THE USER'S MANUAL ON CODEX

A Contemporary Approach to Food Quality and Safety Standards

Developed for
Codex-India
through the
FAO Project

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FAO
FIAT PANIS

THE USER'S MANUAL ON CODEX

A CONTEMPORARY APPROACH TO FOOD QUALITY AND SAFETY STANDARDS

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

MINISTRY OF HEALTH & FAMILY WELFARE, GOVERNMENT OF INDIA

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PREFACE THE USER'S MANUAL ON CODEX

A Contemporary Approach to Food Quality and Safety Standards

International trade in food has evolved over many centuries. Currently it is a highly complex, technical and administrative operation involving the global movement of a very large quantum of a wide variety of food.

Food production is scientifically-based. It is possible to transport food over long distances to arrive at its destination in a wholesome condition, without an appreciable loss of quality. Consumers worldwide now have access to a wider variety of high quality food in greater quantities than ever before.

Two other developments have also contributed significantly to the increase in both, the quantity and variety of food moving in international trade. The first has been the dramatic increase in the number of countries, especially developing countries, involved in the production of food for export. The second has been the internationalization of food tastes and habits. The first is associated with economic development, commercial strategy and the acquisition of valuable foreign exchange. The second is associated with the people of different countries developing a liking for each other's food.

In general, developed countries are net food importers. They import about 22 per cent more food in monetary terms than they export. Developing countries are also, in general, net exporters, exporting about 15 per cent more in monetary terms than they import. In order to be a successful food exporter, a country must produce food that is both, sought after and acceptable to consumers in other countries and which complies with the statutory requirements of the importing countries. Compliance with the statutory or mandatory requirements of importing countries is an unavoidable and essential prerequisite to successful and profitable food export. However, compliance is becoming increasingly demanding because of the preoccupation of the world community with food safety. In addition, an increasing number of importing countries are demanding agreed inspection and examination procedures as well as certification by the governments of exporting countries that products are in compliance with the quality and safety requirements.

It is not inappropriate to state that, instead of facilitating the international food trade, government intervention through laws and regulations – which differ from country to country – impeded trade and created barriers difficult for traders to surmount. In the post-World War years of the 1940s and 1950s, the situation led to a plea from both, exporters and governments, to harmonize national food laws and regulations of all countries so as to free-up trade.

Several unsuccessful attempts were made to standardize food internationally and, thereby, harmonize food requirements globally. Those attempts did, however, eventually lead to the establishment of the Codex Alimentarius Commission (CAC) in 1962 by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) to implement the joint FAO/WHO Food Standards Program. In brief, the purpose of the Program is to protect the health of consumers, ensure fair practices in the food trade and coordinate international food standardization work.

GENERAL OVERVIEW OF CODEX

The CAC provides global leadership in every aspect of food standardization and coordinates and crystallizes expert opinion and evidence relating to consumer safety and practices in the production and sale of food. It is now customary for food legislators, controllers, scientists, consumers and traders everywhere to ask the question, before making decisions: "What does Codex have to say on the matter?" The CAC is an intergovernmental body, with 168 Member Governments as in July 2003. The Codex

Alimentarius (meaning 'Food Code' or 'Food Law' in Latin) is a collection of food standards, Codes of Practices and other recommendations presented in a uniform way. Codex standards, guidelines and other recommendations ensure that food products are not harmful to the consumer and can be traded safely between countries.

Food safety standards are defined in the World Trade Organization's (WTO's) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) as those relating to food additives, veterinary drug and pesticide residues, contaminants, methods of analysis and sampling, labeling, and codes and guidelines of hygienic practices. Codex food safety standards are to be used as the reference point for the World Trade Organization in this area.

Food hygiene has been a major area of activity of the CAC since the Commission's establishment. The Codex Committee on Food Hygiene, hosted by the Government of the United States, was established in1963. As food hygiene is best regulated at the production and processing stage in the exporting country, the Committee's main outputs have been codes of hygienic practices rather than end-product microbiological standards. Taking this philosophy a step further, the CAC has adopted the Guidelines for the Application of the Hazard Analysis Critical Control Point (HACCP) System through its Committee on Food Hygiene. In doing this, it has recognized the HACCP as a tool to assess hazards and establish control systems that focus on preventive measures, instead of relying primarily on end-product testing.

NATIONAL CODEX CONTACT POINT (NCCP)

The National Codex Contact Point is the central point for liaison between Codex national authorities in Member Countries and the Codex Secretariat at the FAO Headquarters. It serves as the initial recipient of Codex documents, publications and other communications; maintains a library of Codex standards, Codes of Practice and guidelines, together with associated documents and, where appropriate, initiates positive action to stimulate the knowledge of, and interest in the aims, objectives and work of the CAC and its subsidiary bodies.

NATIONAL CODEX COMMITTEES (NCC)

National Codex Committees have been established in many Codex Member Countries to provide a forum for the discussion of Codex issues, draft standards, Codex and other documents and establish a national position on all matters discussed within Codex. They supplement the work of the NCCPs and seek the involvement of all stakeholders, including government institutions, academia, industry and consumer organizations.

FAO ASSISTANCE

The Food and Agriculture Organization of the United Nations (FAO) is the principal specialized UN agency dealing with all aspects of food and agriculture. The Food and Nutrition Division, through its Food Quality and Standards Service, addresses capacity-building and technical assistance through the provision of policy advice. It executes food quality control and safety development projects, including the development of food standards and technical regulations and food quality and safety assurance programs for the food industry. It also addresses the establishment of national export food certification programs and monitoring programs for food contaminants. It conducts regional and national seminars and workshops on food control issues. Capacity-building includes all activities undertaken by the FAO in support of the Member Countries' effort to strengthen their food control programs and activities. It covers:

- Policy advice on specific issues.
- Institutional development and/or strengthening; review and updating of food legislation.
- Harmonization of food regulations and standards with Codex and other international regulatory instruments.
- Training of technical and managerial staff in different food safety-related disciplines.
- Studies and applied research on specific food-related subjects.

Capacity-building also includes the organization of national and regional workshops and seminars on food safety-related matters and the development and dissemination of manuals, guidelines, training material and other tools needed to support the food control and food safety development programs.

One of the important elements of the FAO's work is building the capacity of food control personnel, including government authorities, and of food industry personnel who are carrying out food quality and safety assurance programs. As a part of FAO's technical cooperation program for developing countries, the project TCP/IND/0067 – Strengthening the National Codex Committee was implemented by the FAO and the Ministry of Health and Family Welfare and the NCCP in India. Under this project, a National Codex Resource Center was established in the Department of Health in the Ministry of Health. It is equipped with state-of-the-art communication and secretarial facilities to facilitate the interaction among all stakeholders operating in the area of food quality and safety.

INDIA'S CONTRIBUTION TO GLOBAL FOOD TRADE

India has made significant strides over the past several decades in food production and in the export and health sectors. India is number one in the production of milk, sugarcane, cashew and spices and the second largest producer of rice, wheat, pulses, fruits (after Brazil) and vegetables (after China). But the share of the global export basket is less than three per cent. There are several key issues that require attention. These include the lack of institutional coordination, a shortage of technical skills and equipment, the lack of updated standards, an absence of a responsive monitoring system, the lack of awareness of safety and quality control issues on the part of the food handlers in the organized and unorganized sectors of this industry, an increasing incidence of food-borne diseases, the emergence of newer vibrant pathogens, the entry of Genetically Modified (GM) food and an increased import of food products following the setting up of the WTO. The base for research and development as well as for up-to-date information systems is weak and also requires support. There is a further need for a quick flow of information – from the Center to states and vice-versa.

NEED FOR THE TRAINING MANUAL

It is the need of the hour to improve the overall food safety and quality systems through an adequate and appropriate understanding of the work of Codex by all the stakeholders in the food chain. This training manual has been designed to help achieve this objective. The manual is structured to provide essential information in a standardized, logical and systematic manner, while adhering to effective teaching and learning strategies. It is composed of the following sections:

- Section 1: How to Use the Manual
- Section 2: The International Framework for Setting Food Safety and Quality Standards
- Section 3: National Codex Contact Point and National Codex Committee
- Section 4: The Codex Consultative Mechanism
- Section 5: Participation in Codex
- Section 6: Issues Relevant to All Sectors
- Section 7: Industry-specific Issues
- Section 8: Other Sectors

SECTION

1

HOW TO USE THE MANUAL

How to Use the Manual

INTRODUCTION

In August 2001, under the FAO Project TCP/IND/0067, the Ministry of Health and Family Welfare, the nodal agency for the Codex Contact Point in India, initiated action to develop a training manual for all the stakeholders involved in the standard-setting process of Codex. As a result, the national consultants for the project, in consultation with the international consultant, developed a curriculum for training personnel to enable them to understand Codex and its role in facilitating food safety, quality and fair trade.

HOW TO USE THIS MANUAL

The manual is developed to provide fundamental information about Codex in a standardized, logical and systematic manner. It comprises eight sections. Each section consists of specific training modules with a provision for the inclusion of optional modules that may be combined and customized to meet the requirements. The sections and modules are arranged in such a way that the trainees may easily refer to the desired modules.

The modules are:

- Module 1: Codex Alimentarius Commission
- Module 2: Codex and its Influence on Countries
- Module 3: Codex Code of Ethics for International Food Trade
- Module 4: India's Food Control System
- Module 5: WTO Agreements
- Module 6: Risk Analysis
- Module 7: National Codex Contact Point
- Module 8: National Codex Committees and its Shadow Committees
- Module 9: Codex Procedures
- Module 10: International and Regional Consultation
- Module 11: Involvement of National Stakeholders
- Module 12: International Level (national delegations)
- Module 13: National Level (input to national positions)
- Module 14:
  - Food Additives
  - Contaminants
  - Pesticide Residues
  - Residue of Veterinary Drugs
- Module 15:
  - Food Hygiene
  - The HACCP System
- Module 16:
  - Food Labeling
  - Nutrition and Food for Special Dietary Uses

- Module 17:
  - Food Import Control Systems
  - Export Inspection and Certification Systems
- Module 18: Methods of Analysis and Sampling
- Module 19:
  - Organically Produced Food
  - Foods Derived from Biotechnology
- Module 20: Fats and Oil Industry
- Module 21: Marine Products Industry
- Module 22: Dairy Products Industry
- Module 23: Cereals and Cereal Products Industry
- Module 24: Fruits and Vegetables Industry (fresh and processed)
- Module 25: Meat and Meat Products (including animal feed)
- Module 26: Sugar and Sweetening Agents Industry (including honey and artificial sweetening agents)
- Module 27: Mineral and Packaged Drinking Water Industry
- Module 28: Spices and Condiments Industry (including food grade salt)
- Module 29: Street Food
- Module 30: The Public Sector (including trade promotion bodies)
- Module 31: Consumers

It is important that all members of a training team be familiar with the principles exposed in the training modules. This ensures that every presentation in a training course embodies the principles and is in itself a demonstration of the application of those principles. It is stressed that the modules are not intended to constitute a textbook on training. Essentially, their contents are intended as memory joggers for those trained to train others. For this reason, and depending on the nature of the subject, some material is presented in Power Point slides, while other material is covered by full text. Dedicated trainers should make it an essential part of their continuing education as professionals to locate publications in libraries or elsewhere on the topics covered. They will thus keep themselves abreast of the theory and practice that is updated regularly.

The FAO has promoted this project in its efforts to strengthen the National Codex Committees and National Codex Contact Point. The manual has been developed incorporating all the Quality Management System (QMS) Procedures to be in line with international criteria.

Further reference to this manual is available on the web site: www.codexindia.nic.in

Amendment Format

Page No.	Chapter No.	Date of Amendment	Amendment Made	Reasons	Signature of the Issuing Authority	Signature of the Approving Authority

SECTION 2

THE INTERNATIONAL FRAMEWORK FOR SETTING FOOD SAFETY AND QUALITY STANDARDS

The International Framework for Setting Food Safety and Quality Standards

INTRODUCTION

Section 2 of this manual will follow a path that enhances the overall appreciation of the evolution of the setting framework for international food standards up to the present day. This framework enables a body of countries to set food safety and quality standards and regulations under the auspices of the Codex Alimentarius Commission in order to protect the consumer and facilitate trade (Module 1). When we talk about the framework for food safety and quality standards we must keep in mind the fact that we are dealing with a multi-pronged and complex array of issues – some mandatory and some voluntary. These issues influence the way governments do their business. They also influence the opportunities for both, industry (that is, producers, processors, traders, wholesalers and retailers) and consumers, to participate in establishing and maintaining the respective components of the national food control system. Module 2 studies the components of the food control system and the benefits derived from utilizing Codex standards, guidelines and recommendations where this fulfils the national objective.

Participation in the Codex standard-setting process and the acceptance of Codex standards within the national food control system, wherever this meets the national requirements, anticipates the adherence to the Code of Ethics for International Food Trade (Module 3) developed by Codex.

No discussion on the international framework for setting food safety and quality standards would be complete without a general understanding of the national framework for setting food standards (Module 4). As a member of the CAC and the World Trade Organization (WTO), India has certain obligations to meet in the way it sets and applies food safety and quality standards. Like so many countries where industry has traditionally relied on the government for quality and safety control approval, India is making efforts to update its food laws, rules and regulations. It is taking into account new approaches that define a greater role for industry to accept responsibility for Good Agricultural Practices (GAPs) and Good Manufacturing Practices (GMPs), and Hazard Analysis Critical Control Point (HACCP) systems to assure the safety and quality of the final product. Although India has embarked on a major program to align national standards with international standards, there is much work to be done to achieve the full implementation of contemporary approaches to standards throughout the entire food chain.

Contemporary approaches to food standards have come about, in part, as a result of the outcome of the GATT Uruguay Round of Talks that culminated, at the end of 1993, in two key agreements that are administered by the WTO. These agreements, namely the Agreement on Sanitary and Phytosanitary (SPS) Measures and the Technical Barriers to Trade Agreement, brought a new significance to the work of the CAC (Module 5). Since the WTO agreements came into force, science-based decisions have become predominant for justifying standards. In order to facilitate the methodology for determining science-based standards, the concepts and principles of risk analysis that help the methodology to

identify risks, determining the level of acceptability of the risk, managing the risk and communicating the risk to consumers are articulated in Module 6. Thus, national governments, as members of the CAC, have been able to participate in the new environment of standard-setting and have also been able to benefit directly from the most up-to-date and innovative standards methodology that protects the health of their consumers as well as enhances national trade capabilities.

REFERENCES

1. *Understanding the Codex Alimentarius.* FAO/WHO, Rome 1999. www.codexalimentarius.net
2. *Codex Alimentarius.* 14 Volumes. www.codexalimentarius.net
3. *Codex Alimentarius Commission Procedural Manual.* 12th edition. FAO/WHO, Rome 2001. www.codexalimentarius.net

Codex Alimentarius Commission

INTRODUCTION

The Codex Alimentarius Commission (CAC) is responsible for implementing the Joint FAO/WHO Food Standards Program. The name Codex Alimentarius is taken from Latin and translates literally as 'food code' or 'food law'. It was founded in 1962 in response to the worldwide recognition of the importance of international trade and the need to facilitate such trade while, at the same time, ensuring the quality and safety of food to protect the consumer.

The Commission's primary objectives are the protection of the health of consumers, the assurance of fair practices in food trade and the coordination of all work pertaining to food standards. The formulation of food standards covering all the principal food in the form in which they reach the consumer, that is, processed, semi-processed or raw, is the main role and basis of the Commission's work.

The Codex Alimentarius, itself, is the series of internationally agreed food standards, codes and other recommendations for use in international trade which countries may also use as models in their domestic food legislation and regulations. A new emphasis and importance was placed on the standards contained in the Codex Alimentarius with the adoption in Marrakech on April 15, 1994, of the outcome of the Uruguay Round of General Agreement on Tariffs and Trades (GATT) Talks. This is reflected in the newly adopted Agreement on Sanitary and Phytosanitary (SPS) Measures and the revised GATT Agreement on Technical Barriers to Trade (TBT).

1. ABOUT THE CODEX ALIMENTARIUS COMMISSION

The Commission is an intergovernmental body. Its membership had grown to 168 Member Countries by the end of the Commission's 26th Session in 2003. Membership is open to all Member Nations and Associate Members of the FAO and/or of the WHO. In addition, observers from international scientific, food industry, food trade and consumer associations may attend sessions of the Commission and of its subsidiary bodies. Attendance may be as participants of the national government representation or delegation to the meeting, or as representatives of organizations which have qualified as observer organizations on their own merit. Observer organizations can fully participate in the proceedings of meetings with the exception of participating in any decision process, which is reserved by statute for Member Governments only.

The Commission first met in 1963 and meets every two years, alternating between the FAO Headquarters in Rome and the WHO Headquarters in Geneva.[1] Its principal responsibilities are to consider the draft standards and related texts that have been prepared by its subsidiary bodies and to provide advice on principles. The Commission adopts standards by clear general consent or through a voting procedure in which each Member Country has one vote. Almost all standards, guidelines and recommendations have been adopted by consensus.

[1]At its 26th Session (July 2003), the Codex Alimentarius Commission had decided to meet annually, as recommended by the FAO/WHO Evaluation of Codex.

The Commission approves the medium-term program of work proposed by the Executive Committee on a six-yearly basis. It approves and/or suggests which standards should be developed or revised.

1.1 Budget

The CAC has a total budget in the vicinity of US$ 5 million per biennium, which is jointly funded by the FAO (82 per cent) and the WHO (18 per cent). An additional and substantial part of the financial cost of the work of the Commission is borne by the Member Governments that host Codex Committees and Task Forces.

There are no membership or entry fees or dues paid by the members of Codex and Codex does not provide funding for attendance at any of its meetings. Member Governments and/or international observer organizations directly meet the costs incurred in attending the sessions of the Commission or its subsidiary bodies.

1.2 Administration

The work program and other activities of the Commission are administered through a small Secretariat located at the FAO Headquarters. This work is assisted by country Secretariats within Member Governments that host Codex Committees and Task Forces. In addition, an Executive Committee and six Regional Coordinating Committees contribute to the administration of the work of the Commission.

The Executive Committee consists of the CAC Chairperson and three Vice-Chairpersons of the Commission, together with seven further members elected by the Commission at their regular sessions from among the members of the Commission. One member is elected from each of the seven geographical regions, with no two members elected from the same country. Terms and re-election are limited, so that the Chairperson and the three Vice-Chairpersons may hold their offices for no more than four years. Members elected on a geographical basis may stay in office during two consecutive terms of four years, provided they are re-elected.

The Executive Committee meets once between Commission sessions and also once before each Commission session. During the period between Commission sessions, it acts as the executive organ of the Commission and may make interim decisions for the Commission, subject to approval at the next Commission session.

Regional Coordinating Committees assure that the work of the CAC is responsive to regional interests and to developing countries. Codex Regional Coordinating Committees act in an advisory capacity to the Executive Committee. Such Committees have been established for Asia, Africa, Europe, Latin America and the Caribbean, the Near East, and for (jointly) North America and the South-West Pacific.

