



WORLD HEALTH ORGANIZATION

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Food safety

Report by the Director-General

ISSUES

1. Food safety is an essential public health issue for all countries. In recent years a number of extremely serious outbreaks of foodborne diseases have occurred. Many of these outbreaks have involved more than one country, and some more than one continent. Policy-makers and consumers in many countries are re-evaluating their strategy for food safety and the international aspects of public health within that strategy.
2. Foodborne diseases are widespread and represent a serious threat to health in both developing and developed countries, most severely affecting children, pregnant women and the elderly. In addition to the direct health consequences, foodborne disease can impose a substantial strain on health care systems and markedly reduce economic productivity. Millions of children die annually from diarrhoeal diseases, while hundreds of millions suffer from frequent episodes of diarrhoea and its debilitating consequences. Diarrhoea is the most common symptom of foodborne illness, but other serious consequences include kidney failure, brain and nerve disorders, and death. Among the debilitating complications of foodborne disease are reactive arthritis and paralysis.
3. Chemical hazards are a significant source of foodborne illness, though in many cases it is difficult to link the effects with a particular food. The recent dioxins crisis (see paragraph 8 below) is one example of public concern about chemical hazards in food. Other concerns about chemical contamination centre on mycotoxins (e.g. aflatoxins and ochratoxins) and heavy metals such as lead, mercury and cadmium. Chemical contamination may have severe consequences for human health, including mutagenic, carcinogenic and teratogenic effects.
4. Available data indicate that foodborne illness is a huge and growing public health problem. For example, countries with systems for reporting cases of foodborne illness have documented significant increases in the incidence of *Salmonella*, *Campylobacter jejuni*, enterohaemorrhagic *Escherichia coli*, and other pathogens. Up to 30% of the population in industrialized countries may be affected by foodborne illness each year. In the United States of America, some 76 million cases of foodborne illnesses resulting in 325 000 hospitalizations and 5000 deaths are estimated to occur each year.¹ The medical costs and value of lives lost from just five foodborne infections in England and Wales were estimated in 1996 at £300-700 million annually. In developing countries (excluding China) in 1990, the morbidity and mortality associated with diarrhoea was estimated to be of the order of 2700 million

¹ Mead PS et al. Food-related illness and death in the United States. *Emerging infectious diseases*, 1999, 5(5): 607-625.

cases each year, resulting in 2.4 million deaths below age five. The re-emergence of cholera in Peru in 1991 resulted in the loss of US\$ 700 million in fish and fishery products exports. These figures illustrate clearly the negative impact that foodborne illnesses and contamination have on health and development.

5. New pathogens and pathogens not previously associated with food consumption are increasing the risk of foodborne illness. Microorganisms have the ability to change and adapt. Bovine spongiform encephalopathy (BSE), commonly known as mad cow disease, has been associated with new variant Creutzfeldt-Jacob disease (nvCJD) in humans. *E. coli* O157:H7 was identified for the first time in 1979. Following the initial outbreak, enterohaemorrhagic *E. coli* has caused illness and death (especially in children) from the consumption of ground beef, unpasteurized apple cider, milk, lettuce, alfalfa sprouts, and drinking-water in several countries around the world. *Salmonella typhimurium* DT104 with chromosomally encoded resistance to five commonly prescribed antibiotics has spread through many countries.

6. Modern technologies to increase agricultural production must be evaluated in order not to bring new risks to human health. Biotechnology, hormones and antibiotics are examples of this technology. Public health can benefit enormously from biotechnology's potential to increase the nutrient content of foods, decrease their allergenicity, and improve the efficiency of food production. On the other hand, the potential effects on human health of the consumption of food produced through genetic modification should be further studied. The administration of estrogenic hormones in feed increases the rate of growth in livestock, but concern has been raised about the consumption of meat products containing these hormones. Adding low levels of antibiotics also increases the rate of growth in livestock, but there is concern about the transfer of antibiotic resistance to human pathogens from this practice.

