooperation in food protection in a manner consistent with country priorities.

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1. Introduction

Outbreaks of foodborne disease (FBD) in the past decade have given a new dimension to food protection programs in the countries.

The frequency of these outbreaks and their impact both on the health of the population and the international food trade have led the countries to review their food protection policies and the measures adopted for the prevention and control of FBD.

In order to strengthen food protection, in 1986 PAHO/WHO launched the Regional Program for Technical Cooperation in Food Protection, which was consolidated with the creation of the Pan American Institute for Food Protection and Zoonoses (INPPAZ) in 1991 to implement the regional program.

The 29th Session of the Subcommittee on Planning and Programming reviewed and analyzed INPPAZ activities up to 1996.

This document presents the activities of the Regional Program during the period 1997-1999 for the consideration of the Subcommittee, as well as those carried out to meet the demands of the countries with respect to food protection.

2. Food Protection: Current Situation

2.1 *Epidemiological Aspects*

The prevention of FBD represents a challenge today for the Region, given the incidence of these diseases. WHO estimates the annual incidence of diarrhea in children under 5 at 1,500 million episodes and 3 million deaths, a significant percentage of which can be linked to the consumption of contaminated food, although the figure varies from country to country.

According to the data forwarded by the national surveillance systems of the countries to the Regional System for Epidemiological Surveillance of Foodborne Diseases, coordinated by PAHO/INPPAZ, a total of 3,198 outbreaks of foodborne disease occurred during the period 1995-1998, with 102,842 cases and 191 deaths.

Although the system is in its initial phase and there is still a high percentage of underreporting, the figures reveal the magnitude of the FBD problem in the Latin American and Caribbean countries.

Some FBD, while not new, are considered emerging diseases because they are occurring more frequently and have caused outbreaks in several countries that have revealed the shortcomings of the prevention and control programs.

The outbreaks of FBD caused by *Escherichia coli* 0157:H7, *Listeria monocytogenes*, *Campylobacter jejuni*, *Cyclospora cayetanensis*, and *Vibrio cholerae* illustrate this situation.

The investigation of several outbreaks of disease in recent years in which *E. coli* 0157:H7 and *Listeria monocytogenes* were implicated has demonstrated their close association with food. These outbreaks have been fostered by the increase in the number of immunocompromised people, the expansion of the food industry, and changes in eating habits.

In the United States, the Centers for Disease Control and Prevention (CDC) compiled and analyzed the data from many surveillance systems in 1999 and estimated that there are 76 million cases of FBD annually in that country, with 325,000 hospital admissions and 5,020 deaths. The pathogens *Salmonella*, *Listeria*, and *Toxoplasma* are responsible for 1,500 deaths each year.

In the Caribbean countries, outbreaks are frequently associated with the consumption of seafood contaminated by marine toxins or other contaminants such as *Vibrio parahaemolyticus*.

2.2 Social and Political Aspects

Economic globalization and the subregional integration initiatives have led to a massive worldwide and subregional food trade. The creation of the World Trade Organization (WTO) in the final negotiations of the Uruguay Round, and its agreements on the Application of Sanitary and Phytosanitary Measures and on Technical Barriers to Trade (TBT) have established a new world order for the food trade.

The situation with respect to food protection has given rise to initiatives such as the "Food Safety Initiative: From Farm to Table," launched by the President of the United States, and the creation of the Canadian Food Inspection Agency, which integrates all sectors linked with animal and plant health and food into a single agency.

2.3 Economic Aspects

According to the figures from the Food and Agriculture Organization of the United Nations (FAO) the annual world food trade is estimated at US\$ 380,000 million.

The United States imports \$12,000 million in food products from Latin America; Chilean fruit exports to the world amount to \$1,300 million; and Mexico's agricultural exports are as high as \$ 4,000 million.

According to World Bank figures, Brazil and Argentina figure among the 15 countries of the world with the highest volume of exports, with Australia, the United States, and New Zealand the largest exporters and Japan, the United States, and the countries of the European Community the principal importers.

In 1998, several million pounds of meat products had to be recalled from the U.S. market due contamination with *E. coli O157:H7*.

The cholera epidemic represented more than \$700 million in losses for Peru, due to the interruption in exports of fish and other seafood and the drop in the consumption of these products. Moreover, \$70 million were lost due to the shutdown of food processing plants and the fall-off in tourism.

The frequent outbreaks of FBD in hotel establishments in the Caribbean have led to significant economic losses in the sector as a result of decreased tourist flows.