1.3 Secretariat

The Secretariat to the CAC is a service within the Food and Nutrition Division, located in the FAO Headquarters office in Rome, Italy. It provides administrative support to the Commission. It organizes the sessions of the Commission and the Executive Committee. It coordinates the work of the Commission's subsidiary bodies and is the link with the Secretariats of these functioning Committees. The Secretariats of the functioning Committees are the responsibility of the Member Country that has agreed to host that specific Committee, as we will see later. The Codex Secretariat is also the link with National Codex Contact Points (NCCP), designated by each member, and their National Codex Committees (NCC), if there is one. The Codex Secretariat provides the essential link between the Commission and the Member Governments (see Annex 1).

1.4 Procedural Manual

The objectives and modus operandi of the Commission are set out in its procedural manual. This comprehensive text is updated following most Commission meetings, as the Codex evolves to meet the ongoing needs of its members.

The manual is particularly useful for Member Governments and international observer organizations that wish to participate in the work of Codex. It includes the Commission's basic Rules of Procedure and other procedures necessary for the consistent elaboration of Codex standards and related texts. It also includes:

- General principles and guidelines for the acceptance of Codex standards by governments.
- Some basic definitions.
- Terms of Reference of and guidelines for the efficient operation of Codex Committees and Task Forces. This includes the interaction between these subsidiary bodies, thus achieving uniformity of Codex standards and documents.

The procedural manual sets out the membership of the Commission and the dates and places of the Commission, Executive, and Committee/Task Force meetings. It also contains a figure of the Codex Alimentarius Commission.

The procedural manual was, in 2001, in its 12th edition. It is available electronically at www.codexalimentarius.net.

1.5 Committee Structure

The work of the Codex Alimentarius is divided between two types of Committees. The first is one that deals with a general subject matter(s) that cuts across all types of food classes or groups. Consequently, the nature of its work is horizontal. The work of the second type of Committee, the Codex Commodity Committee, is specific for food within a class or group and, consequently, the nature of its work is vertical.

When the Commission, or the concerned Committee, establishes that there is no pending work to be undertaken, the Committee may adjourn sine die. This allows the Committee to cease operating for an unspecified period until it has a sufficient amount of new work to do to be called back into service. There is a Committee for virtually all types of food or classes of food in international trade. Many of these have been the subject of quality and safety standards as a result of the work of the CAC since its inception.

1.5.1 General Subject Committees

At the time of preparing this training manual, there were nine operating general subject matter(s) Committees, each with different responsibilities. These Committees deal with matters such as hygiene, veterinary drugs, pesticides, food additives, labeling, and methods of analysis, nutrition and import/export inspection and certification systems. For example, one Committee is responsible for the elaboration of standards, guidelines and other recommendations related to the evaluation of food additives and environmental contaminants, including radioactivity (Codex Committee on Food Additives and Contaminants). Another Committee establishes the maximum residue levels for chemicals used in agricultural production (Codex Committee on Pesticide Residues and Veterinary Drug Residues in Food). Still another Committee is responsible for developing standards, recommendations and guidelines related to microbiological contamination, including their toxins and general hygienic (sanitation) practices and conditions in food manufacturing, processing, production, handling, storing and transporting, wherever and however food is handled (Codex Committee on Food Hygiene).

These Committees interact with the Commodity Committees; for example, the Committee on Food Labeling proposes standards for labeling or for the specific labeling requirements of commodities in cooperation with the specific Commodity Committee. This process of interaction and integration between Committees in the food standards development by Codex is very important in achieving consistency throughout the work of the Commission.

Section 6 of this manual summarizes the important aspects of the Codex horizontal standards, codes, and recommendations relevant to all sectors, from government agencies and the food producing and processing industries, importers and exporters, wholesalers and retailers to consumers. Section 8 of the

manual provides additional information on Codex norms and is specifically relevant to public sector bodies (including trade promotion bodies) and to consumers.

1.5.2 Commodity Committees

The second type of Committee is one that deals with a specific type of food class or group, such as dairy and dairy products, fats and oils, or fish and fish products. There are 11 Commodity Committees, although, at the time of preparing this training manual, only seven were active. Each of these Committees works, in a vertical manner, on the specific food or class of food allotted to them. A decision of the 19th Session of the CAC (1991) led to all Commodity Committees reviewing their respective standards, and developing all new standards against performance-based measures.

In addition, three ad hoc Intergovernmental Codex Task Forces that were established by the 23rd Session of the CAC (1999) develop standards, guidelines and recommendations for food derived from biotechnology, for animal feeding and for fruit juices. These Task Forces function in the same manner as the Codex Committees, but within fixed time frames.

Section 7 of this manual discusses those Codex commodity, or vertical, standards that are relevant to specific industry sectors.

1.6 Format and Elaboration of Codex Standards and Related Texts

Irrespective of the type of Committee (vertical or horizontal functions), Codex Committees carry out their work in the prescribed manner as set out in the procedural manual. Each standard for a given food commodity follows a similar format, containing information on:

- Scope of the standard and description of the product.
- Essential composition and quality factors.
- Food additives and contaminants.
- Hygiene requirements.
- Labeling requirements.
- Methods of analysis and sampling.

Certain draft requirements, such as labeling, additives, contaminants, MRLs, and so on, are referred as a matter of course to the horizontal Committee for endorsement before the draft standard is recommended to the Commission for adoption.

Codex texts are elaborated according to a common agreed procedure. The Commission, which decides that a standard should be elaborated and also which subsidiary body should undertake the work, invokes the use of the Uniform Procedure for the Elaboration of Codex Standards and Related Texts as the procedure to be used. Subsidiary bodies of the Commission, subject to the approval of the Commission or the Executive Committee, may also make decisions to elaborate standards.

The Secretariat of the Commission then arranges for the preparation of a proposed draft standard which is circulated to the Member Countries for comments. In the light of the comments received, the proposed draft standard is then considered by the subsidiary body that may present the text to the Commission as a draft standard (or other draft text). If the Commission adopts the draft standard, it is again sent to Member Governments for further comments. In the light of these, and after further consideration by the subsidiary body concerned, the Commission reconsiders the draft and may adopt it as a Codex standard. The Uniform Procedure for the Elaboration of Codex Standards and Related Texts is described in the procedural manual.

1.7 Codex Step Procedures

The process for elaborating and adopting a new standard through the Codex procedure ensures that adequate consultation occurs between Member Governments, and that there is adequate opportunity

for review and for stakeholder input into the process. There are eight steps involved in the procedures:

Step1

The Commission decides to elaborate a worldwide Codex standard and assigns the work to the appropriate Codex Committee. The criteria for the establishment of work priorities that apply to general subjects and commodities are set out in the procedural manual.

Step 2

The Secretariat of the Commission arranges for the preparation of a proposed draft standard.

Step 3

The proposed draft standard is sent to members of the Commission and interested international organizations for comments on all aspects, including possible implications for their economy. Comments at Step 3 are sent to the Secretariat of the Commission.

Step 4

The Secretariat of the Commission sends all comments to the Secretariat of the concerned Codex Committee. The Secretariat of the Committee compiles the comments at Step 3, and proposes amendments to the proposed draft standard. Comments and proposed amendments are considered at a session of the Committee, where it is decided to propose to advance the text at Step 5.

Step 5

The concerned Codex Committee submits, through the Secretariat of the Commission, the proposed draft standard as amended to the Commission, or to the Executive Committee, for its adoption at Step 5 as a draft standard. Note that at this point the proposed draft standard becomes a draft standard.

Step 6

The draft standard is sent to members of the Commission and interested international organizations for comments on all aspects, including possible economic implications. Comments at Step 6 are sent to the Secretariat of the Commission.

Step 7

The Secretariat of the Commission sends all comments to the Secretariat of the concerned Codex Committee. The Secretariat of the Committee (host government) compiles the comments at Step 6, and proposes the necessary amendments to the draft standard. Comments and proposed amendments are considered at a session of the Committee, where it is decided to propose to advance the text at Step 8.

Step 8

The draft standard as amended previously is submitted to the Commission for its adoption at Step 8 as a Codex standard. The concerned Codex Committee submits the Step 8 draft standard through the Secretariat with a view to adoption by the Commission. During the Commission's session, written proposals for amendments at Step 8 are considered.

The elaboration procedure of Codex standards, therefore, gives to all Member Countries two opportunities to express their views on the proposed texts, before they are sent to the Commission for adoption. The first opportunity is at the proposed draft standard stage (comments at Step 3). The second opportunity is at the draft standard stage (comments at Step 6). The third and ultimate opportunity is given when the draft standard (at Step 8) is considered for adoption at the Commission session. When the Commission meets, any written proposal received from members and interested international organizations to amend the draft standard at Step 8 is considered. Before the Commission meets, each Member Government receives a copy of the text that will be proposed for adoption at the Commission's session. A date is given in the accompanying letter to notify the members of the deadline for sending written proposals on the texts. National procedures for participating in the Codex step process is discussed further in Module 9.

Setting up a national structure suitable to provide opportunities for written comments from appropriate technical and policy personnel during this standards elaboration process is, therefore, an important step towards increasing national input and making a meaningful contribution to the elaboration of Codex standards.

1.8 Accelerated Procedures

In more recent times, some significant issues of food safety have arisen that have required a prompt

Codex response. The Commission has made available a set of procedures for accelerating the elaboration of standards in these situations, or when a matter is minor, or of a consequential nature following action by another Committee.

Approval to use the accelerated procedure requires a two-third majority of votes cast at a Commission session. Two steps (Steps 6 and 7) of the formal eight-step procedure may be omitted. Since instituted at the 23rd Session of the Commission (1993), this accelerated procedure has been used mainly in consensual circumstances, for example, when an amendment was required to an already existing text.

The steps in the accelerated procedures are detailed as follows:
Step 1
The Commission decides which standard should be elaborated through the accelerated procedure. A two-third majority (66 per cent) of votes must be cast for approval.
Step 2
The Secretariat of the Commission arranges for the preparation of a proposed draft standard.
Step 3
The proposed draft standard is sent to members of the Commission and interested international organizations for comments on all aspects, including the possible implications for their economy. The fact that the text is being elaborated under the accelerated procedure is notified to all the members in the circular letter. Comments at Step 3 are sent to the Secretariat of the Commission.
Step 4
The Secretariat of the Commission sends all comments to the Secretariat of the concerned Codex Committee. The Secretariat of the Committee compiles the comments at Step 3, and proposes amendments to the proposed draft standard. Comments and proposed amendments are considered at a session of the Committee, where it is decided to propose to advance the text at Step 5.
Step 5
The proposed draft standard is submitted to the Commission for its adoption at Step 5 as a Codex standard. During the session of the Commission, any written proposals received from members and interested international organizations for amendments at Step 5 are considered. Note that, under the accelerated procedure, a proposed draft standard moves at Step 5 to an adopted Codex standard.

2. ROLE OF EXPERT ADVICE

The standards, texts or recommendations elaborated by the horizontal, or general, subject committees and adopted by the Commission frequently take into account expert advice from the parent organizations and other international bodies specializing in the subject area. The Joint FAO/WHO Expert Committee on Food Additives (JECFA), the Joint Expert Meeting on Microbiological Risk Assessment (JEMRA), and the Joint FAO/WHO Meeting on Pesticide Residues (JMPR) play a very important role in providing independent and expert scientific recommendations to the respective Codex Committees. The role of science in the elaboration of Codex norms is further discussed below.

Expert advice is also sought from internationally recognized world experts in special subject areas through formal consultations. Such consultations have been recently held on key food safety areas such as Risk Assessment, Risk Management and Risk Communication, Safety Assessment of Biotechnology, Food Fortification, Animal Feedstuff Safety, the Use of HACCP Principles in Food Control, Listeria in Fish Products, etc. The considerations, conclusions and recommendations of the experts are provided to the world community as published reports, and are available for use by national governments, international organizations and institutions and other interested parties at all levels, including Codex and its subsidiary bodies, in carrying out their functions. These reports can be found on the web sites of the FAO or the WHO.

2.1 Joint FAO/WHO Expert Committee on Food Additives (JECFA)

The Joint FAO/WHO Expert Committee on Food Additives (JECFA) is an independent scientific Committee of experts, each serving in his own personal capacity and not as a member of his government or of an

affiliated organization. They carry out the toxicological evaluation of proposed substances to be used as food additives and elaborate the chemical specifications for these substances. The Committee's mandate has been expanded in recent times to include the evaluation of residues of veterinary drugs when used in accordance with good veterinary practices in animals used to produce human food products. They also carry out evaluations of industrial and environmental contaminants of food, including agricultural production inputs, and make recommendations on the maximum tolerable levels permitted without noticeable health consequences.

The JECFA meets twice each year (alternately in Rome and in Geneva) to evaluate substances placed on their agenda. A 'call' for information, research data and studies on the substances to be reviewed precedes each meeting. Reviews and evaluations are made, based on the information resulting from the 'call', when sufficient and appropriate information to make the evaluation is received. Otherwise, the evaluation is delayed until sufficient and appropriate data are available.

Included in the review are data available in the open research literature, available private studies and toxicological and specification data supplied by the sponsor of the substance. The JECFA is serviced by a joint Secretariat, located in the FAO's Food Quality Liaison Group in the Food and Nutrition Division, Rome, and in the WHO's International Program for Chemical Safety (IPCS), Geneva.

2.1.1 Food Additives and Contaminants

The JECFA evaluation of proposed substances for use as a food additive normally results in an estimate of the amount of the additive, expressed on a body weight basis, that can be ingested daily over a lifetime without appreciable health risk. This is referred to as the Acceptable Daily Intake (ADI). The term 'ADI not specified' is used by the JECFA when the total daily intake of the substance from food, does not, in the opinion of the JECFA, represent a hazard to human health.

The recommendations of the JECFA are published and available for use at the national, regional and international levels. The Codex Alimentarius Commission, and particularly the Codex Committee for Food Additives and Contaminants (CCFAC), considers these recommendations in the elaboration of maximum levels for chemical contaminants and the safe use levels of substances proposed for use, for technical purposes, as additives in food.

In the case of contaminants, the JECFA recommends provisional tolerable weekly or provisional tolerable maximum daily intake levels. This is intended to signify permissibility rather than acceptability for the intake of contaminants unavoidably associated with the consumption of otherwise wholesome and nutritious food.

2.1.2 Veterinary Drug Residues

In the case of veterinary drugs, the JECFA recommendations are based on the toxicology of veterinary drugs and their residues, their depletion from edible animal tissues, and a conservative theoretical daily intake of food of animal origin. The Expert Committee carries out toxicological evaluations of veterinary drugs and normally derives an ADI in the same way as for food additives. However, anti-microbial activity may become the end-point for setting the ADI when residues of an anti-microbial veterinary drug ingested in food may affect intestinal flora and impact on human health.

The Maximum Residue Limits (MRLs) of veterinary drugs in tissues and milk are proposed at levels that can be reached within practical withdrawal times. The JECFA also estimates the potential intake of residues of veterinary drugs using the proposed MRLs and standard assumptions about the consumption of edible animal products, such as meat and milk.

These estimates of potential intakes are compared with the ADIs. The JECFA recommendations on MRLs associated with veterinary drug residues are considered by the Codex Committee on Residues of Veterinary Drugs in Food (CCRVDF).

2.2 FAO/WHO Joint Meeting on Pesticide Residues (JMPR)

The Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and in the Environment and the WHO Core Assessment Group come together to form the FAO/WHO Joint Meeting on Pesticide Residues (JMPR). This group carries out toxicological evaluations of agricultural chemicals, normally resulting in an estimate of the ADI. In addition, the JMPR proposes MRLs for individual pesticides in or on specific commodities. These MRLs are primarily based on the residue levels estimated in supervised field trials when the pesticide is used according to Good Agricultural Practices (GAPs). In cases where initial estimates indicate that the ADI may be exceeded, more refined intake calculations are performed, using national food consumption data and information from chemical residue monitoring programs.

The Expert Committees establish chemical safety standards based on a review of toxicological studies in the most sensitive test animal species. They factor in an adequate level of safety (safety factor), use risk assessment procedures, consider use and consumption patterns and define the specifications of the identity and purity of food grade chemicals to be used.

2.3 Ad Hoc Expert Consultations

Ad hoc expert consultations are convened by either the FAO, the WHO or jointly by both organizations to address specific issues on which specific expertise is required to facilitate the work of Codex. In more recent times, a series of ad hoc expert consultations on risk analysis, risk assessment, risk management and risk consultation have been held in response to the international desire to base all standards on an assessment of the risks affecting human health and safety. The independent advice from these consultations has led to the Codex Commission giving advice to its Committees on the application of risk analysis as an intrinsic part of standards design and development. Module 6 of this manual provides further information on the principles of risk analysis and its major components and the significance of risk analysis in the development of the food safety system.

There have been other expert consultations that have provided guidance to the work of Codex in areas such as biotechnology, microbiological hazards, mycotoxins, trade impact of listeria in fish products, validation of analytical methods for food control, animal feeding and food safety, food fortification, street food, probiotics, and others. The reports of expert consultations are available on the FAO web site: www.fao.org/es/ESN/index_en.stm.

3. INTERACTION BETWEEN SOME CODEX COMMITTEES

There is a synergy between the work of different Codex Committees that ensures the consistency of outcome and that requires certain aspects of the Commodity Committees to be endorsed by the horizontal Committees. Thus, Codex Committees do not work in isolation, even though each Committee or Task Force has a discreet mandate – see the procedural manual for Terms of Reference of the Committees and Task Forces.

3.1 Food Hygiene and Food Labeling

The Codex Committee for Food Hygiene and the Codex Committee for Food Labeling carry out their functions by developing proposed general subject standards. For example, the Labeling Committee has elaborated the Codex General Standard for the Labeling of Pre-packaged Food. When a Commodity Committee considers the development of a standard of a pre-packaged food, it merely refers to the labeling standard as the requirement for the labeling aspect of the standard being considered. In another example, the Food Hygiene Committee has elaborated the recommended International Code of Practice – General Principles of Food Hygiene. When a Commodity Committee considers the development of a food standard, it in turn refers to the Code of Practice in the standard section related to hygiene.

When the Commodity Committee thinks that the general provisions are not sufficient, or are inadequate for a specific product, it may propose additional or different provisions in the relevant sections of the standard. These are referred to the competent subject matter Committee for consideration and endorsement. The appropriate general subject Committee would review what the Commodity Committee developed and offer suggested changes, revisions and so on, if necessary, or endorse it as written.

3.2 Food Additives and Contaminants Provisions

When preparing a standard, Commodity Committees prepare a section on food additives containing all the necessary provisions for this specific standard. All authorized additives that are considered technologically necessary, or are widely permitted for use in food, are listed with a maximum level of use expressed – for example, in mg/kg, g/kg or mg/l of product. Similarly, maximum levels are also proposed for major contaminants.

When the text has been adopted as a draft standard (Step 5 of the procedure), the provisions relating to additives and contaminants established by the Commodity Committee are referred to the Codex Committee on Food Additives and Contaminants (CCFAC) for endorsement. In the case of food additives, the CCFAC determines whether or not the proposed use is consistent with the provisions of the Codex General Standard on Food Additives, in particular the General Principles for the Use of Food Additives, and whether the combined use of the additive in the commodity and all other food would pose a potential hazard for consumers' health. The same procedure is followed with regard to contaminants.

3.3 Methods of Analysis and Sampling

Methods of analysis and sampling that are recommended by Codex are published in Volume 13 of the Codex Alimentarius. The section on Methods of Analysis and Sampling in the Codex Standard usually refers the reader to this volume for methods and sampling information rather than including the method in the standard itself. The Codex Committee on Methods of Analysis and Sampling (CCMAS) may develop methods that are of general application, and, in this case, is responsible for carrying out all the steps of the procedure for adopting the method as part of the Codex Alimentarius.