7. Globalization of food trade presents a transnational challenge to food safety authorities, because food contaminated in one country can result in outbreaks of foodborne diseases in another. The latest forecast from the Organisation for Economic Co-operation and Development (OECD) on world trade in food and dairy products reveals a significant increase in terms of both supply and demand on a global scale for the first decade of the next millennium. Globalization of food trade may offer consumers a wider variety of good-quality foods that are accessible, affordable and safe. For example, a consistent finding of studies undertaken so far has been that a diversity of fruits and vegetables in a balanced diet is strongly correlated with improved nutritional status and health. Global food trade is increasing, and with it the potential to disseminate foodborne pathogens between countries and continents. Globalization also provides opportunities for food-exporting countries to earn foreign exchange, which is indispensable for the economic development of many countries and thus for improving the standard of living of many people.

8. Agriculture and food industries are being integrated and consolidated. This consolidation, combined with increasing global trade, means that large amounts of food from a single source are distributed over far greater distances than ever before, creating the possibility for larger and more widespread outbreaks of foodborne illness. The recent dioxins crisis in meat and poultry products provides a case study on the potential for widespread contamination from a single source. Dioxins are carcinogenic by-products of many manufacturing processes and waste incineration which have pronounced toxic effects on the reproductive, endocrine and nervous systems. On this occasion, dioxins entered the food chain when animal fat contaminated with industrial oil was used in livestock feed. More than 1500 farms in Europe received feed from a single source in a two-week time period. This contamination led to serious economic consequences as well as causing widespread "consumer anxiety". The long-term health consequences will need to be monitored and followed up.

WHO'S ACTIVITIES

9. WHO is the United Nations agency with a specific mandate for the protection of public health. Its role in food safety is to protect the consumer against exposure to adverse effects from hazards in food. Article 2(u) of the WHO Constitution gives a mandate to develop, establish and promote international standards with respect to food. The Organization has always recognized that access to adequate, nutritious, and safe food is a right of each individual. WHO's objective is the attainment by all peoples of the highest possible level of health, and an important prerequisite for health is safe food.

10. WHO's most important role is a **normative function**, including international standard setting, health risk assessment, and the development of a risk analysis framework for the management of public health risk in food and water.

11. The concept of **risk analysis** has been promoted by WHO as a framework for the development of public policy with regard to the safety of food supply. This consists of three components:

- **Risk assessment** – a process of systematic and objective evaluation of all available information pertaining to foodborne hazards.
- **Risk management** – the process of weighing policy alternatives in the light of the results of risk assessment and, if required, selecting and implementing appropriate control options, including regulatory measures.
- **Risk communication** – the interactive exchange of information and opinions concerning risks and risk management among risk assessors, risk managers, consumers, and other interested parties.

12. In resolution WHA16.42 (May 1963), the Sixteenth World Health Assembly approved the establishment of the Joint FAO/WHO Food Standards Programme, with the Joint FAO/WHO Codex Alimentarius Commission as its principal organ. The Commission has subsequently elaborated many international standards on food safety. As the international agency dealing with health, WHO bears the main responsibility for the health and safety aspects of Codex Alimentarius activities so that the health of consumers is appropriately protected.

13. WHO has a long history of providing advice on health risk assessment to the Codex Alimentarius Commission and to Member States in relation to the safety hazards in foods. The Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Joint FAO/WHO Meeting on Pesticide Residues (JMPR) are recognized as being in the forefront of current scientific knowledge in risk assessment of food chemicals, and WHO has, in particular, been responsible for their toxicological evaluation. WHO has also convened a series of consultations to assess the safety of food produced by biotechnology and to assess the public health implication of emerging foodborne pathogens (e.g. *Salmonella enteritidis*, *Campylobacter jejuni*, enterohaemorrhagic *E. coli*).

14. WHO has established a global surveillance response system for epidemics. The surveillance component (epidemic intelligence) actively gathers outbreak-related information and disseminates it to regional and country offices for rapid verification. When an outbreak is confirmed and assistance is requested, WHO can immediately respond through field teams (epidemic response team) and coordinate international efforts.