2.4 *Technical Aspects*

FBD outbreaks in the United States and several European countries, particularly outbreaks caused by *E. coli O157:H7*, have led to the review and modernization of food protection programs, especially the inspection and control systems, with the conclusion that an efficient system must involve the entire chain of production, from the farm to the consumer.

As a result all the attention has focused on the Hazard Analysis Critical Control Points methodology, known by the acronym HACCP. This is a preventive method that covers all steps in a production process, identifies the dangers and factors that lead to food contamination, and prescribes preventive measures to control them.

Since HACCP is a self-monitoring system, it has also facilitated a transition in the State's role from that of the entity responsible for control to the entity in charge of overseeing the industry's programs for self-monitoring.

The standards and codes of sanitary practice developed by the Joint FAO/WHO Codex Alimentarius Commission constitute a technical foundation that is extremely important for the quality and safety of food for both domestic consumption and international trade. For this reason the WTO has adopted the *Codex* standards as the reference for the international food trade.

3. The PAHO Response: Regional Program for Technical Cooperation in Food Protection

Based on the initial mandate of the IV Inter-American Meeting, at the Ministerial Level, on Animal Health (IV RIMSA) and the 31st Directing Council of PAHO, held in 1985, and supported by the recommendations of the Inter-American Conference on Food Protection, PAHO launched the Regional Program for Technical Cooperation in Food Protection in 1986. The objectives of the program, updated at the recommendation of the 29th Session of the Subcommittee on Planning and Programming are:

- to achieve a food supply that is safe, healthy, nourishing, pleasing, and economical;
- to reduce human morbidity and mortality from FBD.

The plan of action of the Regional Program has five components, namely: *organization of national food protection programs; strengthening of analytical capability; strengthening of inspection services; surveillance of foodborne diseases, and promotion of food protection through community participation.*

The results obtained in recent years can be summarized as follows:

3.1 *Organization of National Programs*

PAHO has promoted the concept of integrated food protection programs in order to standardize the technical criteria for such programs and promote a transparent vision of sectoral policy in the field. This cooperation effort has led almost 60% of the countries to develop integrated program structures through the organization of national or local commissions. The countries have promoted and supported coordination between the public and private sector to create integrated programs. Argentina, Guatemala, Panama, Paraguay, and Uruguay already have legislation in place that establishes programs involving intersectoral participation.

An information system on food legislation was developed in collaboration with BIREME and delivered to all the countries to facilitate the updating of food regulations and contribute to their efforts to harmonize standards and promote the food trade. The

legislation of Argentina and part of that of Brazil, Colombia, Paraguay, Peru, and Uruguay are available, as well as the legislation of MERCOSUR and JUNAC. Argentina has already entered its national legislation into the database and is implementing the system at the provincial level. The regional information is available on the INPPAZ/PAHO website (www.inppaz.org.ar), and cooperation is under way with Mexico, Guatemala, and Uruguay for the incorporation of their legislation.

In order to strengthen the *Codex* committees in the countries, meetings and workshops have been held for all the countries on how to organize the committees and on topics of interest in food protection, in collaboration with the FAO. In 1999 a workshop was held in Bogota, Colombia, for the countries of the Andean Community.

PAHO is collaborating with the Chair of the Codex Alimentarius Commission to promote the strengthening of national committees in the countries of the Region. In this regard, a workshop for the Caribbean countries was held in San Juan, Puerto Rico, and other subregional workshops are programmed for the year 2000 to support this initiative.

3.2 *Strengthening of Analytical Capacity*

Cooperation in this component is geared to the organization of contaminant control programs through laboratory networks with quality assurance systems that complement epidemiological studies on contamination risks.

In 1997 the Inter-American Network of Food Analysis Laboratories (INFAL) was formed. Twenty-five countries attended a meeting at PAHO Headquarters in Washington to strengthen epidemiological surveillance of FBD, facilitate the harmonization of analytical methodologies, and promote the concepts of equivalence and transparency, as well as information exchange. An Executive Committee was established for INFAL, with PAHO/INPPAZ and FAO remaining as the Secretariat *ex officio*. The plan of action includes activities to procure financing, a survey for the identification and evaluation of all laboratories participating in the Network, promotion of the organization of national laboratory networks, and the training of staff members.

A project to standardize the techniques for isolating and identifying certain emerging foodborne pathogens is being implemented in the laboratories of the Region, with scientific and technical support from the WHO Collaborating Centers. The project, which places special emphasis on microbial contaminants such as *E. coli O157:H7* and *Listeria monocytogenes*, has offered courses for personnel in all the Latin American countries.