Similarly, when a Commodity Committee proposes a method of analysis or a sampling procedure, the proposal must be referred to the CCMAS at Step 4 of the adoption process. This allows the Member Governments time to review and offer comments on the proposal at the earliest stage in the development of the standard.

The Codex Committees on Food Hygiene (microbiological methods), the Codex Committee on Food Additives (food additive specifications), and the Codex Committee on Pesticide Residues also elaborate methods of analysis and sampling. These methods are not referred to the CCMAS as the proposed methods originate from Codex Committees recognized for their competence in these fields.

4. CODEX ACHIEVEMENTS AND CURRENT TRENDS

4.1 Standards and Related Texts[2]

As of 2003, the Codex Alimentarius Commission had in place 237 adopted standards for food in all the main groups of food traded at the international level. Its commodity standards have been updated to align with contemporary trends for performance-based standards.

Codes of Practice provide guidance on acceptable manufacturing and food processing and handling practices during production, transport and storage. The Codex Commission has elaborated 47 codes,

[2]The number of Codex standards, codes, MRLs, MCPs, etc, are as at the conclusion of the 24th Session of the Commission (July 2001) and the Extraordinary Executive Committee meeting (September 2001).

some of which have a general application across food product classes or groups, while others are specific for certain commodities or food. These codes serve as a means of providing specific recommendations to producers and to government regulatory organizations on specific Good Manufacturing Practices (GMPs) for the commodities they address. These codes, when used appropriately, can serve to enhance compliance with Codex standards and international trading requirements.

The review of chemicals for approved use in agricultural practice has resulted in the evaluation of over 200 chemicals (pesticides, herbicides, etc) and the establishment of approximately 2,500 Maximum Residue Levels for these substances in various types of food when used under Good Agricultural Practices (GAPs) in food production systems.

The Commission has established guidelines for the maximum tolerable levels for 25 common industrial and environment contaminants of food. Food additive evaluations have resulted in the establishment of acceptable use levels (that is, with no appreciable health risk over a lifetime) for 1,300 additives used in food. Veterinary drugs have also been evaluated for the safety of drug residues remaining in food of animal origin, when the drugs are administered under the control of acceptable Good Veterinary Practices (GVPs) in animal husbandry. Under the conditions of use specified, 54 drugs have been found to be acceptable with the established MRLs and 289 limits for veterinary drug residues have been established.

In addition, the Commission has adopted a number of sets of principles and guideline texts for use in food import and export inspection and certification systems, the application of concepts such as the judgment of equivalence, food safety objectives, and the application of other legitimate factors in the context of Codex. It has endorsed methods of analysis and sampling applicable throughout the commodity standards. At the time of preparing this manual, the Commission was also addressing issues involved as a result of 'new' technologies, such as biotechnology, and developing guidance on animal feed.

The adopted texts of the Commission can be found on the Codex web site, and further reference to the Codex Alimentarius is set out in Sections 6, 7 and 8 of this manual.

4.2 General Decisions of the Commission

In furthering its objectives to deliver internationally agreed standards and related texts for use in domestic regulation and international trade in food based on scientific principles and affording the world the highest attainable levels of consumer protection, the Commission sets down two key Statements of Principle that apply to all Codex decision-making processes.

4.2.1 Role of Science in the Codex Decision-making Process

The Codex Commission has considered science to be the basis for elaborating food standards, guidelines and recommendations, particularly in its mandate to protect human health and to facilitate trade in safe, wholesome and nutritious food at the international level. In today's trading environment there is no question that this is one of the most important aspects of trade in food for all countries.

In order to reaffirm the basic principles on which Codex functions, during its 21st Session (1995), the Commission adopted four Statements of Principle confirming the role of science as the primary factor which underpins all Codex work, especially in regard to standards and other recommendations directed towards the protection of consumer health. These statements (full text in Annex 2) require that:

- Food standards, guidelines and other recommendations of Codex are based on the principle of sound scientific analysis through a review of all relevant information.
- Other legitimate factors relevant for the health protection of consumers and the promotion of fair practices in food trade also play a part in Codex decisions.
- Food labeling plays an important role in furthering these two objectives.
- When members of Codex hold differing views about Codex considerations, they may abstain from the acceptance of a standard without necessarily preventing the Commission's decision.

The Commission has, in response to the need of its members, provided further guidance on the role to be played by factors other than science that may affect the health protection of consumers and promote fair food trade practices. By its 24th Session (2001), the Commission had adopted a set of criteria for the consideration of other factors referred to in the second Statement of Principle Concerning the Role of Science in the Codex Decision-making Process (see Annex 2 for full text). In essence, these criteria identify the food safety risk management process as the point at which other legitimate factors may be identified, and that risk managers have a role in indicating how these factors might influence the selection of risk management options as well as the development of standards, guidelines and related texts.

The criteria, therefore, place the onus on the respective Codex Committees, which are responsible for risk management, to ensure that a clear separation is made between the science-based risk assessment process and the risk management process. Member Countries are also responsible for recognizing that some factors may be relevant in the national legislative context, but are not generally applicable or relevant worldwide.

The application of these Statements of Principle clearly align with the obligations of the World Trade Organization Members (see Module 5 of this manual).

4.3 Role of Food Safety Risk Assessment

At its 22nd Session (1997), the Commission endorsed the Statements of Principle Relating to the Role of Food Safety Risk Assessment to ensure that the health and safety aspects of Codex decisions and recommendations are based on a risk assessment as appropriate to the circumstances (full text in Annex 2). Food safety risk assessments must be soundly based on science, use available quantitative information to the greatest extent possible, and present readily understandable and useful risk characterizations, in accord with the risk assessment process (see Module 6 of this manual). These Statements of Principle reiterate the need to maintain a functional separation between the risk assessment and the risk management processes. They also recognize that some interactions between the two processes might be essential for a pragmatic approach.

4.4 Strategic Framework and Medium-term Plan

The Commission adopted at its 24th Session (2001) a Strategic Framework for 2003-2007. This document sets out the strategic priorities for the Commission and provides the basis for the elaboration of its Medium-term Plan for the period. It is important to note that the Commission has always operated in an environment of change and technological advancement. The growth in world food trade, increasing mobility of populations, growing international concern related to an increase in food-borne diseases, consumers becoming more aware than ever about food safety issues, and the new recognition and status that Codex standards, guidelines and other recommendations acquired under the World Trade Organization Agreements have brought new challenges and greater responsibilities to the work of Codex.

The Strategic Framework sets out the Strategic Objectives, each with equal importance as follows (complete text available from www.codexalimentarius.net):

- Promoting sound regulatory frameworks: This objective stresses the importance of sound national food control and regulatory systems and the strong interest of the Commission, and its parent bodies, the FAO and the WHO, in promoting national regulatory systems that are based on international principles and guidelines and address all components of the food chain.
- Promoting the widest and consistent application of scientific principles and risk analysis: The Commission has been actively involved in promoting its capacity to include health considerations in its standards and guidelines through the widest possible application of risk analysis based on Codex principles. Developing further the concepts and sound working principles of risk analysis is essential as the new 'science' continues to evolve.
- Promoting linkages between Codex and other multilateral regulator instruments and conventions: The Commission recognizes that it does not, and cannot, operate in isolation from other relevant international standard-setting bodies. Recognized by the WTO Agreements as the international body

for establishing food safety standards, the Commission has a clear obligation to respond to food standards issues that protect the health of consumers and ensure fair practices in the food trade. Interaction with other related international bodies will ensure international congruity on regulatory initiatives and developments as they emerge.

k Enhancing the capacity to respond effectively and expeditiously to new issues, concerns and developments in the food sector: The rapid development of technology and the emergence of food safety as a major public policy issue will continue to stimulate the Commission's capacity to respond to the needs of its members in a timely and effective manner. The development of the Strategic Framework, expanding opportunities for the discussion of selected contemporary food safety and regulatory policy issues, promoting consensus-based decision-making, and utilizing modern information technologies are means at hand for the Commission to refocus the manner in which it communicates its outcome.

k Promoting the maximum membership and participation: As noted above, the membership of the Codex Alimentarius Commission in 2001 had grown to 165 countries. But members must participate fully, particularly developing countries, as they contribute to the significant proportion of Codex Member Countries. The Commission recognizes that resource constraints may impede the effective participation by developing countries, and that bilateral or multilateral technical assistance, including training, are needed.

k Promoting the maximum application of Codex standards: The Commission has a clear and strategic interest in promoting the maximum use of its standards both for domestic regulation and for international trade. Harmonization with Codex norms is essential for promoting a global approach to consumer health protection and minimizing the negative effects of technical regulations on international trade. Sustained commitment and effort is required in promoting the application of sound science, the principles of risk analysis, the Statements of Principle on the Role of Science in the Codex Decision-making Process and the Statements of Principle Relating to the Role of Food Safety Risk Assessment. Similiarly, the processes of Codex must be inclusive and transparent and provide for the participation and input of all interested groups at both, national and international levels. Section 4 of this training manual specifically addresses the latter issue.

The Strategic Framework for 2003-2007 provides the basis for the Medium-term Plan for the same period. The 24th Session of the Commission (2001) required a new dimension to the Medium-term Plan in the form of cost estimates that would determine whether the objectives could be achieved within available resources. The plan is updated following each Codex Committee/Task Force session to include new proposals as they arise. It is available from the Codex web site: www.codexalimentarius.net.

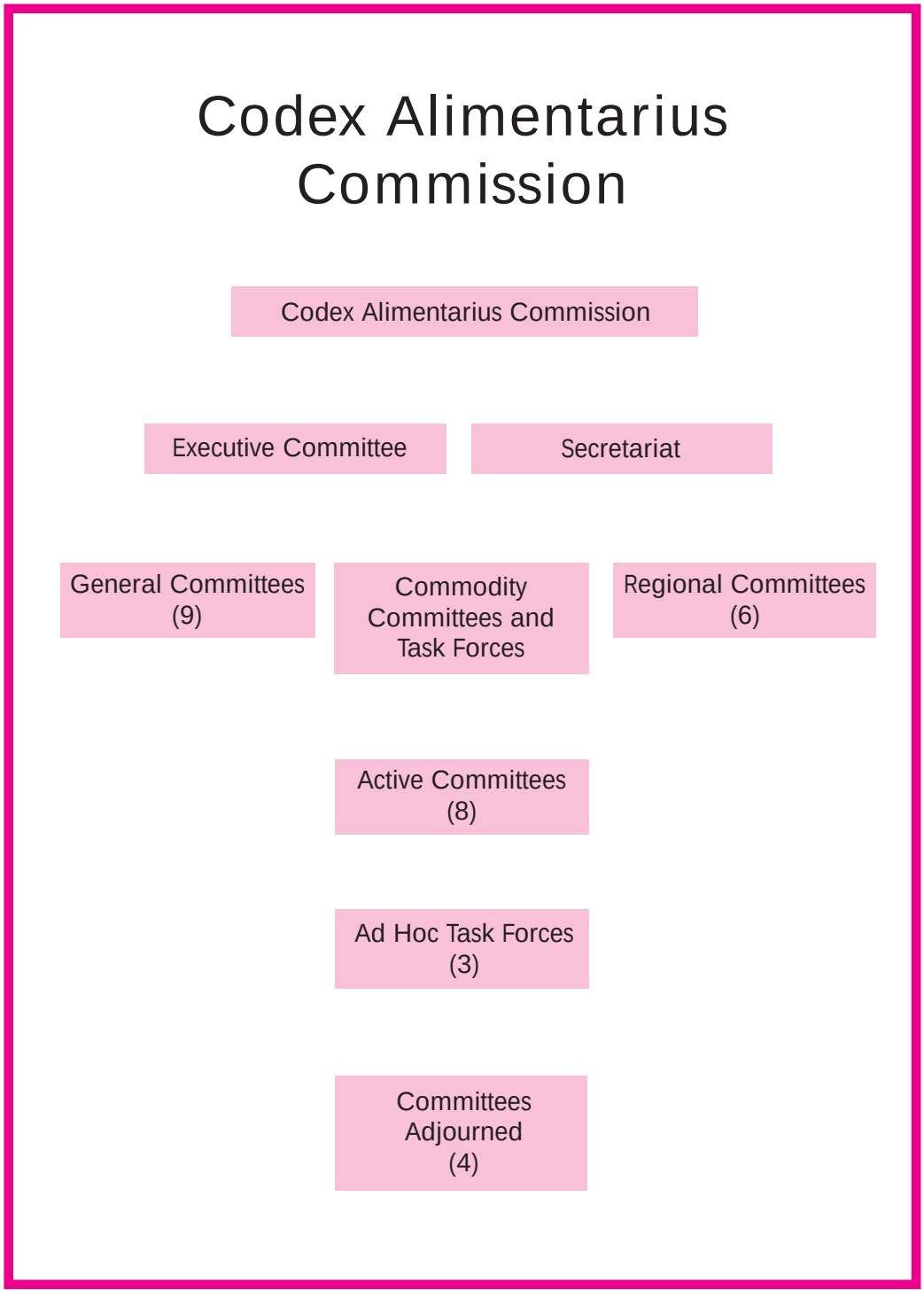
5. CONCLUSION

The fundamental mandate of the Commission is to develop international standards for consumer health protection and fair practices in food trade. The Strategic Framework for FAO 2000-2015 accords a high priority to promoting policy and regulatory frameworks for food at the international and national levels. Similarly, the 53rd Session of the World Health Assembly recognized the need to highlight health considerations in international food trade. It acknowledged the importance of the CAC for assuring the highest levels of consumer health protection.

Further, as Codex standards, guidelines and recommendations have the full support of the World Trade Organization's SPS and TBT Agreements, they will also play a significant role in the harmonization of national food safety standards. Thus, the collective body of Member Countries that comprise the CAC continues to develop international agreed standards and related texts for use in domestic regulation and international trade in food that is based on scientific principles and fulfills the objectives of consumer health protection and fair practices in food trade.

REFERENCES

1. *Understanding the Codex Alimentarius.* FAO/WHO. Rome. 1999. www.codexalimentarius.net
2. *Codex Alimentarius.*14 Volumes. www.codexalimentarius.net
3. *Codex Alimentarius Commission Procedural Manual*.12th edition. FAO/WHO. Rome. 2001. www.codexalimentarius.net


Codex Alimentarius Commission
Codex Alimentarius Commission
Executive Committee
Secretariat
General Committees (9)
Commodity Committees and Task Forces
Regional Committees (6)
Active Committees (8)
Ad Hoc Task Forces (3)
Committees Adjourned (4)

STATEMENTS OF PRINCIPLE CONCERNING THE ROLE OF SCIENCE IN THE CODEX DECISION-MAKING PROCESS AND THE EXTENT TO WHICH OTHER FACTORS ARE TAKEN INTO ACCOUNT[3]

1. The food standards, guidelines and other recommendations of Codex Alimentarius shall be based on the principle of sound scientific analysis and evidence, involving a thorough review of all relevant information, in order that the standards assure the quality and safety of the food supply.
2. When elaborating and deciding upon food standards, Codex Alimentarius will pay regard, where appropriate, to other legitimate factors relevant to the health protection of consumers and for the promotion of fair practices in food trade.
3. In this regard, it is noted that food labeling plays an important role in the furthering of both these objectives.
4. When the situation arises that members of Codex agree on the necessary level of protection of public health but hold differing views about other considerations, members may abstain from the acceptance of the relevant standard without necessarily preventing the decision by Codex.

Criteria for the Consideration of the Other Factors Referred to in the Second Statement of Principle:[4]

- When health and safety matters are concerned, the Statements of Principle Concerning the Role of Science and the Statements of Principle Relating to the Role of Food Safety Risk Assessment should be followed.
- Other legitimate factors relevant for health protection and fair trade practices may be identified in the risk management process, and risk managers should indicate how these factors affect the selection of risk management options and the development of standards, guidelines and related texts.
- The consideration of other factors should not affect the scientific basis of risk analysis; in this process, the separation between risk assessment and risk management should be respected, in order to ensure the scientific integrity of the risk assessment.
- It should be recognized that some legitimate concerns of governments when establishing their national legislation are not generally applicable or relevant worldwide.[5]
- Only those other factors which can be accepted on a worldwide basis, or on a regional basis in the case of regional standards and related texts, should be taken into account in the framework of Codex.
- The consideration of specific other factors in the development of risk management recommendations of the CAC and its subsidiary bodies should be clearly documented, including the rationale for their integration, on a case-by-case basis.
- The feasibility of risk management options due to the nature and particular constraints of the production or processing methods, transport and storage, especially in developing countries, may be considered. Concerns related to economic interests and trade issues in general should be substantiated by quantifiable data.
- The integration of other legitimate factors in risk management should not create unjustified barriers to trade[6] and particular attention should be given to the impact on developing countries of the inclusion of such other factors.

[3]Decision of the 21st Session of the Commission, 1995. [4]Decision of the 24th Session of the Commission, 2001. [5]Confusion should be avoided between justification of national measures under the SPS and TBT Agreements and their validity at the international level. [6] According to the WTO principles, and taking into account the particular provisions of the SPS and TBT Agreements.

STATEMENTS OF PRINCIPLE RELATING TO THE ROLE OF FOOD SAFETY RISK ASSESSMENT[7]

1. Health and safety aspects of Codex decisions and recommendations should be based on a risk assessment, as appropriate to the circumstances.
2. Food safety risk assessment should be soundly based on science, incorporate the four steps of the risk assessment process, and be documented in a transparent manner.
3. There should be a functional separation of risk assessment and risk management, while recognizing that some interactions are essential for a pragmatic approach.
4. Risk assessment should use available quantitative information to the greatest extent possible and risk characterizations should be presented in a readily understandable and useful form.

[7]Decision of the 22nd Session of the Commission, 1997.

National Food Control Systems and Codex

INTRODUCTION

The access to safe, reliable and nutritious food supplies is a basic need for all people. Governments have an obligation to ensure this need is met. Producing safe and good quality food is also a prerequisite to the successful and sustainable development of national agricultural resources and of domestic and international food trade.

Food quality and safety systems have been part of the basic fabric of societies for a very long time. Today, some 165 countries comprise the Codex Alimentarius Commission that has over 40 years consistently provided guidance to governments on food quality and safety standards and continues to meet the contemporary challenges in food safety and quality. Since the establishment of the World Trade Organization in 1994, there has been an increased awareness of the need to achieve international harmonization of the standards used in food quality and safety. Thus Codex has emerged as the pre-eminent organization in this field. Governments are encouraged to utilize Codex to the greatest extent possible in the design and development of food quality and safety systems in order to facilitate international harmonization of the standards applied both domestically and in trade.

Consumer protection measures continue to evolve and expand to provide a greater degree of protection and to deal with the increased levels of sophistication in the problems associated with food quality, safety and trade practice. With mass production technology to meet the needs of ever-increasing urban populations, greater movement of people across countries, more complex food safety issues and decreasing government budgets, it is evident that more efficient means are needed to avoid sacrificing either the control or protection of consumers and trade.