15. WHO provides technical assistance to governments in their efforts to supply their populations with safe and nutritious food. It provides training in the basics of food sanitation through community-

based programmes and the Healthy Marketplaces Initiative. In collaboration with international, regional and national agencies, it also provides technical training in the application of risk analysis, the Hazard Analysis and Critical Control Point (HACCP) system and other food safety-related skills. In addition, WHO assists national governments in the development and implementation of food legislation, and provides support for the development of information systems that allow countries to monitor food contamination and conduct surveillance of foodborne disease.

16. WHO's integrated approach to food safety incorporates activities in several departments. Externally, its work is conducted in coordination with other international organizations, most notably the Food and Agriculture Organization of the United Nations (FAO), and recently also the World Trade Organization (WTO).

FUTURE DIRECTIONS

17. A **better evaluation of the burden of foodborne disease** is urgently needed to set priorities for future activities. Available data indicate that foodborne disease has been increasing globally, but more work needs to be done to document disease incidence as well as cause-effect relationships. Where appropriate, Member States should set up systems for laboratory-based surveillance of foodborne disease, covering both outbreaks and sporadic cases, and for monitoring contamination of food. At the request of Member States, WHO will support capacity-building for data collection and surveillance systems. WHO will also initiate work to define a common format for harmonized data collection procedures and to determine the minimal data requirements needed from region to region. These will be important for both international and national food safety initiatives in the future.

18. There is also a need for coordination of the **long-term strategic planning** of food safety initiatives globally, regionally and nationally. To support this effort, WHO will develop and strengthen its existing activities aimed at obtaining accurate surveillance and monitoring data, including activities that enhance WHO's ability to respond rapidly to emergencies involving contaminated food. The Organization will apply a holistic approach to measures for the reduction of illness, covering the entire cycle of stages before (e.g. the application of sewage sludge to farmland), during and after (e.g. sewage treatment) the traditional food chain concept. It will expand and strengthen its work in providing global leadership in the promotion of food safety as an integral part of public health policy, and support food safety systems and standards for the protection of consumer health.

19. Recognizing that the disease outcome is a real measure of the effectiveness of food safety interventions, WHO will consider **developing regional and/or national targets** for reduction of the incidence of disease, duly taking into account any international implications this would have.

20. The increased awareness of food safety problems calls for **scrutiny of the science base** for making food safety decisions at both national and international levels. Chemical risk assessments, which have been carried out by JECFA and JMPR, are extremely valuable for Member States. This work will be strengthened and the results of these bodies' meetings will be made more readily and freely available to Member States.

21. WHO will hold expert consultations on **microbiological risk assessment** on an ad hoc basis. These expert consultations will review and summarize national risk assessments of microbiological hazards in food and water. The models developed during the process will facilitate the transfer of the technology for risk assessment between countries. For microbiological risk assessment of food in international trade, WHO will establish a new ad hoc expert advisory body in cooperation with FAO,

as requested by the Codex Alimentarius Commission. An international strategy and supporting mechanisms for this effort were developed in a joint WHO/FAO consultation in Geneva, Switzerland, in March 1999.

22. The advance of **biotechnology** in the food arena presents consumers worldwide with new challenges and questions of both a technical and an ethical nature. In collaboration with international partners, WHO will provide the scientific basis for decisions regarding human health aspects of genetically modified foods. Other considerations relevant to the assessment of this new technology will be explored in collaboration with other agencies. Likewise, the general effect and safety of other new foods or food technologies should be addressed.

23. WHO acknowledges the paramount importance of open and intelligible **risk communication** between all parties affected by foodborne risk, and will take the lead in global as well as regional communication. Apart from permitting useful dialogue between the stakeholders in the risk analysis process, such communication will strengthen information sharing and consumer education and build reliability into the process, which in turn will lead to improved food safety practices in domestic settings.