The training activities to support this initiative include instruction in rapid microbiology techniques for 80 laboratory workers from 24 countries in 1999, with the collaboration of the University of Kansas.

With regard to chemical contaminants, 1996 marked the beginning of multi-laboratory analysis of chlorinated pesticide residues, an effort that involved 19 national laboratories in 8 countries. This, combined with the development of a databank of pesticide reference standards, is satisfying the countries' needs with regard to laboratory quality assurance programs and also supplies critical reference standards and reagents unavailable in commercial catalogs. Thirty-six of these reference standards, which include families of chlorinated and phosphorated pesticides, have been distributed.

The countries are receiving direct support in developing programs for the detection of chemical contaminants. In 1996 a cooperation agreement was signed with the Agricultural and Livestock Service of Chile (SAG) to develop a program for the detection of chemical residues in food. This led to the drafting of plans and directives for the control of chemical residues in meats, vegetables, and fruits; training for personnel in various aspects of food protection, and direct technical assistance for SAG programs.

3.3 *Strengthening of Inspection Services*

Given the current trend in food protection and control, the resources of this component have been oriented to cooperation with the countries for the adoption of Good Manufacturing Practices (GMP), Standard Operating Procedures for Cleaning and Disinfection (SSOP), and the HACCP system through training, the dissemination of information, and direct technical assistance. Cooperation has been provided to all the countries of the Region, with greater emphasis on Argentina, Brazil, Mexico, Paraguay, the Dominican Republic, and Uruguay to help them fulfill their commitments to meeting the international standards governing the food trade and tourism. As of July 1999, 946 people had received training.

Four courses on the inspection of red meats, chicken, and seafood, based on the HACCP methodology, were offered between 1996 and 1999 in the countries of the English-speaking Caribbean, facilitating the training of 120 inspectors in this subregion.

In order to support the training programs and the dissemination of information about this new approach, a guide on the application of the HACCP system was put together.

In response to the requests for technical cooperation to train personnel in the countries, courses to train trainers in HACCP were offered in collaboration with the International HACCP Alliance and the HACCP Seafood Alliance. Participating in this effort were three staff members from INPPAZ/PAHO, who are the individuals in charge of organizing standardized courses in all the countries of the Region.

The II Pan American Meeting of National Services and Institutions for the Inspection and Quality Control of Seafood Products, was also held at INPPAZ/PAHO, in coordination with FAO and INFOPECA. This meeting reviewed and updated the information on all aspects of the inspection of these products for the domestic market and on the utilization and auditing of HACCP in the fishing industry.

Given the change in approach involved in applying the HACCP system to guarantee food protection, training activities have been geared to strengthening the role of the State in the verification of HACCP plans. Based on the results of the FAO/WHO Consultation in Geneva in June 1998, a workshop for the Americas was held on this topic, prior to the meeting of the Regional Coordinating Committee of the Codex Alimentarius for Latin America and the Caribbean.

In order to integrate academia and institutionalize training in the countries in this area, support is being provided to the universities for the organization of training activities in food protection, with emphasis on the application of HACCP. Cooperation is under way with graduate programs at the University of Buenos Aires in Argentina, the University of San Marcos in Peru, the UNAM in Mexico, and the University of the West Indies in the English-speaking Caribbean.

3.4 *Surveillance of Foodborne Diseases*

To help orient national policies for the prevention and control of FBD, the countries have received assistance in integrating epidemiological surveillance of FBD into their national epidemiological surveillance systems. In addition, PAHO has been coordinating the Regional Information System for Epidemiological Surveillance of FBD, which compiles the information sent by the national systems mentioned above.

During the period 1995-1998, 22 countries sent information to the system, revealing 3,411 outbreaks, 107,146 cases, and 205 deaths.

The food associated with these outbreaks was identified in 2,540 of them (74.5%). Food of animal origin was responsible for the highest share (1,457 outbreaks), representing 61.7% of the total.

The causative agent was identified in 1,939 outbreaks, with bacterial agents associated with 51.4% of them. *Salmonella spp* and *Staphylococcus aureus* were implicated in the highest proportion of outbreaks.

Because they are just starting up, the countries' surveillance systems lack both the sensitivity for detecting the etiologic agents and the specificity for their precise identification.

3.5 *Promotion of Food Protection through Community Participation*

In order to stimulate activities in this component, PAHO/INPPAZ, in coordination with FAO, provided support for the Latin American Seminar on the Protection of Food Sold on the Street, held in 1994, and the Workshop on Integrating Consumer Interests in Food Production and Food Protection, held in Ecuador in August 1996, to strengthen cooperation between consumers, producers, and official food protection agencies in a joint effort to guarantee food protection.