Food control plays an important role in assuring a high quality, safe and nutritious food supply for the public, for their good health and for the economic benefits derived from trade in safe and quality food. The FAO Conference on International Food Trade Beyond 2000: Science-based Decisions, Harmonization, Equivalence and Mutual Recognition, held in Melbourne, Australia, in October 1999 (the Melbourne Conference), noted in its recommendations that there was an urgent need for developing countries to become aware of the economic and health benefits of food control systems at the highest political and policy levels in the country. The Conference also called upon the CAC when elaborating and deciding upon Codex standards and any related texts to take into consideration the special needs of developing countries, including infrastructure, resources, technical and legal capabilities, while also recognizing that food safety standards cannot be compromised.

1. IMPORTANCE OF FOOD CONTROL

The importance of food control need not be overemphasized. But recent events are sufficiently alarming to have created some concerns about the effectiveness of the food control systems. Every year, nearly 800 million people all over the world suffer from widespread malnutrition, most of them in developing

countries. Malnutrition is not only the result of insufficient food supplies; it is also caused by the consumption of a limited variety of food, its poor quality and unsafe nature. Also, every year, three million children die from diarrheal diseases (including dysentery) brought about by the consumption of poor quality food and unsafe drinking water.

An examination of the basic food safety concerns of most people throughout the world will find that consumers are concerned about chemical contaminants in the food supply, in particular mycotoxins (including aflatoxins); industrial chemicals such as polychlorinated bi-phenols and toxic heavy metals; the use of agricultural chemicals, such as pesticides and fertilizers; the presence of residues of drugs administered to animals and the safety of colors and the various types of additives added to the food supply.

During the late 1990s/early 2000s, biological contamination surfaced as one of the most important concerns of consumers, particularly in developed countries. There are increasing concerns about pathogenic organisms that also exhibit antibiotic resistance. Also, considerable concern has been expressed by some consumers and scientists over the use of new technologies, such as the use of biotechnology in food product development. Consumers continue to resist purchasing food that has been irradiated, despite the fact that this technology has received considerable scrutiny and has been considered safe for a number of years – provided it is used in accordance with proper control measures. Other technologies of concern include the use of packaging innovations such as modified atmosphere packaging, as well as food fortification as a means of overcoming micronutrient deficiencies.

In the light of these concerns, an effective food control system is needed to assure consumers about the safety and quality of the food supply and to promote and facilitate trade both domestically and externally. Internal food trade would benefit by the value addition of products, the protection of careful and scrupulous producers and processors against unlawful competitors, and the development of industry and trade. External food trade would be facilitated by better international market access and foreign exchange earnings and by the avoidance of the dumping of inferior quality products.

2. WHAT IS FOOD CONTROL?

Under contemporary practices, it is recognized that food control is applicable throughout the entire food chain, from pre-farm inputs through to the consumption of the food. The official food control system, therefore, includes: 'All mandatory activities necessary to assure the quality and safety of food.'[8] The three basic characteristics of a food control infrastructure include:

- Food policy, law and accompanying regulations.
- A food inspectorate, analytical services and compliance unit.
- Supporting services (education, information, training and advisory support), including human resources and infrastructure.

Official food control has its foundation in law. Without the legal framework[9] of the government, there is no credibility for official activities or for those who carry them out. Further, there is no incentive for others to comply with any directive issued by an 'unauthorized' agency. While this defines the role of the government in food control, other partners, namely the food industry and the consumer, are also involved. Many segments of the food producing industries, such as farmer groups, food processing companies, wholesalers and retailers, have recognized that they, too, have a responsibility for ensuring the safety and quality of food. Although frequently driven by commercial imperatives, there are now many voluntary programs in place that complement the official food control system. There are also many programs where government and industry work in partnership to achieve the desired outcome.

2.1 Role of Government in Food Control Food Legislation

As a first step in improving food control, the legal framework on which it is based should be reviewed and revised, and updated where necessary. Food legislation[10] is an expression of the will of the government

[8]FAO. Food and Nutrition Paper (FNP) series on Food Quality Control – Manual 14/11 titled 'Management of Food Control Programs'.
[9]The Melbourne Conference underlined the usefulness of using the FAO/WHO Model Food Law for developing the legal framework.
[10]A Model Food Act has been developed by the FAO/WHO, see www.fao.org.

to assure food quality and safety and to carry out consumer protection measures as a matter of public policy. The terms used in the law should be clearly defined, along with procedures for the administration of the law, including the authority to promulgate rules, regulations, Codes of Practice and quality and safety standards. Procedures for food handling, processing, storage, shipping and sale should also be laid out. The law should define the role and authority of the competent government agency, as well as the powers granted to its personnel. It should define the role and responsibility of the private sectors and other institutions such as industry, academic institutions, scientific committees, and consumers, in relation to food quality and safety. In order to ensure the transparency of decisions and to encourage the 'ownership' of the food control system, any effort to revise the food law should incorporate the input of the other partners in food control, the food industry and the consumers.

General regulations issued under the authority of the law should also involve the input of all affected sectors. They should be specific, clear and in plain language so as to be understood by non-technical people. Occasionally, regulations that are sensitive from a regulatory point of view may be issued without outside agency input.[11] In either case, they should clearly state the requirements, limits or other restrictions.

It is good policy to follow up the issuance of any regulation with information designed to provide explanations and answers to anticipated questions. Risk communication is an essential part of the risk analysis process and could, where possible, involve education and training seminars and workshops to facilitate the understanding of and compliance with the regulation.

2.1.1 Functional Components of a National Food Control System

The primary functional units of a food control system, at the basic and minimal level, include an inspectorate, an analytical service, and a regulatory compliance unit. The inspectorate inspects and investigates an industry's performance in complying with official control requirements. The analytical service tests and examines products to determine their compliance with the mandatory requirements of the law and regulations, including food standards, established quality and safety limits for chemical and biological contaminants, packaging requirements and other factors for which testing is required. The compliance unit serves as the enforcement function to oversee the bringing of legal cases when warranted. Other functional units support these activities, including administrative, planning, programming, research and information, and education and training support, to assist both internal agency units and, when resources permit, affected external sectors.

2.1.1.a Food Inspectorate

A primary functional unit of official food control is an adequately staffed and trained inspectorate. The role of the inspectorate is to inspect domestic food manufacturing, processing and handling facilities, import/export food and a company's facilities for compliance with the national legal and regulatory requirements. The inspector normally collects samples for all types of food analysis to demonstrate the compliance level of any suspected food, as well as market samples for monitoring and surveillance purposes. In many countries, the inspectors also conduct investigations into suspected food poisoning or injury, fraudulent marketing and handling practices, complaints by consumers or industry and the illegal import/export of food products.

It is important that the inspectors be trained in the latest investigative techniques and are fully educated in the latest food safety and quality assurance methods. They should receive up-to-date training in the new technologies used in processing and manufacturing, including what is required for the control of these technologies, for them to function at maximum effectiveness and to assure proper performance. They must also be able to evaluate the performance of the equipment and instruments used in production

[11] An example might be the need to regulate food derived from biotechnology where a 'non-genetically modified' equivalent food is not available in adequate quantity, even though there may be strong opposition to such food within the marketplace.

to assure they are appropriately controlled and monitored. In short, they must be well trained and understand the importance of Good Manufacturing Practices (GMPs), recognize deviations from GMPs and know the impact on product quality and safety. Finally, the inspector should understand the utilization of performance-based standards, and the application of Hazard Analysis and Critical Control Point (HACCP)-based systems as a means of enhancing the existing quality assurance and control measures used by the food industry.

2.1.1.b Analytical Service

The laboratory function is critical to food control. The laboratory personnel serve to either confirm or not confirm the suspicion of the inspector that the food products sampled do not comply with regulations. The laboratory also confirms the quality and safety of the food by determining if mandatory levels or limits of contaminants, additives, or other restricted materials are met and if the product complies with mandatory food standards. The laboratory gathers analytical data related to monitoring activities such as those for food contaminants, microbiological contamination, meeting quality and safety standards, and so on. Laboratories deal with very complex analytical problems caused by product composition interference. These problems can only be overcome by using the latest in analytical instruments and sophisticated methods of analysis. This also requires up-to-date technical knowledge acquired only through a continuous personnel training program.

As the analytical results may serve as the basis for legal action against a food producer, the methods and techniques used must be accurate and validated. In the legal system of most countries, these matters come under careful scrutiny, with the laboratory analyst frequently forced to defend his technical abilities, the method and techniques used in the analysis, the accuracy of the instruments used and, finally, the results of the analysis. Official food control laboratories must maintain an internal quality assurance program to assure their credibility under such circumstances.

2.1.1.c Regulatory Compliance Unit

Compliance functions in food control vary from country-to-country. It is generally the responsibility of a legal unit in the Ministry of Justice to carry out court actions. However, the food control unit is usually the unit that recommends penalty actions or sanctions for violations encountered during the course of its investigative activities. If this is the case, the food control unit then should have a compliance unit. This unit would ensure that the recommendations for legal action are appropriate, supported by sufficient and supportable evidence, and are worthy of the time and effort it will take in the courts to achieve a successful enforcement outcome.

The compliance unit would be responsible for those actions that are considered regulatory in nature, such as court actions, and for programs intended to achieve compliance through voluntary means. Most businesses will comply with reasonable rules and laws, provided they understand what they must do and believe it is in their best interest to do so. Consequently, keeping industry informed about the requirements, and working with them to assist in achieving these requirements, will go a long way in assuring that food is safe and of suitable quality, without having to resort to penalty actions.

2.1.1.d Education and Supporting Activities

Some of the supporting functions to food control activities include information, education and training services. These may be the direct responsibility of other government agencies, which act in a horizontal manner across government agency lines in a number of areas, such as health education, trade and industries information services, consumer information services, etc. In any case, it is an important element of the food control process since industry and consumers alike need to have information to make decisions in the business world and marketplace. Food control officials must recognize the need for the development of information in a useable format to keep people informed about the important aspects of the food supply.

The information and training services can conduct workshops and seminars on timely subjects of concern to the industry or the consumers, or can develop informational materials to be used for public distribution. Communication through public media announcements, published brochures, information bulletins, even the development of an Internet home page, can go a long way in keeping people informed. Programs of education and training can be arranged directly or through educational institutions. A consumer affairs unit would relate to consumer issues, and work with consumer groups and the media and public in general to describe the food control programs, get inputs and provide information that is useful and informative. The unit can also assist in imparting important food quality and safety messages to the public, particularly during emergency situations when public involvement is required in providing protection against health threatening hazards related to the food supply.

Science and technology services provide a backup in research planning and support, or for the review of the latest technologies in food control or food processing. They can liaise with academia on technology transfer, to assist in solving technical problems. Scientific advisory services are absolutely necessary for a food control system. Using a risk-based programmed approach to food control requires an understanding of food hazards and of how to control, reduce or eliminate these hazards to decrease consumer health risks. The scientific community plays a vital role in food control, developing methods, conducting research and defining the severity of the risk to consumers. It can assist in solving technical problems and providing sound scientific information to support and defend actions taken. It can provide risk assessment estimates on additives to food, and contaminants and residues, when necessary, particularly in circumstances when a higher level of protection is needed for the public than international standards provide, or where international standards do not exist.

2.2 Role of the Industry

The food industry shares responsibility with government agencies in achieving the objectives of a national food control strategy. It is responsible for the implementation of codes of Good Agricultural Practices (primary production) and Good Manufacturing Practices (secondary production) and a food quality and safety system, for example, HACCP. The role of the industry can also include the education and training of all employees in the areas of food handling and general food quality and safety systems. The industry may also be involved in research into developing technologies for food control. It can provide information to consumers through food labeling and advertising. Ensuring that the industry is included in national food control activities can be instrumental in overcoming potential problems.

2.3 Role of Consumers

Consumers have rights and responsibilities; this means they also have a role in food control. While they have the right to high quality and safe food, they also need to understand there is no such thing as an absolutely safe food supply. They must understand that they have the responsibility for the safe handling and transport of food from the point of purchase, for protecting food in the household, during the handling, preparation, cooking, serving and storage of food to prevent this food from becoming a health hazard. Consumers are also a valuable source of information but they need a focal point in the food control system to communicate their concerns, to lodge any complaints about product deception and poor quality, and to report any injury and illness caused by food. Consumer organizations can play an important role in representing the consumer in the development of a national food control strategy and bringing the concerns of consumers to the attention of policy-makers and the industry.

3. INTERNATIONAL FOOD TRADE REALITIES

There are some factors related to international trade that must be taken into account because of their importance to and their impact on food control and the fair trade of food. Trade in food at the international level is growing at a rapid rate with its continued growth anticipated in the years to come. WTO statistics indicate international trade in food to be worth US$ 380 billion (1997). Although the liberalization of trade practices and the reduction of tariff and non-tariff trade barriers can account for some of this growth, there are a number of other reasons which should be taken into consideration for food control reasons.

Consumers are demanding cheaper food products and a greater variety of food to be available on an all-year-round basis. Over the past several decades or more, there has been mass migration from country-to-country and shifts in populations from the rural areas to growing urban centers. This migration has increased the demand for ethnic and traditional food by people who want access to the food from their native country, generally available only through import. Increase in tourist travel to nearly every part of the world has created the awareness and taste for exotic foods only available through import. The liberalization of the international trading rules that permit free passage without tariffs and non-tariff trade barriers, including technical barriers, has had the impact of opening up markets that were previously protected by import quotas and national protectionist policies.

Technical innovations have made a lot of this possible. Packaging and packing technologies have been introduced which have extended the shelf life of many food products that formerly could not 'go the distance'. This means that, without the packaging technologies, the product would spoil before it ever reached the intended destination and, therefore, could not be exported to faraway countries. Rapid production, handling practices and transportation methods allow food produced by one country to be shipped to another country thousands of miles away. Methods such as containerized and palletized shipments, refrigerated and freezer compartments, at sea fish processing, and air cargo provide the opportunity for a variety of fresh and nutritious products to be available almost all year-round. They also allow contaminated products to be in the hands of consumers in other countries within hours or days, thus increasing the risk. There are a few countries in the world that monitor the import of food products to the degree that they know what products are rejected or detained and for what reasons. Although many countries are beginning to gather this information, the United States of America is the only country that has tracked this information for some time, and makes this information available to the public and anyone who has an interest in such matters.

4. TRADING ENVIRONMENT

The World Trade Organization (WTO) has had a dramatic impact on food trade. The introduction of the disciplines and requirements of the Agreements on Sanitary and Phytosanitary Measures (SPS), and the Technical Barriers to Trade Agreement (see Module 5) have also set the stage for equally dramatic changes in food control. Codex safety and quality standards have become the benchmark for compliance with the SPS Agreement. All trading countries will need to reconcile this fact. By definition, this includes any measure applied to protect human, animal and plant life and health. As it relates specifically to food, it includes the control of food additives, food contaminants, toxins, and disease-causing organisms.

All WTO Member Countries are to harmonize their procedures and standards by participating in the standard-setting process of Codex, and to accept the principle of equivalence, that is, the outcome of the measure is the same regardless of the method used to achieve it. Transparency is required and the availability of information, notification and openness in the decision-making and handling procedures in the administration of the terms of the Agreement will satisfy this requirement when handled appropriately. The SPS enquiry point helps to serve that purpose. Developed countries are encouraged to provide technical assistance to their developing country trading partners and particularly to those that are facing difficulties in meeting the terms of the Agreement.

5. BENEFITS OF USING CODEX

The Codex objectives are based on a framework of standards, guidelines and recommendations that protect consumers and prevent unfair trading practices, while at the same time facilitating international trade. The basic purpose of food control is to do the same thing and the SPS Agreement effectively does this through the mutual agreement of its Member Countries at the international level. It must be emphasized, however, that the SPS makes it clear that technical rules will be allowed, but only when it is justified, and it can only be justified by sound scientific evidence utilizing internationally acceptable risk assessment procedures. This effectively establishes the need for a risk-based food control system for national governments to be utilized for international compliance with trading requirements.

International standards can be used by countries where the capacity to independently develop national standards does not exist. Many developing countries do not have either the technically qualified personnel or the financial resources to contract an expert to do the intense review necessary to evaluate the safety of substances, conduct risk assessments, design inspection systems, develop the criteria for laboratory accreditation, or the development of other parts of the official food control system. The best way to handle these matters is to utilize the work of the Expert Committees (JECFA, JMPR), the outcome of the ad hoc international expert groups/consultations, and the recommendations of the Codex Alimentarius Commission. It is relevant that, over the past 100 years, food control has evolved in a slow and methodical manner, taking one step at a time. It deals with the problems brought about by changes in consumer demands, technology advances, abuses in the environment that influence the safety of food, and new and intense approaches in agriculture and production. The latest challenges are just a continuation of this process, except that there is a greater sense of urgency for those countries whose systems have been slower in the evolutionary process. A liberalized trading system could bring many benefits, especially at a time when demand is high and new opportunities exist. Missing out on this chance simply because food control systems are lacking is likely to be at a great cost to economic growth and to the safety of the national population.

6. FUTURE DIRECTIONS FOR FOOD CONTROL

At the international level, there are some dramatic changes taking place in food control, driven in part by the changes in international food trade. These changes are having both, a positive and negative impact worldwide. For the economics of the developing world that relies heavily on agriculture, there are prospects that additional resources resulting from increased trade can improve food control activities, leading to improved food quality and safety for domestic and export trade.

The negative side of these changes, particularly for a developing country, is in relation to the increased emphasis on food safety. This is not well managed within domestic trade, although the performance in this area is better for export products. Each report of an episode of a food-borne disease from an exported food product weakens trade and consumer confidence in the safety of all imported food products, regardless of the exporting country responsible for the outbreak. Thus, it must be remembered that the quality and safety problems of the exporting country can become the quality and safety problems of a distant importing country almost overnight.

A country cannot go wrong by using Codex standards. Full participation within the limits of a country's resources is strongly recommended so that the Codex standards reflect the inputs of the Codex members and each member has the chance to make a difference. By following Codex and adopting its standards, a country is presumed to comply with the terms of the WTO SPS Agreement. Compliance is a tough requirement and it will take an adequately administered and effective food control system to give countries the type of assurance they will need to convince and establish the confidence of their trading partners.

The responsibility for achieving the same level of compliance for domestically produced and consumed food is a shared one between industry, consumers and the government. The Codex Alimentarius goes a long way in providing 'readymade' components for adoption into the official food control system. The Codex process provides the level of expert debate necessary for updating standards and for dealing with ever-emerging food safety and food quality issues.

REFERENCES

1. *Multilateral Trade Negotiations on Agriculture, A Resource Manual.* Volume III. FAO. Rome. 2000. www.fao.org
2. *Guidelines for Developing an Effective National Food Control System.* Food Control Series 1. FAO. Rome. 1976.
3. *The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Text.* Cambridge University Press. WTO. 1994.
4. *Codex Alimentarius.* 14 Volumes. FAO/WHO. Rome. www.codexalimentarius.net

Codex Code of Ethics for International Trade in Food[12]

INTRODUCTION

Food is big business and food trade is an extremely complex activity that includes exporters, importers, national governments and international organizations and the main buyers and sellers working within commercial arrangements. Currently a number of countries, including developing countries, are becoming both, importers and exporters. The number is expected to increase even further.

In order to be a successful food exporter, a country must produce food that is both, sought after and acceptable to consumers in other countries, and which complies with the statutory requirements of the importing countries. Compliance with the statutory, compulsory or mandatory requirements of the importing countries is an unavoidable and essential prerequisite to a successful and profitable food business. In addition, subject to the provisions of Article 5, no food should be in the international trade which has, in or upon it, any substance which renders it poisonous, harmful or otherwise injurious to health; or consists in whole or in part of any filthy, putrid, rotten, decomposed or diseased substances or foreign matter, or is otherwise unfit for human consumption; or is adulterated; or is labeled, or presented in a manner that is false, misleading or deceptive; or is sold, prepared, packaged, stored or transported for sale under insanitary conditions.