24. In many countries of the world, the emergence of a food safety agenda has underlined the need for **strengthening local technical and scientific capabilities**, and for additional **educational tools** pertinent to each level of society. In developed countries, WHO will promote the concept that strengthening local technical and scientific capability in the food safety area in developing countries can be mutually beneficial, a concept that is consistent with the WTO Agreement on the Application of Sanitary and Phytosanitary Measures. In strengthening food safety activities, WHO through its **regional offices** will seek to respond to the differing food production conditions in different countries as well as the variation in societal and cultural settings and traditional foods. Likewise, WHO will substantially increase its technical cooperation activities with developing countries in order to protect the health of consumers through the production of safe food for both local consumption and export.

25. WHO will **advocate** the importance of food safety as a priority public health concern in order to sensitize policy-makers in Member States by emphasizing the public health and economic gains to be achieved through increased input in this area. Important outcomes of this investment can be: alleviation of human suffering and prevention of loss of lives; lower cost of medical treatment and reduction of sick leave; increased marketability of food; and promotion of tourism.

26. WHO will further develop its capacity to respond immediately to international and national food safety **emergencies** and to give scientific and technical advice to assist governments in crisis management.

27. An important prerequisite for food safety initiatives is the realization that they are **intersectoral issues** involving public health, agriculture, fisheries, trade, education, environment and other sectors, and that cooperation between these sectors is essential. WHO will expand its partnerships and work with international organizations, civil society, academia and industry involved in the food safety area.

28. The current working relationship between WHO and FAO under the **Joint FAO/WHO Food Standards Programme** is being reviewed with a view to increasing WHO's scientific and public health role in the work of the Codex Alimentarius. WHO will continue, in close collaboration with WTO, to advocate that Member States fulfil their obligations to take health considerations into account in the globalization of trade.

AGENDA FOR THE FUTURE

29. The above directions for the future provide the basis for an integrated WHO food safety initiative. The key areas to be addressed include public health advocacy, research and training, and monitoring and evaluation, all based upon sound scientific evidence. Expanded partnerships with Member States and with other international organizations will be sought.

30. The key activities under this integrated food safety initiative will be:

- (a) to support Member States in the development and assessment of national control strategies, recognizing their intersectoral nature and focusing on major foodborne pathogens, such as salmonella and campylobacter, while developing the concept of setting targets for reduction of the incidence of disease;
- (b) in collaboration with other international organizations, to work towards integrating food safety as one of the essential public health functions with the goal of developing sustainable, integrated food safety systems for health risk reduction along the entire feed-food chain, beginning with primary production in agriculture and following through to the consumer;
- (c) to support Member States in the identification, assessment and containment of foodborne diseases and provide scientific advice during international and national food safety emergencies;
- (d) to lead the development of a global strategy for the surveillance of foodborne diseases and for efficient gathering and sharing of information by countries and regions;
- (e) to provide technical assistance to developing countries in assessing the burden on health and prioritizing disease control strategies through the development of laboratory-based foodborne disease surveillance systems and monitoring of contaminants in food;
- (f) to advocate to Member States the fulfilment of their obligation to take health considerations into account in the globalization of trade, in cooperation with WTO;
- (g) to support the development of science in the assessment of risks related to food, encourage research on the identification of risk factors for the increase of foodborne diseases, and promote sentinel and other studies to assess the public health impact of foodborne diseases;
- (h) to establish an ad hoc expert advisory body on microbiological risk assessment;
- (i) to support and provide the scientific basis for decisions regarding genetically modified foods through the addition of a specialized staff member, and in so doing specifically address human health considerations;
- (j) to advocate communication in readily understandable form among all parties affected by foodborne risk, to permit useful dialogue between all stakeholders in the risk analysis process, including consumers.