INPPAZ established a website (www.inppaz.org.ar/) for wide dissemination of the available information on food protection. Also, the INPPAZ virtual library is being developed with information for the different levels of the community.

4. Strategic and Programmatic Orientation of PAHO Technical Cooperation in Food Protection

The planning of PAHO technical cooperation strategies in food protection involves the formulation of general activities grounded in the five strategic approaches mentioned earlier, adhering to PAHO's programming and evaluation system, AMPES, which includes the biennial program budget (BPB) and the semiannual work plan (PTS).

Given the rapid developments and dynamic changes in food protection in recent years, the Regional Program on Food Protection has different advisory bodies at the political and technical level. INPPAZ has three advisory bodies, the International Coordination Council (ICC), the Scientific and Technical Committee (CCT), and the Program Committee for Argentina. The function of these entities is to advise the Director of the Organization concerning the orientation of the priorities and strategies of action of the Institute as a scientific and technical center of excellence in the Americas in food-related matters; periodically evaluate its activities; and ensure compliance with the basic agreement between PAHO and the Government of Argentina that established the Institute.

At the policy level, RIMSA, which the Director of PAHO convenes every two years with the participation of Ministers of Agriculture and some Ministers of Health of the Organization's Member States, analyzes the program budget for technical cooperation in veterinary public health, which includes the areas of food protection, foot-and-mouth disease, and other zoonoses. Its recommendations and the mandates of the Governing Bodies of PAHO serve as the foundation for the plans of action for PAHO technical cooperation in food protection.

5. Strategic Plan of Action

5.1 *Strategic Foundations of the Plan*

The strategic plan described in this document has been formulated in response to the recommendations of the Governing Bodies that PAHO technical cooperation in food protection consider the available information on the regional and global foodborne disease situation, the previous years' experience in executing the Regional Program for Technical Cooperation, and the technical orientations issued by the advisory bodies of PAHO/INPPAZ. The following strategic postulates constitute the basis for the plan:

- The protection of food to ensure its safety and quality is a key issue of the utmost national, regional, and global importance because of its impact on public health and international trade.
- To address the problems in food protection, fundamental advances in food inspection and protection methodologies have been developed that employ preventive approaches targeting the entire chain of production.
- The countries must modernize their food protection programs to reduce the risk of disease for the population and facilitate international trade.
- In order to promote equity in health, it will be necessary to stress technical cooperation to improve food protection in the medium- and small-scale food industries—industries that generally produce a high proportion of the food for domestic consumption and need to improve sanitary conditions in their processing plants.
- To attend to the export sector, private mechanisms for technical assistance have been developed, and several international technical cooperation agencies, such as the FAO, IICA, and the International Office of Epizootics (IOE), as well as bilateral agencies, are collaborating to modernize regulations, inspection systems, quality control, etc.

- The expansion in communications technology is facilitating the programs for training, capacity development, education, and mass communication.
- The available information on cases of FBD indicates that they occur most frequently in the home, which implies the need for a broad campaign to promote public awareness and health education.
- All the countries of the Region are in a phase marked by State reform and cutbacks in government services, with a trend toward the privatization of certain government services.
- With technical cooperation from PAHO and other international organizations, some countries already have basic the infrastructure in place for integrated food protection programs.
- PAHO has played a very important part in the activities aimed at compliance with the programming orientation of disease prevention. However, in the future its activities must encourage the political resolve in the countries to develop programs to modify the FBD situation.
- PAHO has an extensive infrastructure in the Region consisting of its Representative Offices, Pan American Centers, technical programs, and specialized human resources in the countries. These, together with adequate intra- and interprogram cooperation, can strengthen technical cooperation in food protection.
- There is an infrastructure of WHO Collaborating Centers and international and national organizations working in food protection that can potentially be utilized through coordinated activities and partnerships to strengthen technical cooperation among countries.

5.2 *Execution of the Regional Program*

The Pan American Institute for Food Protection and Zoonoses, with the coordination of the Program on Veterinary Public Health, is the Pan American Center in charge of implementing PAHO's Regional Program for Technical Cooperation in Food Protection. Therefore, bearing in mind the strategic postulates cited above and the recommendations of the External Evaluation Team of the PAHO Program on Veterinary Public Health, the Governing Bodies, and advisory bodies, the mission of this Center has been defined as follows:

To provide the member countries of PAHO, as well as their integration initiatives, with technical cooperation for the solution of problems related to food safety and the prevention and control of foodborne diseases.