The objectives of the Codex Code of Ethics to be followed for international trade in food is, therefore, to establish standards of ethical conduct for all those engaged in international trade in food or responsible for regulating it and thereby to protect the health of the consumers and promote fair trade practices.

1. FOOD TRADE

Food in international trade should be:
- Safe
- Sound
- Wholesome

Food trade should be based on fair practices. Worldwide concerns in food trade are food safety, food contamination through environmental pollution, adulteration, unfair trade practices in the quality, quantity and presentation of food, food loss and wastage, improvement of food quality and nutritional status.

2. FOOD CONTROL

Food control legislation is yet to be developed in many countries and hence the need arises to take advantages of the Codex Code of Ethics in International Trade in Food for developing confidence in trading between countries.

[12]The code is currently being revised.

3. OBJECTIVE OF CODEX

To protect consumer health and ensure fair practices in food trade.

4. FACILITATION OF TRADE

The Codex Code of Ethics has been developed to assist countries to establish an adequate food control system. The objectives of the Codex Alimentarius Commission can best be achieved by each country establishing or strengthening its food legislation and food control infrastructure and, where necessary, taking advantage of the work of international organizations competent to advise and provide assistance in these areas, particularly of the recommendations of the CAC.

A code of ethical conduct for the international trade in food embodying the principles of sound consumer protection can supplement and complement the establishment and strengthening of national food legislation and food control infrastructures and, at the same time, provide an internationally agreed norm and framework for the realization of practical and effective international cooperation.

4.1 Objective of the Code

To establish standards of ethical conduct for all those engaged in international trade in food.

4.2 What is the Scope?

- The code applies to all food introduced into international trade.
- The code establishes standards of ethical conduct to be applied by all those concerned with international trade in food.

4.3 Principle of International Food Trade

'Safe Food to All' and 'Food Shall Not be Adulterated' is the principle in the international food trade.

4.4 Specific Requirements

- Establish national food standards.
- Establish sound food hygiene practices.
- Establish accurate and adequate labeling.
- Establish a criteria for the use of food additives.
- Establish a limit for pesticide residues.
- Establish a decrease in the microbiological contaminants.
- Establish a control over other contaminants.
- Establish a control over irradiated food.
- Establish a control over food for infants, children and other vulnerable groups.
- Establish nutritional aspects concerning, in particular, vulnerable groups and regions where malnutrition exists.

4.4.1 Food Standards

Appropriate and adequate national food standards should be established and enforced, taking into account that uniform consumer protection and the orderly marketing of food can be better achieved through the acceptance of food standards elaborated by the Codex Alimentarius Commission or the adaptation of national standards to such international recommendations.

4.4.2 Food Hygiene

Food should be subject at all times to sound hygienic practices as set forth in the Codes of Practice elaborated by the Codex Alimentarius Commission.

4.4.3 Labeling

All food should be accompanied by accurate and adequate descriptive information, particularly:
a. In the case of pre-packaged food, labeling should be in accordance with the provisions and standards elaborated by the Codex Alimentarius Commission.
b. In the case of food in bulk and non-retail containers, labeling should be in accordance with the Codex recommendations for the labeling of non-retail containers of food.

4.4.4 Food Additives

The use of and the trade in food additives should be in accordance with the criteria in the General Principles for the Use of Food Additives adopted by the CAC, taking into account the Codex lists of approved food additives (see Reference No. 2).

4.4.5 Pesticide Residues

Limits for pesticide residues in food should be subject to control and should take into account the international maximum limits recommended for pesticide residues elaborated by the CAC (see Reference No. 3).

4.4.6 Microbiological Contaminants

All food should be free from micro-organisms and parasites in amounts harmful to man and should not contain any substance originating from micro-organisms or parasites in an amount that may represent a health hazard.

4.4.7 Other Contaminants

Levels of other contaminants in food should be subject to control and should take into account the international maximum levels recommended for contaminants elaborated by the CAC (see Reference No. 2).

4.4.8 Irradiated Food

Irradiated food should be produced and controlled in accordance with the provisions and standards of the CAC.

4.4.9 Food for Infants, Children and Other Vulnerable Groups

Food for infants, children and other vulnerable groups should be in accordance with the standards elaborated by the CAC.

4.4.10 Nutritional Aspects Concerning, in Particular, Vulnerable Groups and Regions Where Malnutrition Exists

a.No claims in any form should be made about food – particularly processed food – with minimal nutritive value; this implies that food can make a valuable (significant) contribution to the diet.
b. Information concerning the nutritional value of food should not mislead the public.

4.5 Implementation

In the absence of provisions to such standards and requirements as may be agreed upon, with emphasis on the use of Codex standards wherever possible, food exported should conform to:
- Food legislation.
- Regulations.
- Standards.

k Code of Practice.
k Other legal and administrative procedures.

Where stated in the General Principles, expanded in specific requirements, and not covered by appropriate food legislation, regulations, standards, Codes of Practice and other legal and administrative procedures in the importing country, food that is exported should conform to the General Principles stated in specific requirements. It should take into account such standards, Codes of Practice or other guidelines elaborated by the CAC that are applicable to the food or practice or other guidelines elaborated by the CAC for the food or practice concerned.

The authorities of the importing country should inform the competent authorities in the exporting country of all relevant facts of serious cases involving considerations of human health or fraudulent practices and, in particular, the details of the origin of the product in question, and a statement concerning the facts of the matter made to the importing country. This is applicable where, in an importing country, a food product:
a. Is found not meeting the health and safety considerations.
b. Claiming to be in compliance with a standard, Code of Practice or other generally accepted certification system is found not to be in compliance, whether in respect of the label accompanying the product or otherwise.
c. Is the subject of unfair trade practice, or otherwise not conforming to the provisions of this code.

4.5.1 Who is Responsible for Implementation?

The government of the respective country shall develop practices to facilitate ethics in international trade.

4.5.2 How Should the Government Act?

k Provide adequate food legislation.
k Provide adequate food control infrastructure.
k Provide certification and inspection systems.
k Provide legal or administrative procedure.

Governments of exporting countries should:
a. Employ, as appropriate and practicable, legal or administrative controls aimed at preventing the export of shipments of food that do not comply with the provisions of implementation.
b. Promptly notify the importing country of the export of shipments of food found not to comply with, when legal or administrative means of preventing exportation are not available, or were unsuccessfully applied, or where non-compliance was determined after exportation.
c. Make available to the importing country, upon request, suitable certification, inspection or other procedures as appropriate with the manner of compensation for these services to be agreed upon between governments. These include:
k Consultative procedures as may be established between governments of importing and exporting countries, and, generally, between all those concerned with international trade.
k The extent to which international food standards, Codes of Practices and similar other recommendations, elaborated by the Codex Alimentarius Commission, are considered and accepted where relevant and appropriate.

All concerned with international trade in food should take into account the General Principles detailed in this guideline.

4.6 Provisions During an Emergency Situation

Where special circumstances exist under which it is neither possible nor desirable to apply certain provisions of this code, as in the case of famines and other emergencies.

REFERENCES

1. *The Codex Code of Ethics for International Trade in Food.* RCP/20-1979 (Rev 1985). www.codexalimentarius.net
2. *Codex Alimentarius Publication*. Volume 1A – General Requirements. 1998.
3. *Codex Alimentarius Publication.* Volume 2A and 2B – Pesticide Residues in Food – Maximum Residue Limits. 1998.

India's Current Food Control System

INTRODUCTION

Governments have the responsibility for the establishment and operation of national food safety programs and quality control systems that must ensure safe and wholesome food that meet the nutritional needs of consumers and do not endanger the consumer's health through chemical, biological or other contaminants. They must also ensure that food sold is presented in an honest and non-deceptive or non-fraudulent manner. Consumer protection and the prevention of food-borne diseases are two essential elements of a food safety program and they are the shared responsibilities of governments, the food industry and the consumer.

The 'food control system' means the national, state and municipal organizations involved in either the regulation, inspection or analysis of food and agricultural products, together with their supporting legislation and rules and compliance activities.

A. FOOD LEGISLATION

1. PREVENTION OF FOOD ADULTERATION ACT

In India, the Ministry of Health and Family Welfare (MOH&FW) in the Central Government is the nodal Ministry for ensuring the quality and safety of food marketed in the country. A comprehensive legislation called the Prevention of Food Adulteration Act (PFA Act) has been enacted in 1954, which came into effect from June 1, 1955, with the objective of assuring the quality and safety of food as well as to encourage fair trade practices.

The Act has been amended a number of times to make the provisions more practical and consumer-oriented. This Act is a significant piece of legislation in India as it is the basic statute intended to protect the consumer from the supply of adulterated food and it specifies food safety and quality standards for consumer protection. The definition of 'adulteration' includes the addition of cheaper or inferior substances to deceive the consumer and the presence of contaminants which may make the food unfit for human consumption. The objective of this legislation is, therefore, not only to ensure pure and wholesome food to the consumers, but also to prevent fraud or deception. It lays down that no person shall manufacture for sale, store, or distribute adulterated or misbranded food products not conforming to the standards laid down in the rules. The provisions apply to imported food as well as to food produced in India.

The overall infrastructure includes the local food inspectors, the public analysts, both at the municipal and state levels, their laboratory facilities, the four central food laboratories designated under the PFA Act and the central PFA Division in the MOH&FW in New Delhi. The central PFA Division is also designated as the National Codex Contact Point for India.

2. OTHER RELATED LEGISLATION

2.1 Essential Commodities Act, 1955

This Act was administered by the Ministry of Consumer Affairs, Food and Public Distribution through the states/UTs for regulating the manufacture, commerce and distribution of essential commodities, including food. While doing so, the Act also lays stress on the quality and hygiene aspects of food. A number of Control Orders have been promulgated under the provisions of the Act. The details are:

a. Edible Oils Packaging (Regulation) Order, 1998, dealing with the packaging of vegetable oils and fats, including Vanaspati administered by the Directorate of Vanaspati, Vegetable Oils and Fats, Department of Food and Public Distribution in the Ministry of Consumer Affairs, Food and Public Distribution.

b. Vegetable Oil Products (Regulation) Order, 1998, dealing with vegetable oils and fats, including Vanaspati.

c. The Solvent Extracted Oils, De-oiled Meal and Edible Flour Control Order, 1967, controlling the production and distribution of solvent extracted oils, de-oiled meal, edible oilseed flours administered by the same Directorate as mentioned above.

d. Fruit Products Order, 1955, dealing with processed fruits and vegetable products (also includes sweetened aerated water, vinegar and synthetic syrup) in the Ministry of Food Processing Industries. It aims at regulating sanitary and hygienic conditions in the manufacture of food products.

e. Milk & Milk Products Order, 1992, dealing with milk and milk products under the Department of Animal Husbandry & Dairying, Ministry of Agriculture.

f. Meat Food Products Order, 1973, dealing with all processed meat and poultry products in the Directorate of Marketing and Inspection, Ministry of Agriculture. The Order also governs the export certification of meat products.

2.2 Standards of Weight and Measures Act, 1976 and the Standards of Weights and Measures (Packaged Commodities) Rules, 1977

These standards are administered by the Department of Consumer Affairs in the Ministry of Consumer Affairs, Food and Public Distribution. They govern the sale of packaged commodities in the country and provide the mandatory registration of all importers of packaged products in the country.

2.3 Agricultural Produce (Grading and Marking) Act, 1937, as Amended in 1986 (AGMARK)

This Act is enforced by the Directorate of Marketing and Inspection (DMI) under the Ministry of Agriculture. It provides for the promotion of the standardization and grading for agricultural food commodities by pre-testing and certification under the General Grading and Marking Rules, 1986 and 1988. Products such as cereals, honey, butter, ghee, edible oils and spices are certified under AGMARK.

2.4 Bureau of Indian Standards (BIS) Act, 1986

This Act is implemented by the Department of Consumer Affairs in the Ministry of Consumer Affairs, Food and Public Distribution. It formulates the standards of processed food products and operates under the voluntary certification scheme, ISI Mark. The organization operating the scheme of certification is known as the Bureau of Indian Standards (BIS). The ISI Mark is mandatory for 47 food items and ingredients. Items such as biscuits, confectionery, packaged drinking water, including mineral water, and food additives are certified by the BIS.

2.5 Export (Quality Control and Inspection) Act, 1963

This legislation, enacted by the Ministry of Commerce and Industry, aims at ensuring the sound development of the export trade of India through quality control and inspection by the Export Inspection Council (EIC) and the five Export Inspection Agencies (EIA) functioning under the Council. With the liberalization of the trade regime, the role of EIAs has become more of a voluntary nature for many items. However, with the establishment of the WTO and the signing of the SPS Agreement, the role of certification in assuring the

quality and safety of food products has become significant. In the area of food certification, the role of EIAs has been reoriented by putting into place a system of certification covering both, product and systems aspects, in line with international requirements with a view to facilitating export.

3. DETAILS OF THE PREVENTION OF FOOD ADULTERATION PROGRAM

The PFA Act, 1954, like the national food legislation in most countries, is targeted at food in commerce, that is, processed food, not home-cooked food. The PFA Act is an amalgam of the English common law and US food statutes and is a fairly modern food law. A few salient provisions of the Act are:

3.1 Definitions Under the Act

3.1.1 Definition of Food

Food means any article used as food or drink for human consumption other than drugs and water and includes:
a. Any article which ordinarily enters into, or is used in the composition or preparation of, human food.
b. Any flavoring matter or condiments.
c. Any other article which the Central Government may have, with regard to its use, nature, substance or quality, declared by notification in the official gazette, as food for those purposes.

3.1.2 The Terms 'Adulterants', 'Adulterated' and 'Misbranded' have been Defined

3.2 Prohibition on the Import of Food Products

Section 5 of the PFA Act, 1954, prohibits the import of the following articles of food:
- Food which is adulterated.
- Food which is misbranded.
- Food which contravenes any other provision of the PFA Act or any Rule.

After the signing of the SPS and TBT Agreements by the Government of India, large volumes of food products are being imported into India. Studies have been carried out by various organizations on imported food products and it is found that the label of the majority of the food products being imported are not meeting the requirements laid down under the PFA Act/Rules.

With a view to streamline the checking of imported food products, the Government of India has issued various instructions from time-to-time. Various departments of the Government of India, including Health, Revenue, Commerce and the Directorate General of Foreign Trade, have initiated several steps to streamline the checking of imported food. The Confederation of Indian Food Trade and Industry (CIFTI) has published 'A Reference Handbook for Importers and Distributors of Food Products' for the benefit of importers as well as inspecting officers posted at ports/airports. This handbook is of immense help in clearing the imported food products. The important provisions which are required to be followed essentially while importing/clearing the food products are:
- Authorized officers to check the imported food products.
- Section 6 of the PFA Act, 1954, authorizes the custom collector to check the imported food products.
- The authorized officer, on suspicion, may detain any imported food product.
- He will send the samples of the detained product to the Central Food Laboratory for analysis.

4. SOME GENERAL COMMENTS ON GOVERNMENT RESPONSIBILITY AS ENABLED THROUGH THE FOOD LAW

4.1 Analysis as to the Suitability of the PFA Act, 1954

While it can be said that the PFA Act is relatively modern, it has been observed that some of the provisions are not up-to-date. For example, the Act overemphasizes the parameters of finished products by testing end-products only, rather than ensuring the adoption of the principles of the HACCP throughout the whole food chain so as to assure the quality and safety of food from farm-to-table.

Imported food is subject to the same mandatory requirements required of food products sold in the domestic market. This policy is in line with the SPS Agreement of the World Trade Organization (WTO) and with Codex guidelines for food import inspection.

As the pressures from the WTO and other international organizations increase due to emerging food safety hazards, the Ministry of Health & Family Welfare, Government of India, which is the nodal agency for the implementation of the Program of Food Quality and Safety, has initiated action to change the existing food laws incorporating the Codex General Principles of Food Hygiene and the HACCP, as well as harmonizing national food standards with Codex standards. To cater to the contemporary aspects of food quality and safety, the MOH&FW has also been taking steps to implement the principles of the HACCP and Food Hygiene.

5. ROLE OF VOLUNTARY STANDARDS AND QUALITY ASSURANCE MARKS

In addition to the legal thrust to strengthen food safety and standards within the industry, the voluntary standards in India also have a significant impact on strengthening food safety management systems. Different sectors of industry are simultaneously being encouraged to adopt the HACCP system of quality control to build quality assurance right from the stage of raw material to the final product and to minimize the chances of the rejection of end-products for failure to meet the prescribed standards of quality and safety. It is proposed to cover the vulnerable industries such as dairy products, fruits and vegetable products in the first instance and extend it to other industries in due course. Sooner or later all food industries shall realize the benefit of this system and adopt these measures within three to four years. Training modules for the adoption of the HACCP system shall be developed with the assistance of experts in the area. Responsible personnel of the industry will be given training in developing critical control points and adopting remedial measures.

A recent initiative by the Agriculture and Processed Food Export Development Authority (APEDA) under the Ministry of Commerce and Industry called 'Quality Produce of India' – a certification mark for agricultural products – is worth mentioning. Its objective is to maintain quality and safety standards and to assure the consumer of adherence to quality assurance measures. It applies to agricultural products for export and it is proposed to initially launch the scheme for meat, rice, fruits and vegetables. The certification mark will be granted on the basis of compliance with hygiene standards, implementation of quality assurance systems such as ISO 9000, the HACCP, backward linkage and residue testing of pesticides and contaminants, laboratory facilities, but is again restricted to food for export.

Another example is the issuance of the 'Quality Mark' spice logo to the consumer for packing spice products by the Spices Board, Government of India. The spice logo is given to products for the export and domestic markets. The Board promotes the products from these units through international fairs and exhibitions. It also provides financial and technical assistance for manufacturers to upgrade the facility and install the system, based on process quality control and the HACCP. The spice logo is granted only to those units who provide a guarantee for the implementation of a quality and safety system and meet the requirements of the regulations laid down by the Spices Board. The system is purely on a voluntary basis.

B. OBJECTIVES OF CURRENT FOOD CONTROL

Modern government control related to food quality and safety generally has three objectives:
1. To assure a safe, wholesome food supply and an acceptable level of consumer nutrition.
2. To foster innovation and variety in food supply.
3. To facilitate the necessary growth in the production and commerce of food products, including exports.

The first objective is primary and often the only one specifically mentioned in statutes. But the others are present, either in the basic need to have and preserve a food supply, in the need for jobs, in the omission of draconian standards, in provisions for due process, and in the recognized day-to-day need to consult with industry. The perceived importance of these three basic objectives has shifted over the years as India has successfully passed through several internal crises and as India's policies have

become more outward looking. The food control system has not quite kept pace with these changes. It has now become essential to pay attention to the facilitation of the export of agriculture and food products. The Sanitary and Phytosanitary (SPS) Agreements and the new World Trade Organization have indicated the path to follow to achieve ready acceptance in world markets. The SPS Agreements call upon members to harmonize their sanitary and phytosanitary measures with international standards (Codex Alimentarius standards).