ACTION BY THE EXECUTIVE BOARD

31. The Executive Board is invited to consider the following draft resolution:

The Executive Board,

Noting the report by the Director-General on the role of the World Health Organization in food safety,

RECOMMENDS to the Fifty-third World Health Assembly the adoption of the following resolution:

The Fifty-third World Health Assembly,

Deeply concerned that foodborne illnesses associated with microbial pathogens and chemical contaminants in food represent a serious threat to the health of millions of people in the developing and developed world;

Recognizing that foodborne diseases, including infant diarrhoea, result in significant health and economic consequences for individuals, families, communities, businesses, and countries;

Acknowledging the importance of the public health services in ensuring the safety of food and harmonizing the efforts of all stakeholders throughout the feed-food chain;

Aware of the increased concern of consumers about the safety of food after recent foodborne disease outbreaks of international and global scope and the emergence of new food products derived from biotechnology;

Recognizing the importance of the standards, guidelines and other recommendations of the Codex Alimentarius Commission for the protection of the health of consumers and assuring fair trading practices;

Noting the need for surveillance systems for the assessment of foodborne disease burden and the development of evidence-based national and international control strategies;

Mindful of the trend towards integration of agriculture and the food industry and ensuing changes in farming, production, marketing practices and consumer habits in both developed and developing countries, which are not adequately addressed by traditional food safety systems;

Noting that the majority of recent foodborne disease outbreaks of international importance have been caused by microbiological agents and that some foodborne bacteria of animal origin are increasingly resistant to common therapies because of the use of antimicrobials in agriculture;

Aware of the improvements in public health protection and the development of sustainable food and agricultural sectors that could result from the enhancement of WHO's food safety activities,

1. URGES Member States:

- (1) to integrate food safety as one of their essential public health functions and to provide adequate resources to establish and strengthen their food safety programmes;
- (2) to develop and implement systematic and sustainable preventive measures aimed at reducing significantly the occurrence of foodborne illnesses;
- (3) to develop and maintain national means for surveillance of foodborne diseases and monitoring relevant microorganisms and chemicals in food;
- (4) to support the development of science in the assessment of risks related to food, including the analysis of risk factors relevant to foodborne disease;
- (5) to integrate food safety matters into health education programmes for consumers, particularly within primary and secondary school curricula, and to initiate culture-specific health education programmes for food handlers and consumers;
- (6) to develop outreach programmes for the private sector that can improve food safety at the community level, especially in urban food markets, and to explore opportunities for collaboration with the food producing and processing industry;
- (7) to coordinate the food safety activities of all relevant national sectors concerned with food safety matters, particularly those related to the risk assessment of foodborne hazards;
- (8) to participate actively in the work of the Codex Alimentarius Commission and its committees, including activities in the emerging area of food safety risk analysis;

2. REQUESTS the Director-General:

- (1) in collaboration with other international organizations, to work towards integrating food safety as one of the essential public health functions, with the goal of developing sustainable, integrated food safety systems for health risk reduction along the entire feed-food chain, from primary production in agriculture to the consumer;
- (2) to support Member States in the identification and assessment of emerging foodborne hazards and diseases, particularly during international and national food safety emergencies;
- (3) to lead the development of a global strategy for the surveillance of foodborne diseases and for efficient gathering and exchange of information in countries and regions;
- (4) to provide technical assistance to developing countries in assessing the burden on health and prioritizing disease control strategies through the development of laboratory-based surveillance systems for major foodborne

pathogens, including antimicrobial-resistant bacteria, and monitoring of contaminants in food;

(5) to strengthen the application of science in the assessment of health risks related to food, and specifically to support the establishment of an ad hoc expert advisory body on microbiological risk assessment, and to strengthen the expert advisory bodies that provide scientific guidance on chemical food safety issues;

(6) to support Member States in providing the scientific basis for health-related decisions regarding genetically modified foods;

(7) to encourage research to support evidence-based strategies for the control of foodborne diseases, particularly research on risk factors for the emergence and increase of foodborne diseases;

(8) to examine the current working relationship between WHO and the Food and Agriculture Organization of the United Nations (FAO) under the joint FAO/WHO Food Standards Programme with a view to increasing the role of scientific and public health aspects in the work of the Codex Alimentarius Commission and its committees;

(9) to advocate the inclusion of health considerations in the international food trade, *inter alia* through the work of the World Trade Organization (WTO).

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