5.3 Strategies

The main technical cooperation strategies are:

- Direct technical assistance for the organization and/or strengthening of integrated food protection programs.
- Promotion of the establishment, updating, and harmonization of the legislation and standards on food protection in the countries, groups of countries, or subregional integration initiatives.
- Training of staff.
- International reference services for the identification of microbial and chemical contaminants.
- Collection and dissemination of epidemiological and technical information on food protection.
- Coordination of applied research on food protection.
- Mobilization of the community to encourage its participation as an agent of change.
- Promotion of technical cooperation among countries.

5.4 Short- and Medium-term Objectives and Goals

For the short and medium term, which includes the biennium 2000-2001, technical cooperation to the countries will be based on the five components of the Regional Program for Technical Cooperation, as programmed in PAHO's American Region Planning, Programming, and Evaluation System (AMPES).

- Cooperation with the countries in the organization of national and local food protection programs and in the establishment of coordination mechanisms and regional and subregional program evaluation.

- Cooperation with the countries in reviewing and strengthening of analytical systems for the detection and monitoring of microbial and chemical contaminants.
- Cooperation with the countries for the review and modernization of methodologies for food inspection and control.
- Cooperation with the countries for the organization of national information systems and epidemiological surveillance of foodborne diseases.
- Promotion of food protection through community participation.

5.5 *Long-term Objectives and Goals*

The primary objective of the Strategic Plan is to define what PAHO must do to fulfill the strategic postulates and be ready for the new millennium. To this end, PAHO will have the following objectives, goals, and strategies until the year 2004.

- (a) PAHO will be recognized in the Region as the principal technical cooperation agency and the main source of information and training in food protection. It will:
 - Assist the countries in improving their surveillance systems for foodborne diseases, coordinate the regional system, and disseminate epidemiological information on FBD.
 - Develop databases on food protection with up-to-date scientific and technical information and develop a virtual library through the INPPAZ/PAHO website.
 - Develop training programs and distance learning courses on topics related to food protection, for official human resources and the community at large.
 - Participate as a consultative agency at meetings on food protection.
 - Conduct campaigns to promote requests for PAHO cooperation in food protection.
- (b) PAHO will have enhanced its technical cooperation potential through interprogram coordination and partnerships with other international, binational and national technical cooperation organizations, acting as a regional reference center on food protection. It will:

- Complete the database on food protection programs around the world and in the Region able to provide technical cooperation in food protection.
 - Negotiate partnerships with other technical cooperation agencies (AOAC, CDC, EU, FAO, FDA, IICA, ILSI, IOE, USDA).
 - Promote interprogram coordination.
 - Identify national and regional entities that can carry out reference activities in food protection and promote the organization of consortia to provide technical cooperation.
- (c) PAHO will have improved its capacity to cooperate with the countries in developing health education and communication programs in food protection to foster community participation, mainly among consumers, food processors, and food handlers. It will:
- Establish a permanent advisory group on strategies for conducting regional communication and education activities in food protection.
 - Identify specialized entities and experts in communication and health education.
 - Train staff at PAHO/INPPAZ and in the countries in the basic principles of mass communication and health education applied to food protection.
 - Organize a mass communication and health education unit in PAHO/INPPAZ.
 - Develop a database on mass communication and health education programs for food protection programs.
 - Cooperate to develop demonstration areas in the countries for mass communication and health education campaigns.
- (d) PAHO/INPPAZ will have fully developed its infrastructure and human resources in order to offer technical cooperation to the countries in food protection.
- Appoint the needed staff to the PAHO/INPPAZ roster.
 - Develop a program for human resources development.

- Participate in technical and scientific events.
 - Coordinate research projects on food protection.
- (e) PAHO will develop and execute binational technical cooperation plans consistent with the needs of the countries. It will:
- Utilize the PAHO planning system (AMPES).
 - Engage in ongoing consultations with the country institutions involved in food protection programs.
 - Promote and create a regional commission on food protection to serve as an agency for evaluating national programs and for consultation.
 - Give priority in technical cooperation to the medium-size and small-scale food industry.
- (f) PAHO/INPPAZ will enjoy stable financing and be able to implement its programming on a continuing basis. It will:
- Promote agreements with the countries for extrabudgetary food protection projects that mobilize additional resources to strengthen technical cooperation.
 - Develop and negotiate projects with financial agencies and food industry that can finance training and research.