For food safety, the SPS Agreement requires the harmonization of food standards, food additive ADIs, pesticide and animal drug residues, contaminant tolerances, methods of analysis and sampling and codes and guidelines for hygienic practices. So far, India has given little attention to these matters.

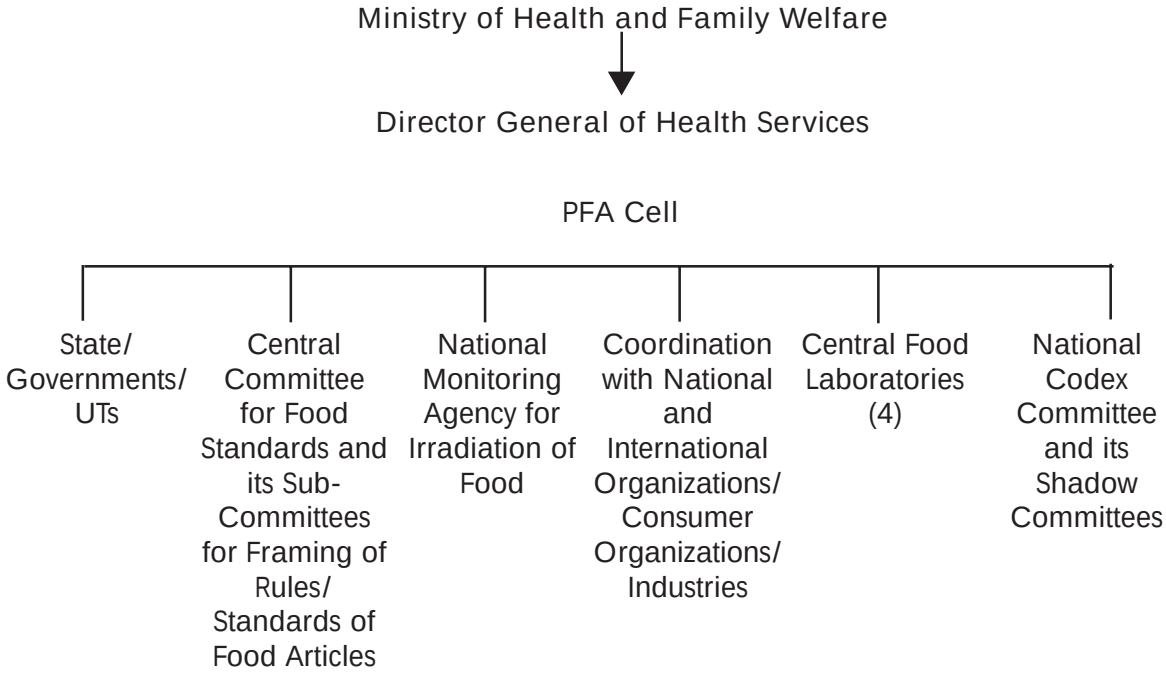
C. FOOD CONTROL ADMINISTRATION – ROLE OF GOVERNMENT AGENCIES

This paragraph sets out the main government agencies with the responsibility for food control activities, such as the inspection of domestic, imported and exported food, strengthening food safety management systems in the food industry and the operation of certification schemes.

C.1 Ministry of Health and Family Welfare

As already stated, the Ministry of Health and Family Welfare largely has the responsibility for the control of the quality and safety of food sold in the domestic market (including imported food). The organizational structure is as follows:

Food Safety and Quality Control Organization



C.2 Responsibilities in Food Control

- Enhance the availability of safe and wholesome food.
- Consumer protection from deception, fraud and food-borne diseases.
- Risk analysis, risk management and risk communication.
- Ensure safety of genetically modified food.
- Enhance the involvement of NGOs and Home Science Institutes.
- Educational authorities to ensure better consumer protection.
- Promote a voluntary management system, the Code of Ethics, through principles of GMPs and the HACCP.

C.3 Central Committee for Food Standards (CCFS)

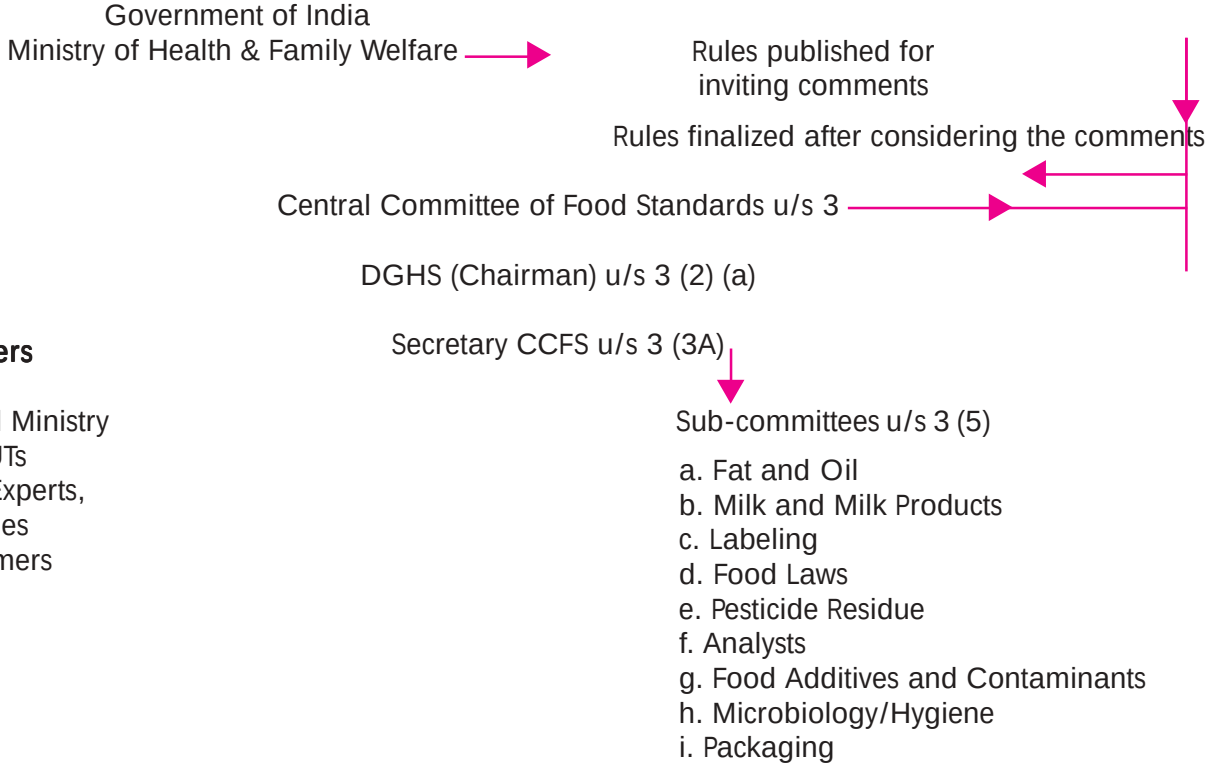
The CCFS advises the government on matters of implementation of the Act and framing of rules, regulations and standards of food. The Committee does take into consideration Codex standards in its deliberations. The Committee also considers various issues concerning food safety such as:

- Strengthening of the state food regulatory system.
- Up-grading laboratories and the adoption of good laboratory practices.
- Introduction of the GMP/HACCP in food processing units – a proposal for the introduction of such requirements under PFA Rules with a time frame of three to four years is already under consideration. The Ministry of Agriculture/Animal Husbandry Department has been urged to look into good agricultural/husbandry/hygiene practices before the processing stage.
- Strengthening of facilities for microbiological analysis.
- Training in the HACCP – modules/materials/trainers. Training plan to be developed.

C.4 Member of the CCFS

1. The Director General, Health Services Ex-officio Chairman.
2. The Director of the Central Food Laboratory, or, in a case where more than one Central Food Laboratory is established, the Directors of such Laboratories, Ex-officio.
3. Two experts nominated by the Central Government.
4. One representative each of the Departments of Food and Agriculture in the Central Ministry of Food and Agriculture and one representative each of the Central Ministries of Commerce, Defence, Industry and Supply and Railways, nominated by the Central Government.
5. One representative each nominated by the Government of each state.
6. Two representatives nominated by the Central Government to represent the Union Territories.
7. One representative each nominated by the Central Government to represent the agricultural, commercial and industrial interests.
8. Five representatives nominated by the Central Government to represent the consumer's interest, one of whom shall be from the hotel industry.
9. One representative of the medical profession, nominated by the Indian Council of Medical Research
10. One representative nominated by the Indian Standards Institution (now called BIS).

C.5 Rule-making Under the PFA Act u/s 23(1)



C.6 Laboratory Facilities Under the PFA Act

There are approximately 80 food laboratories in the country undertaking the analysis of samples of food articles under the provisions of the PFA Act, out of which 13 are managed by local bodies (municipalities). These are known as Public Analyst Laboratories. In addition, there are four Central Food Laboratories notified under the PFA Act to carry out an analysis of appeal samples whenever the report of the public analyst is challenged in the court of law. These are situated in Kolkata, Ghaziabad, Mysore and Pune. These laboratories analyze the bulk of the samples under the PFA Act. Microbiological contamination of food is rarely reported, despite the fact that studies carried out by the Central Laboratories at Pune and Kolkata with the support of the FAO have indicated considerable microbiological health hazards from street food.

D. PARTICIPATION OF NON-GOVERNMENTAL BODIES

Promotional bodies are providing all types of support, such as financial and technical, to food processing industries to improve upon the quality and safety of food. Organizations such as the Agricultural and Processed Food Export Development Authority (APEDA), Marine Product Export Development Authority (MPEDA), Ministry of Food Processing Industries, Department of Small Scale Industries and the Spices Board have been formulating strategies to promote the HACCP and hygiene in the food sectors coming within the purview of each.

The activities of some of these sectors is outlined here in brief.

D.1 Agricultural and Processed Food Products Export Development Authority (APEDA)

The APEDA, in association with CIFTI (Confederation of Indian Food Trade and Industry), FICCI (Federation of Indian Chamber of Commerce & Industry) and other trade associations is already in the area of the HACCP implementation in a number of industries – processing fruits and vegetables, meat, dairy, cereals, nuts, etc. The APEDA is also arranging the audit and certification of the HACCP system through accredited certified bodies.

D.2 Marine Products Export Development Authority (MPEDA)

The MPEDA ensures the highest standards for seafood exported from India. It works in close association with the Export Inspection Council of India and other Indian and international quality control organizations. Assistance is given to registered processors to set up quality control laboratories and modern pre-processing plants throughout the country to meet the ISO 9000 quality standards. The HACCP cell in the MPEDA offers advice on matters connected with EC Directives and US-HACCP requirements.

The development section of the MPEDA extends assistance for the modernization of seafood processing units. Under the Integrated Development Program for Seafood Quality and Extension Services scheme, the MPEDA organizes demonstration-cum-training programs for fishermen and processing workers. Value addition gives the consumer products that bring him a step closer to his meal. Moreover, he gets the parts of his choice at the exact weight measurements. Realizing the importance of value addition in exports, the MPEDA has been concentrating on the development of diversified/value added seafood products. It introduced new technology and encouraged seafood processors to adopt consumer packaging. These efforts have proved to be fruitful as the country has expanded its overseas markets and has achieved higher market value realization with audiovisual aids.

D.3 Ministry of Food Processing Industries (MFPI)

The Ministry of Food Processing Industries is now working on a project to have the HACCP in the units approved by them under the Fruit Products Order, 1955, all over India (nearly 5,000 small-scale units). This is a five-year plan designed by the MFPI in collaboration with industry and experts in food safety. Whatever the industry spends on upgradation and quality/safety system implementation, the MFPI will

reimburse 50 per cent. The MFPI also launches joint venture food processing units for promoting GHPs and the HACCP. These are either with state governments or with promotional bodies.

The sectors are:
- Fruit Processing
- Meat Processing
- Fish Processing
- Dairy Products
- Snack Products

The Central Government has allotted enough finance for these sectors in the current five-year plan. The Ministry of Food Processing is extending financial and technical support to the industry to have the system in place and a number of units have implemented the system.

D.4 Spices Board

It is also in the area of training spice processors in self-inspection. The Board has a program of in-process Quality Control to grant the Spice logo to the processors as a mark of quality. Though the HACCP is not fully implemented in the spice industry, the facility with the logo will certainly find it easy to install the HACCP in place, as there is already a hygiene system in practice.

E. INSPECTION AND CERTIFICATION PROCEDURES FOR IMPORTED FOOD

As stated earlier, imported food is inspected at the ports of entry by personnel of the Collectorate of Customs. If necessary, samples are further tested in the laboratories designated/notified for this purpose by the Ministry of Health and Family Welfare to verify the compliance with the requirements stipulated under the PFA Act, 1954 and Rules.

In addition to the above general procedure, 47 food items required by domestic regulations to carry the ISI Mark on the food label are inspected for a broad spectrum of requirements which include product quality and safety standards as well as compliance with GMPs (Good Manufacturing Practices) and the HACCP. Inspection for the ISI Mark is carried out by inspectors of the Bureau of Indian Standards either at the place of manufacture in the foreign country or prior to entry. A procedure for self-certification of foreign manufacturers or importers of products requiring the ISI Mark has recently been established by the BIS.

F. PROCEDURES FOR FOOD EXPORT INSPECTION AND CERTIFICATION

The Export Inspection Council (EIC) of the Ministry of Commerce and Industry is the official government inspection body for certifying food products for export. It carries out the inspection of several food articles such as marine, milk products, meat, honey, poultry, Basmati rice, black pepper and cashew meant for export.

An interdepartmental panel (IDP) consisting of representatives from industry promotion boards such as the Marine Products Export Development Authority and the Central Institute of Fisheries Technology initially carry out an assessment of the documents, describing the quality assurance systems and standards used by a fish company requesting for certification. If the IDP approves the system, representatives from the same panel audit the company as a team.

The certification or approval of the seafood plant and facility is based on the HACCP implementation and compliance during audit. For other sectors, the certificates issued by other agencies such as the Directorate of Marketing and Inspection operating the AGMARK certification scheme, Ministry of Food Processing Industries implementing FPO (Fruit Products Order 1955) and so on, are based on quality and commercial parameters. The processor often gets the end-products tested to meet the importing country's requirements.

The EIC certifies to the requirements of an importing country. It tailors these requirements with those to which the exporting company should comply. Its certificate covers GMPs and the HACCP, a combination of product specifications and requirements for manufacture, transport and shipping. The product specifications consist of the minimum standards required in India by the buyer, the importing countries and Codex.

The export certification is an important program for facilitating the acceptance of food products by importing countries and for building confidence in Indian food products. The EIC export certificate appears to have a professional reputation and was found to be helpful by the industry.

REFERENCES

1. *The Prevention of Food Adulteration Act*. 1954 (37 of 1954).
2. *The Prevention of Food Adulteration Rules.* 1955 (as on 04.01.2001).

World Trade Organization Agreements

INTRODUCTION

The World Trade Organization (WTO) has its origins in the General Agreement on Tariffs and Trades (GATT). The GATT came to life in 1947 in Geneva as a framework for regulating international trade. At the beginning, a charter was envisaged for the formation of an international trade organization, but this was never ratified by Member Governments. As a result, the GATT continued to be governed by 'provisional' and 'interim' measures, and remained an agreement without a formal organization to enforce it. These 'provisional' arrangements persisted up to 1994 when the Uruguay Round Agreement was concluded and the World Trade Organization established.

The outcome of the Uruguay Round Agreement, ratified in February 1994 at Marrakech, included two key agreements that have a direct bearing on the work of the Codex Alimentarius Commission. These are the rules-based Agreements on Sanitary and Phytosanitary Measures (SPS) and the revised and updated Technical Barriers to Trade Agreement (TBT).

A rules-based system works effectively only when there is a means for settling disputes. Thus, a dispute settlement mechanism is an essential component of the multilateral trade system, in order to provide security and predictability to trade. The new dispute settlement procedures of the Uruguay Round are contained in the Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU). In the context of food safety and quality systems, this may be invoked when there is a trade dispute between countries.

It is relevant that the SPS and TBT Agreements both call up the 'international standards' in the case of food trade disputes. The SPS Agreement specifically refers to the 'standards, guidelines and recommendations of the Codex Alimentarius Commission' as the benchmark for dispute settlement purposes. Thus, the Codex Alimentarius has taken on a new importance as a result of the outcome of the Uruguay Round. On the other hand, the TBT Agreement refers to 'international standards' although it is understood that this refers to the Codex Alimentarius in regard to food products.

Further, both the SPS and the TBT Agreements set out certain obligations for WTO members in respect to their participation in the international food standard-setting process. A recent study[13] undertaken by the WTO and the World Health Organization (WHO) highlights areas where trade and health linkages deserve more careful analysis. It also highlights benefits that are possible when trade and health officials work closely together.

1. AGREEMENT ON SANITARY AND PHYTOSANITARY MEASURES (SPS)

The purpose of the SPS Agreement is to ensure that measures established by governments to protect

[13]WTO Agreements and Public Health – A Joint Study by the WHO and the WTO Secretariat, August 2002.

human, animal and plant life and health are consistent with obligations prohibiting arbitrary or unjustifiable discrimination on trade between countries where the same conditions prevail. Such measures should not be applied in a manner that would constitute a disguised restriction on international trade. With regard to food safety measures, the SPS requires WTO members to base their national measures on international standards, guidelines and other recommendations adopted by the Codex Alimentarius Commission.

For the purposes of the SPS Agreement, 'standards, guidelines and recommendations' has been defined to include all laws, decrees, regulations and procedures related to:

- End-product criteria.
- Processes and production procedures.
- Testing.
- Inspection.
- Certification and approval procedures.
- Quarantine treatments associated with animal and plant transport and materials required for their transport (note that quarantine issues do not fall under the mandate of the Codex Alimentarius Commission).
- Statistical methods.
- Sampling procedures.
- Methods for risk assessment.
- Packaging and labeling.

In respect to the 'standards, guidelines and recommendations' of the Codex Alimentarius Commission, it has been agreed that these terms also incorporate any Codes of Practice, sets of principles, or any other recommendation of the Commission.

For animal life and health, the SPS Agreement recognizes the standards adopted and recommended by the International Office of Epizooties (OIE), and for plant life and health, those standards and recommendations of the International Plant Protection Convention (IPPC). The organizations Codex, OIE and IPPC are known, collectively, as the three sisters.

With regard to food, the term 'phytosanitary measure' means any measure applied to protect human and animal life or health within the territory of the member from risks arising from:

- Food additives.
- Contaminants.
- Toxins.
- Disease-causing organisms in food, beverages or feedstuff.

Only those measures that are necessary to protect human, animal and plant life and health are to be applied by WTO members. Such measures must be based on scientific principles and must not be maintained without sufficient supporting scientific evidence.

However, the Agreement requires WTO members to base their sanitary measures on international standards, guidelines and recommendations where they exist, and if they are sufficient to provide the appropriate level of protection. Importantly, the SPS Agreement also allows for countries to adopt stricter measures than those adopted by the three sisters if there is a scientific justification for doing so, or if the level of protection afforded by the recognized standard-setting organization is inconsistent with the level of protection generally applied and deemed appropriate by the country concerned. Thus the Agreement recognizes the sovereign rights of Member Countries to introduce requirements that may not be consistent with the respective Codex norm, providing that the country can, when requested, provide scientifically-based justification.

Sanitary measures that conform to the international standards (in this case those of the CAC) are presumed to be in conformance with the requirements of the SPS Agreement. But, where the importing country's measures differ from the exporting country's measures, they may be determined to be equivalent if the exporting country can objectively demonstrate that its measures achieve the appropriate level of protection of the importing country.

Under the Agreement, all measures are to be based on an assessment of the risks to human health, using internationally accepted risk assessment techniques. The Agreement details the issues to be taken into account when conducting a risk assessment. The CAC has developed these procedures further for use by Codex Member Countries. In order to achieve transparency, all changes to the sanitary measures of WTO Member Countries must be notified to the WTO where measures deviate from those of Codex.

WTO Member Countries are encouraged, under the Agreement, to take an active part in the activities of the CAC. Developing and least developed country members are especially encouraged to do so although the SPS Committee, having regard for financial, trade and development needs, has been given the authority to grant developing and least developed members time-limited exceptions from obligations under the Agreement.

2. TECHNICAL BARRIERS TO TRADE AGREEMENT (TBT)

The TBT Agreement sets out the new disciplines that govern trading practices at the international level for all consumer type products, including quality requirements for food. It covers standards drafted as:

- Process or production methods.
- Technical regulations, standards and conformity assessment procedures, including all amendments, additions and changes.

The objective of the Agreement is to prevent the use of national or regional technical requirements or unjustified technical barriers to trade. The Agreement also covers measures designed to protect the consumer against deception and economic fraud.

Under the TBT Agreement, technical standards and regulations must have a legitimate purpose and the impact or cost of implementing the standard must be proportional to the purpose of the standard. It also says that if there are two or more ways of achieving the same objective, the least trade-restrictive alternative must be followed. Some examples of legitimate purposes for technical regulations given in the TBT text include:

- National security requirements.
- Prevention of deceptive trade practices.
- Protection of human health or safety and animal or plant life or health.
- The environment.

Scientific and technical information is to be used in the assessment of risks associated with the intended purpose of the technical regulation, along with processing technology and intended end-users of the product.

The Agreement emphasizes the use of international standards or part of them where they exist, except where the international standard would be ineffective or inappropriate in the national situation. It does not specifically refer to the standards of the CAC as in the SPS Agreement, but, like the SPS Agreement, the TBT Aagreement also calls for the harmonization of standards and obliges members to fully participate within the limits of available resources in developing and adopting standards at the international and/or regional level.

The TBT Agreement also supports the principle of transparency and, if international standards do not exist, or the technical regulation of a country is not in compliance with an existing international standard, and the technical regulation has a significant effect on the trade of other WTO members, then the issue must be notified through a defined process.

Harmonization is to be achieved through the full participation of WTO members in the relevant international body. Members are also to recognize the results of the conformity assessments of other members where there is confidence that the procedures are equivalent, even if different. Members are encouraged to provide advice to other members, especially developing country members, in the form of the preparation of

technical regulations, establishing standardizing bodies, assisting the developing country to participate in the activities of the international standardizing body, or in establishing institutions and legal frameworks to enable a developing country fulfill its obligation under the Agreement.

3. DEFINING SPS AND TBT ISSUES

The SPS deals with the application of measures associated with the protection of human and animal health without restricting international trade. It recognizes that governments have the right to adopt sanitary and phytosanitary measures, but stipulates that they should be applied only to the extent required to achieve the necessary level of protection. Governments should not arbitrarily or without scientific justification discriminate between members where identical or similar conditions prevail.

The Agreement on Technical Barriers to Trade (TBT) seeks to ensure that technical regulations and standards, including packaging, making and labeling requirements and procedures for the assessment of conformity with technical regulations and standards do not create unnecessary obstacles to international trade. The provisions of the TBT do not apply to sanitary and phytosanitary measures subject to the SPS, including measures to protect human or animal or plant life or health from such things as food-borne health hazards.

4. CONCLUSION

The SPS and TBT Agreements are complementary and, as applied to food, cover all health and safety aspects as well as fair trade requirements. Common elements throughout the SPS and TBT Agreements include the application of risk, scientifically defensible standards, harmonization, transparency, participation, concept of consensus and assistance to developing or least developed countries. There is no doubt that the WTO Agreements have influenced the work of the CAC, although by the time of the ratification of the Marrakech Agreement (1994), Codex had already embarked on a course of action to articulate principles for risk analysis, ensure its decisions were based on sound science, moved to performance-based standards, established a Committee to deal with import and export inspection and certification systems issues, encouraged transparency in its decision-making processes, stressed greater participation of all stakeholders, and supported decisions by consensus. The Conference on International Food Trade Beyond 2000: Science-based Decisions, Harmonization, Equivalence and Mutual Recognition held in Melbourne, Australia, from October 11-15, 1999, endorsed further continuing work in these areas.

The Strategic Framework of the CAC 2003-2007 and the Medium-term Plan 2003-2007 reflect that the Commission continues to work towards providing its Member Countries with the tools necessary for implementing an appropriate food standards framework that complies with contemporary trends. Participation in, and utilization of the work of Codex within the national food standard-setting framework, will not only assist countries in achieving harmonization of requirements, but will also assist in the demonstration of equivalency, and thus help countries to meet their WTO obligations.

REFERENCES

1. *WTO Agreements and Public Health – A Joint Study by the WHO and the WTO Secretariat.* WTO/WHO. 2002. www.wto.org/news
2. *Report of the Conference on International Food Trade Beyond 2000: Science-based Decisions, Harmonization, Equivalence and Mutual Recognition.* FAO. 1999. Melbourne, Australia, October 11-15, 1999. www.fao.org
3. *Codex Alimentarius Commission Strategic Framework 2003-2007.* Rome. 2001. www.codexalimentarius.net
4. *The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts.* Cambridge University Press. WTO. 1994.
5. *WTO Committee on Sanitary and Phytosanitary Measures.* 1999. *The Difference Between SPS and TBT Measures.* G/SPS/GEB/151. Geneva. www.wto.org

Risk Analysis

INTRODUCTION

Codex, the FAO, the WHO and other concerned organizations have held several expert and intergovernmental meetings and consultations on food safety risk analysis to provide information on the principles of risk analysis and its major components, the stakeholders' responsibilities for conducting risk analysis and its significant role in the development of food safety systems.

1. SPS AND TBT AGREEMENTS

Risk assessment has become the basis for standard-setting under the SPS and TBT Agreement obligations.

WTO members may introduce or maintain measures that result in a higher level of sanitary or phytosanitary protection than would be achieved by measures based on international standards, guidelines and recommendations. In this regard, WTO members are required to ensure that their sanitary and phytosanitary measures are based on an assessment, as appropriate to the circumstances, of the risks to human, animal or plant life or health, taking into account the risk assessment techniques developed by the relevant international organizations. Article 5 of the SPS Agreement provides an impetus for the development of microbiological risk assessment to support the elaboration of standards, guidelines and recommendations related to food safety.

2. RISK ANALYSIS IN CODEX

- The introduction of risk analysis was considered at the 20th Session of CAC, 1993.
- The 21st Session of the CAC, 1995 adopted the definition of risk analysis and also recommended to address it by different Committees in relation to the standard-setting process.
- The 22nd Session of the CAC, 1997, adopted the risk analysis terms relating to food safety.
- The 23rd Session of the CAC adopted the statement of principles relating to the role of food safety risk assessment.
- The 26th Session of the CAC, 2003, adopted the working principles of risk analysis in Codex.

3. RISK VERSUS HAZARD

"Risk is a function of probability of an adverse effect and the severity of that effect, consequential to a hazard(s) in food."

"Hazard(s) is a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect."

The risk to the world's population from hazards in and on food depends largely on the degree of control exercised by producers, processors and official food control authorities to prevent or minimize the risks to acceptable safe levels. Food safety risk analysis is an emerging discipline, and the methods used for

assessing and managing risks associated with food hazards are still being developed.
It is important to recognize the difference between 'hazard' and 'risk'. As stated above, a hazard is a biological, chemical or physical agent in, or condition of, food with the potential to cause harm. In contrast, risk is the estimated probability and severity of adverse health effects in exposed populations consequential to hazards in food. Understanding the association between a reduction in hazards that may be associated with a food and the reduction in the risk of adverse health effects to consumers is of particular importance in the development of appropriate food safety controls. Unfortunately, there is no such thing as 'zero risk' for food (or for anything else).

4. ELEMENTS OF RISK ANALYSIS

Risk analysis consists of three elements:
- Risk assessment
- Risk management
- Risk communication

4.1. Risk Assessment

"Risk assessment is the process of scientific evaluation of known and potential adverse health effects resulting from human exposure to food-borne hazard(s)."

Source: The Joint FAO/WHO Expert Consultation on the Application of Risk Analysis to Food Standards Issues, 1995

Risk assessment is a quantitative evaluation of information on potential health hazards from exposure to various agents. It consists of four steps:
- Hazard identification
- Hazard characterization
- Exposure assessment
- Risk characterization

Source: The Joint FAO/WHO Expert Consultation on the Application of Risk Analysis to Food Standards Issues, 1995

- Hazard identification: The identification of known and potential effects associated with a particular agent.
- Hazard characterization: The qualitative and/or quantitative evaluation of the nature of adverse effects of the hazards associated with biological, chemical and physical agents that may be present in food.
- Exposure assessment: The qualitative and/or quantitative evaluation of the degree of consumption and intake of the hazardous agent likely to occur.
- Risk characterization: The integration of the above steps resulting in an estimation of adverse effects likely to occur in a given population, including uncertainties.

The entire risk assessment process requires the use of sound and scientifically derived information and the application of established scientific procedures carried out in a transparent manner. Unfortunately, sound scientific data are not always available for the qualitative and quantitative evaluations necessary for an absolute final decision; consequently a degree of uncertainty must be factored into the decision.

The importance of risk assessment lies not only in its capacity for estimating human risk, but also in its function as a framework for organizing data as well as for allocating the responsibility for analysis. The risk assessment process can include a variety of models for reaching conclusions; for example, the concept of Acceptable Daily Intake (ADI) may be considered a component of risk assessment.

Biological hazards of concern to public health include pathogenic strains of bacteria, viruses, helminths, protozoa, algae and certain toxic products that they may produce. Of these hazards, pathogenic bacteria in food currently present the most significant problems internationally. An assessment of the risks associated

with bacterial pathogens presents unique complications. Any method for assessing the risk of hazards from food-borne bacteria will be complicated by factors related to the methods used to grow, process and store food for consumption. These factors can vary greatly, depending on cultural and geographical differences. Such factors characterize the scenario for a given food and are an essential element for a risk assessment for bacterial hazards.

Significance of Scientific Data in Microbiological Risk Assessment***

In many cases, sufficient data will not be available to support a quantitative assessment of risks associated with bacterial pathogens. For a number of reasons, including the many uncertainties associated with how and when an organism may express its pathogenic potential, it has not yet been determined whether a quantitative risk assessment approach is possible and appropriate for the characterization of the risk associated with food-borne bacterial pathogens. Thus, by default, a qualitative approach to characterizing risk may be the only current alternative. The scientific community must advance beyond qualitative microbial risk assessment and generate the data needed to make quantitative assessments to bring about regulatory changes.

Chemical Risk Assessment

Chemical risk assessment is a fairly well-established process and in general permits the assessment of risks from long-term chronic exposure to a chemical. It includes the assessment of food additives, residues of pesticides and other agricultural chemicals, residues from veterinary drugs, chemical contaminants from any source and natural toxins such as mycotoxins and ciguatoxin.

4.2. Risk Management***

Risk management is defined within the Codex Alimentarius as 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 evaluation.
- Risk management option assessment.
- Implementation of management decisions.
- Monitoring and review.

****Source: The Joint FAO/WHO Consultation on Risk Management and Food Safety, 1997*

BASIC PRINCIPLES FOR THE FOOD SAFETY AND RISK MANAGEMENT PROCESS***

- Risk management should follow a structured approach.
- Protection of human health should be the primary consideration.
- Risk management decisions and practices should be transparent.
- The determination of the risk assessment policy should be included as a specific component of risk management.
- Risk management should ensure the scientific integrity of the process by maintaining a functional separation of risk management and assessment.
- Risk management should take into account the uncertainty in the output of risk assessment.
- Risk management should include clear communication with the consumer and other interested parties.
- Risk management should be a continuous process.

****Source: The Joint FAO/WHO Consultation on Risk Management and Food Safety, 1997*

PURPOSE OF RISK MANAGEMENT

- To establish the significance of the estimated risk.
- To compare the costs of reducing this risk to the benefits gained.

- To compare the estimated risks to the societal benefits derived from incurring the risk.
- To carry out the political and institutional process of reducing the risk.

The outcome of the risk management process, as undertaken by Committees within the Codex Alimentarius system, is the development of standards, guidelines and other recommendations for food safety. In the national situation it is likely that different risk management decisions could be made according to different criteria and different ranges of risk management options. Risk managers, in developing approaches to managing risk, use the risk characterization that results from the risk assessment process. Risk management decisions can be based on establishing safe handling procedures and practices, food processing quality and safety assurance controls and food quality and safety standards to control hazards in food. These standards must take into consideration the proper use of food additives which have been determined to be safe and their permitted levels and scientifically determined acceptable safe limits for contaminants and agricultural chemical residues in food, using the risk assessment process.

UNCERTAINTIES IN RISK ASSESSMENT****

The outcome of the risk assessment process should be combined with the evaluation of available risk management options in order that a decision on the management of the risk can be made. The implementation of the management decision should be followed by the monitoring of both, the effectiveness of the control measures and its impact on the risk, to the exposed consumer population, to ensure that the food safety objective is being met.

While research and scientific studies continue to provide the answers needed for making informed decisions in risk analysis related to hazards in food, the uncertainty and unresolved questions continue to cause concern to decision-makers. Only continued research and scientific study can provide the necessary answers. Until these answers are available, much of what is known about hazards and assessing and controlling risks is based on only partial information, with uncertainties factored into the analysis.

4.3 Risk Communication****

It is an interactive process of the exchange of information and opinion on risk throughout the risk analysis process among the risk assessors, risk managers, consumers, industry and other interested parties, including the explanation of risk assessment findings and the basis of risk management justification.

*****Source: Joint FAO/WHO Consultation on Application of Risk Communication to Food Standards and Safety, 1998*

Principles of Risk Communication

- Know your audience.
- Involve scientific experts.
- Establish expertise in communication.
- Be a credible source of information.
- Share responsibility.
- Differentiate between science and value judgment.
- Assure transparency.
- Put the risk in perspective.

Source: The Joint FAO/WHO Consultation on Application of Risk Communication to Food Standards and Safety, 1998

Purposes of Risk Communication

The quality and safety of food depends on responsible action by all involved at all stages in the food chain, including consumers. Consumers require access to adequate information about potential hazards and

appropriate precautions to be taken in the final preparation and serving of food. In addition, consumers need to be aware of and to understand food safety control measures implemented by their government in the interest of the consumers' health.

Benefits of Risk Communication

Risk communication provides the public with the results of an expert scientific review of food hazard identification and an assessment of the risks to the general population or to specific target groups such as infants or the elderly. Certain people, such as those who are immuno-deficient, allergic or nutritionally-deficient, require particular information. Communication provides the private and public sectors with the information necessary for preventing, reducing or minimizing food risks to acceptably safe levels through systems of food quality and safety management, by either mandatory or voluntary means. It also provides sufficient information to permit the populations with the greatest level of risk from any particular hazard to exercise their own options for achieving even greater levels of protection.

5. RISK ANALYSIS APPROACH FOR INDIA

Develop a national policy for the application of risk analysis in food safety through:

- Identification of institutes for risk analysis on areas of priority, that is, chemicals and toxins.
- Introduction of risk analysis as a prerequisite for proposals for consideration of the CCFS.
- Central compilation of surveys/studies carried out in the areas of food safety.
- Participate actively in the risk assessment exercise carried out by the FAO/WHO through data generation by institutes such as the Indian Council of Medical Research (ICMR), New Delhi; Industrial Toxicology Research Center (ITRC), Lucknow; National Institute of Nutrition (NIN), Hyderabad, etc

6. MESSAGES

- **Risk assessors shall be independent of risk managers.**
- **Risk assessment is a science-based evaluation of the safety of food.**
- **Risk management must take into account uncertainties in risk assessment.**
- **There must be a continuous interaction between risk assessors and risk managers.**

REFERENCES

1. *Risk assessment procedures used by the Codex Alimentarius Commission.* Geneva. June 28. FAO. Rome. 1985.
2. *Application of risk analysis to food standards issues. Report of the Joint FAO/WHO Experts Consultation.* Geneva. March 13-17. WHO. Geneva.
3. *Codex Alimentarius Commission: Procedural Manual.* 9th edition. FAO. Rome.
4. *Report of the 12th Session of the Codex Committee on General Principles.* Paris. November 25-28. ALINORM 97/33. Codex Alimentarius Commission. FAO. Rome.
5. *Preamble to the Codex General Standard for Contaminants and Toxins in Food.* ALINORM 95/12 A, Appendix IV. Report of the 21st Session of the Codex Committee on Food Additives and Contaminants. The Hague. March 20-24. FAO. Rome.
6. *Report of the 29th Session of the Codex Committee on Food Hygiene.* ALINORM 97/13 A. Washington, DC. October 21-25. FAO. Rome.
7. *Report of the 4th Session of the Codex Committee on Food Import and Export Inspection and Certification Systems.* ALINORM 97/30. Sydney. February 9-23. FAO. Rome.
8. *Report of the 21st Session of the Joint FAO/WHO Codex Alimentarius Commission.* ALINORM 95/37. FAO. Rome.
9. *Report of the 28th Session of the Codex Committee on Food Hygiene.* ALINORM 97/13. Washington, DC. November 27-December 1. FAO. Rome.

SECTION 3

NATIONAL CODEX CONTACT POINT AND NATIONAL CODEX COMMITTEE

National Codex Contact Point and National Codex Committee

INTRODUCTION

Since 1970, India has been a member of the Codex Alimentarius Commission (CAC). The Ministry of Health and Family Welfare, which is responsible for the program of food quality and safety at the national level, has, therefore, designated a National Codex Contact Point (NCCP-India) for liaison with the CAC. A National Codex Committee (NCC-India) has also been constituted. Both the National Codex Committee and National Codex Contact Point have been functioning since 1971. With the establishment of the World Trade Organization (WTO) in April 1994, followed by the signing of WTO Agreements effective from January 1, 1995, Codex standards have assumed considerable significance for most WTO members, including India.

Under the WTO, two specific Agreements relate to international trade in agricultural products. These are the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT). One of the main features of the SPS Agreement is that, with regard to measures on food safety, the WTO members base their national measures on international standards, guidelines and other recommendations adopted by the CAC. Thus it has become imperative to ensure that standards formulated by the CAC do reflect the concerns and interests as well as national positions of the Member Countries as far as possible.

The Government of India, therefore, considers it necessary that India participates more actively and effectively in the establishment of international standards for food to ensure that its concerns and interests, as well as those of other developing countries, are appropriately considered in the elaboration of standards by the CAC. This section briefly outlines the functioning of the NCCP and the NCC of India and their roles in enabling India to have an effective intervention in the work of the CAC.

National Codex Contact Point (NCCP-India)

INTRODUCTION

The objective of this module is to expose the trainees to the functioning of the National Codex Contact Point vis-à-vis its role in the consolidation of India's position in Codex.

1. ROLE OF NATIONAL CODEX CONTACT POINT (NCCP-INDIA)

In order to develop a country's food quality and safety requirements over and above the existing ones, the adoption of Codex standards is an appropriate measure to comply with the requirements of the SPS and TBT Agreements. With the object of ensuring that a country's interest is fully reflected in the formulation of Codex standards, the Member Countries are required to develop a national food strategy to strengthen food quality and safety control procedures and fully participate in the work of the CAC through a National Codex Contact Point (NCCP) designated for this purpose. The Codex Procedural Manual, therefore, outlines the core functions of the Codex Contact Points with the rider that the operation of Codex Contact Points will differ in each country, depending on national legislation, government structures and practices.

In India, the Ministry of Health and Family Welfare (MOH&FW), dealing with the subject of food quality and safety at the national level, has been designated the nodal ministry for maintaining liaison with the CAC. The instrument for ensuring food quality and safety at the national level is through a legislation titled Prevention of Food Adulteration Act, 1954 (PFA) and Rules made thereunder as amended from time-to-time.

The National Codex Contact Point has been set up under the MOH&FW and has been functioning since 1971. The Program Officer in charge of the program of food quality and safety at the national level in the Directorate General of Health Services, designated as Assistant Director General (PFA), has been notified as the National Codex Contact Point for India (NCCP-India). The office is in Nirman Bhavan, New Delhi.

2. CORE FUNCTIONS OF NCCP-INDIA

Keeping in view the functions entrusted to the Codex Contact Points as outlined in the Codex Procedural Manual, the NCCP-India has to undertake the following core functions:

- Act as the link between the Codex Secretariat and India.
- Coordinate all relevant Codex activities within the country.
- Receive all Codex final texts (standards, Codes of Practice, guidelines and other advisory texts) and working documents of Codex sessions and ensure that these are circulated to those concerned within the country.
- Send comments on Codex documents or proposals to the CAC or its subsidiary bodies and/or the Codex Secretariat within the stipulated time frame.

k Work in close cooperation with the National Codex Committee. The National Codex Contact Point acts as the liaison office to coordinate with the other concerned government departments (at the central and state level), the food industry, consumers, traders, research and development institutions and academia to ensure that the government is backed by an appropriate balance of policy and technical advice upon which to base decisions relating to issues raised in the context of the CAC and its subsidiary bodies.

k Set up an adequate and effective information management system for the collection, dissemination and exchange of information on standards and other related texts adopted by the CAC, and those under elaboration, across all relevant parties (government agencies, industry groups, research institutes, academia and consumers). This improves broad consultation so as to ensure that India's positions and interests are fully considered in the development of effective inputs to the international standards. This also results in the more effective dissemination of information on the adopted international standards for the utilization of the regulators, for the application by the industry, and the education of consumers.

k Receive the invitation to Codex sessions and inform the relevant chairpersons and the Codex Secretariat of the names of Indian delegations.

k Maintain a library of Codex final texts.

k Promote Codex activities throughout the country.

3. RESPONSIBILITIES OF NCCP-INDIA

In discharging the above activities, the NCCP-India has been shouldering the following responsibilities.

1. Providing a Secretariat to the National Codex Committee-India.
2. Acting as the contact point for the country for maintaining liaison with the CAC, elaborating international food standards.
3. Collecting, procuring and analyzing data for elaborating international food standards with the CAC.
4. Keeping track on international food standards work and giving comments and data to ensure that the international food standards elaborated are practicable to local manufacturers and do not hinder the export of food products from India.
5. Doing the study and research work to solve any problem resulting from the elaboration of international food standards.
6. Encouraging food manufacturers to improve the quality and hygiene management to meet the requirements of international food standards.
7. Ensuring the dissemination of information of food standards and food laws to manufacturers, exporters and concerned organizations.

4. NATIONAL CODEX RESOURCE CENTER (NCRC-INDIA)

With the objective of discharging these functions and responsibilities, the National Codex Contact Point has established a National Codex Resource Center (NCRC-India) in 2002 as the focal office for the work of Codex in India. The Resource Center provides access to copies of Codex standards, agenda papers and reports of Codex meetings, as well as the physical location for the Codex Contact Point for India.

A number of computers with Internet facilities from where Codex documents and reports can be downloaded are available for visitors to use within the Center. To download the Codex documents available in PDF (Portable Document Format), one has to install Acrobat Reader 5 software (available for free downloading from the Codex web site) and visit the web site: www.codexalimentarius.net. The Codex publications may also be obtained by contacting via e-mail: publications-sales@fao.org.

5. SOURCES PROVIDING INPUTS TO NCCP-INDIA

To consolidate India's position to the CAC, the NCCP has to have feedback from the following agencies/bodies.

1. State Government

2. Concerned Central Ministries

- Ministry of Agriculture and Cooperation
- Ministry of Commerce and Industry
- Ministry of Consumer Affairs, Food and Public Distribution
- Ministry of Human Resource Development
- Ministry of Food Processing Industries

3. Commodity Promotion Boards/Export Councils

- Agricultural and Processed Food Products Export Development Authority (APEDA)
- Coffee Board
- Cashew Export Promotion Council of India
- Export Inspection Council (EIC)
- Marine Products Export Development Authority (MPEDA)
- Spices Board
- Tea Board

4. Research Institutions

- Central Food Technological Research Institute (CFTRI), Mysore
- National Institute of Nutrition (NIN), Hyderabad
- Industrial Toxicology Research Center, Lucknow
- Central Institute of Fisheries Technology, Cochin

5. All India Industry Organizations

- Confederation of Indian Industry (CII)
- Federation of Indian Chamber of Commerce and Industry (FICCI)
- Confederation of Indian Food Trade and Industry (CIFTI) under FICCI

6. All India Consumer Organizations Affiliated to the International Consumer Union

The details of the activities of the NCCP-India are outlined in the Codex India Procedural Manual (CIPM) for which one has to visit the Codex India web site: http://codexindia.nic.in – or contact NCCP-India by e-mail: Codex-India@nb.nic.in.

6. CONCLUSION

The National Codex Contact Point-India is capable of discharging its functions and responsibilities more effectively with the joint cooperation of all those who have a stake in the import/export and domestic trade of food and agricultural products.

National Codex Committee and its Shadow Committees

INTRODUCTION

This module describes the roles and responsibilities of the National Codex Committee of India (NCC-India) and its Shadow Committees in providing inputs to the Government of India so to make effective contributions to the Codex.

1. NATIONAL CODEX COMMITTEE OF INDIA (NCC-INDIA)

In order to enable a Member Country to actively associate with the work of food standardization at the international level, protecting the national interest on sound scientific reasoning, the establishment of a National Codex Committee (NCC) comprising experts from various sectors is a prime necessity. Such a Committee provides scientific and rational inputs to the work of the National Codex Contact Point (NCCP). The NCCP also has to work in close cooperation with the NCC, as provided in the procedural manual of the CAC.

Like the CAC, each Member Country has to set priorities for its work in Codex. In order to understand and appreciate the criteria for setting priorities for Codex work at the national level, it would be appropriate to get acquainted with the criteria for the establishment of work priorities as set out by the Codex Alimentarius Commission in the procedural manual. These are:
A. It should be in the priority list of the CAC Medium-term Plan and current Codex project.
B. Prospect of completing the work within a reasonable time period.
C. Assessing the proposal against the criteria listed below.

1. General Subject (Horizontal) Committees

- Consumer protection
- Diversification of national legislation (impediments to trade)
- Scope of work
- Existing work

2. Commodities

- Consumer protection
- Volume of production and consumption in countries/in trade
- Diversification of national legislation
- International/regional market potential
- Amenability of commodity to standardization
- Whether already covered by standards?
- Work of international organizations

In the light of these priorities listed at the international level, the following priorities are listed for India's work in Codex at the national level:

1. Level of risk presented by issue (risk categorization)

2. Food safety:
- Health-related issues
- Fraudulent practices

3. Other Factors:
- Production
- Local business
- Export trade
- International obligations

4. Availability of Data

- Within country
- Within other countries
- Within international agencies

5. Availability of Expertise

- Within the government
- Industry
- Others

6. Networks

- Availability and reliability
- Within country
- Codex members
- International organizations

The functions of the NCC-India as notified by the Ministry of Health and Family Welfare: "The National Codex (Food Products Standards) Committee shall meet as and when necessary to consider the various issues that may be discussed at annual meetings of the Codex Alimentarius Commission and to prepare necessary material thereafter. The work of the Committee will include standards for all principal food, whether processed or semi-processed or raw, for distribution to the consumer. It will include provisions in respect of food hygiene, food additives, pesticides residues, contaminants, labeling and preservation, methods of analysis and sampling."

The Committee is chaired by the concerned Joint Secretary in the Department of Health of the MOH&FW handling the policy issues of the program of food quality and safety at the national level. The Program Officer dealing with the subject of food quality and safety and designated the National Codex Contact Point (NCCP-India) is the Secretary of the Committee. This ensures that the national position is always taken care of while commenting on Codex issues.

1.1. Terms of Reference (TOR) of the NCC-India

- To advise governments on the implications of the various food standardization, food quality and safety issues which have arisen and related to the work undertaken by the CAC so that the national economic interest is taken into account or at least considered when international standards are formulated.
- To provide important inputs to the government so as to assist in ensuring the quality and safety of food to the consumers, while maximizing the opportunities for industry development and the expansion of international trade.

k To enable the food industry and the government to take appropriate action at the national level to ensure that exported food iems are not rejected and the quality and safety of imported food is assured.
k To maintain liaison with the national standard-setting body.
k To meet at regular intervals as frequently as possible.

1.2 Criteria for Membership of NCC-India

Apart from the Chair and the Secretary who eventually belong to the same ministry to facilitate the smooth working of the NCC, other members have been chosen taking into account the priorities of work as listed above and based on the following criteria:

1. Policy-level officers from relevant central ministries involving the portfolios of agriculture, animal husbandry and dairying, commerce, consumer protection, export development, food, food processing, foreign trade, nodal point for the WTO, plant protection, quarantine and storage and women and child development.
2. Top-level officers from a few state governments administering the program of food quality and safety.
3. Other standard-setting bodies at the national level.
4. Scientific and other food safety research organizations providing independent scientific advice.
5. The industry, representing various sector interests within the overall food industry such as the farming, fish sector, processed fruits and vegetables sector, the dairy sector, packaging, transportation, distribution and marketing, who are capable of providing inputs to ensure the quality and safety of food throughout the whole food chain.
6. The trading sector bodies dealing with the import and export of food.
7. Recognized consumer bodies affiliated to the International Consumer Union.
8. Individual members with an expert knowledge of food processing/food quality and safety.

A list of the members of the NCC is given in Annex 1.I.

1.3. Functions and Responsibilities of NCC-India

1. To cooperate with the Joint FAO/WHO Food Standards Program and to ensure the timely nomination of the delegation to Codex meetings.
2. To formulate the national position in consultation with the members of NCC and other stakeholders in the matters of Codex.
3. To maintain continuity in India's stand in Codex meetings.
4. To motivate the delegation to hold informal group meetings/discussions with like-minded countries while attending Codex sessions so as to seek their support in India's favor.
5. To study Codex documents, collect and revise all relevant information relating to technology, economics, health and control system so as to give supporting reasons to the government in the acceptance of Codex standards or otherwise.
6. To identify organizations to take action for the generation of a database or the preparation of a base paper projecting the country's interest for interacting with the CAC.
7. To cooperate with other local/regional or foreign organizations dealing with activities relating to food standardization.
8. To maintain transparency in the entire decision-making process.
9. To have interaction with the national standard-setting body to ensure the consideration of Codex standards while formulating national standards and vice versa.
10. To disseminate information relating to Codex.
11. To explore the possibilities of extra budgetary resources either from the industry or international organizations to meet the resources for participation in Codex meetings.
12. To ensure that the written views of the Committee are always made available to the Commission on time for all meetings crucial to India's interest, irrespective of the fact whether the particular meeting is represented by an Indian delegation or not.
13. To keep track of the developments in the WTO on matters relating to food standardization, quality and safety.

1.4 Shadow Committees of NCC

The NCC-India is a large body comprising members from different parts of the country; it is not feasible for the Committee to meet off and on to deliberate on the agenda items of all the subsidiary bodies. The NCC has, therefore, constituted 18 Shadow Committees with experts in the relevant field to formulate India's views on its behalf, based on documents under consideration of the CAC and its General Subjects Committees (horizontal 9), Commodity Committees (vertical 11), Ad Hoc Intergovernmental Task Forces (3) and Regional Coordinating Committees (6). Shadow Committees have been constituted only for those subjects on which India has a stake. The list showing the counterpart Shadow Committees against the CAC and its subsidiary bodies is outlined here:

Serial No.	Name of the Codex Committee	Name of the Counterpart Committee/Shadow Committee in India
1.	Codex Alimentarius Commission (CAC) (Chair: USA)	National Codex Committee (NCC-India)/Shadow Committee on Codex Commission (Chair: Joint Secretary in the Department of Health)
2.	General Principles (CCGP) (Chair: France)	Shadow Committee on General Principles (Chair: Joint Secretary in the Department of Health)
3.	Food Additives and Contaminants (CCFACS)(Chair: The Netherlands)	Shadow Committee on Food Additives and Contaminants (Chair: Joint Secretary in the Ministry of Food Processing sIndustry)
4.	Food Hygiene (CCFH) (Chair-USA)	Shadow Committee on Food Hygiene (Chair: Joint Secretary in the Ministry of Agriculture dealing with Animal Husbandry and Dairy Development)
5.	Food Labeling (CCFL) (Chair: Canada)	Shadow Committee on Food Labeling (Chair: Joint Secretary in the Ministry of Food Processing Industry)
6.	Methods of Analysis and Sampling (CCMAS) (Chair: Hungary)	Shadow Committee on Methods of Analysis and Sampling (Chair: Director, Central Food Laboratory)
7.	Pesticide Residue (CCPR) (Chair: The Netherlands)	Shadow Committee on Pesticide Residue (Chair: Plant Protection Adviser in the Ministry of Agriculture)
8.	Residues of Veterinary Drugs in Foods (CCRVDF) (Chair: USA)	There is no counterpart Shadow Committee but crucial issues, if any, are considered by the Shadow Committee on Codex Commission or by the NCC
9.	Food Import and Export Inspection and Certification Systems (CCFICS) (Chair: Australia)	Shadow Committee on Food Import and Export and Certification Systems (Chair: Chairman, Agriculture and Processed Food Products Export Development Authority)
10.	Nutrition and Food for Special Dietary Uses (CCNFSDU) (Chair: Germany)	Shadow Committee on Special Dietary Uses (Chair: Joint Secretary in the Ministry of Human Resource Development dealing with women and child development)
11.	Milk and Milk Products (CCMMP) (Chair: New Zealand)	Shadow Committee on Milk and Milk Products (Chair: Joint Secretary dealing with Animal Husbandry and Dairy Development in the Ministry of Agriculture)
12.	Cocoa Products and Chocolates (CCCPC) (Chair: Switzerland)	Shadow Committee on Cocoa Products and Chocolates (Chair: Joint Secretary in the Ministry of Food Processing)
13.	Processed Fruits and Vegetables (CCPFV) (Chair: USA)	Shadow Committee on Processed Fruits and Vegetables (Chair: Joint Secretary in the Ministry of Food Processing)
14.	Meat and Poultry Hygiene (CCMPH) (Chair: New Zealand)	There is no counterpart Shadow Committee but crucial issues, if any, are considered by the Shadow Committee on Codex Commission or by the NCC

Serial No.	Name of the Codex Committee	Name of the Counterpart Committee/Shadow Committee in India
15.	Fish and Fishery Products (CCFFP) (Chair: Norway)	Shadow Committee on Fish and Fishery Products (Chair: Fisheries Development Commissioner, Ministry of Agriculture)
16.	Fresh Fruits and Vegetables (CCFFV) (Chair: Mexico)	Shadow Committee on Fresh Fruits and Vegetables (Chair: Agriculture and Processed Food Products Export Development Authority)
17.	Sugars (CCG) (Chair:UK) (Adjourned)	There is no counterpart Shadow Committee but crucial issues, if any, are considered by the Shadow Committee on Codex Commission or by the NCC
18.	Fats and Oils (CCFO) (Chair: UK)	Shadow committee on Oils and Fats (Chair: Joint Secretary in the Department of Sugar and Edible Oils, Ministry of Food, Consumer Affairs and Public Distribution)
19.	Cereals, Pulses and Legumes (CCCPL) (Chair: USA) (Adjourned)	There is no counterpart Shadow Committee but crucial issues, if any, are considered by the Shadow Committee on Codex Commission or by the NCC
20.	Vegetable Protein (CCVP) (Chair: Canada)	There is no counterpart Shadow Committee but crucial issues, if any, are considered by the Shadow Committee on Codex Commission or by the NCC
21.	Natural Mineral Water (CCNMW) (Chair: Switzerland) (Adjourned)	Shadow Committee on Mineral Water (Chair: Joint Secretary in the Ministry of Food Processing Industries)
22.	Ad hoc Intergovernmental Task Force on Fruits and Vegetable Juices (CCFVJ) (Chair: Brazil)	There is no counterpart Shadow Committee but crucial issues, if any, are considered by the Shadow Committee on Codex Commission or by the NCC
23.	Ad hoc Intergovernmental Task Force on Food Derived from Biotechnology (CCFBT) (Chair: Japan)	Shadow Committee on Genetically Modified Food (Chair: Joint Secretary, Department of Health)
24.	Ad hoc Intergovernmental Task Force on Animal Feeding (CCAF) (Chair: Denmark)	There is no counterpart Shadow Committee but crucial issues, if any, are considered by the Shadow Committee on Codex Commission or by the NCC
25.	*Six Regional Coordinating Committees (i) Asia (CCASIA) (Chair: Malaysia) (ii) Africa (CCAFRICA) (Chair: Uganda) (iii) Europe (CCEurope) (Chair: Slovak Republic) (iv) Latin America and the Caribbean (CCLAC) (Chair: Dominican Republic) (v) Near East (CCNEA) (Chair: Egypt) (vi) North America and the South West Pacific (CCNASWP) (Chair: Canada) * *Note: Chairs are rotated among Member Countries every two years*	Shadow Committee on Regional Coordinating Committee for Asia *Note: India is not a member of the other Regional Committees but is entitled to participate in the meetings as an observer*

1.5 Terms of Reference of the Shadow Committees

As the name implies, the Shadow Committees have to follow closely the working of the Codex Commission and the respective Codex Committees. The Terms of Reference (TOR) of the Shadow Committees may, therefore, be generalized as:

k To consider the TOR of the respective Codex Committee as the reference document for the working of

the Committee so that no issue is lost sight of.

- To determine priorities on the subject under consideration of the CAC and the respective Codex Committees, taking into consideration import/export as well as the domestic situation.
- To study the overall impact of the Codex agenda/document concerning relevant subjects on the agricultural/commercial/industrial/consumers' interest of the country and advise the NCC/NCCP accordingly to take an appropriate stand at the CAC, based on sound scientific rationale.
- To draft a base paper on the subject which is to be proposed as a new item by India for consideration by the respective Committee/Commission.
- To identify and associate appropriate stakeholders/experts/institutions capable of contributing to the work of the Committee/data generation on the subject.
- To maintain liaison with the counterpart Technical Committee on the subject working on food standardization at the national level.

1.6 Functions and Responsibilities of Shadow Committees

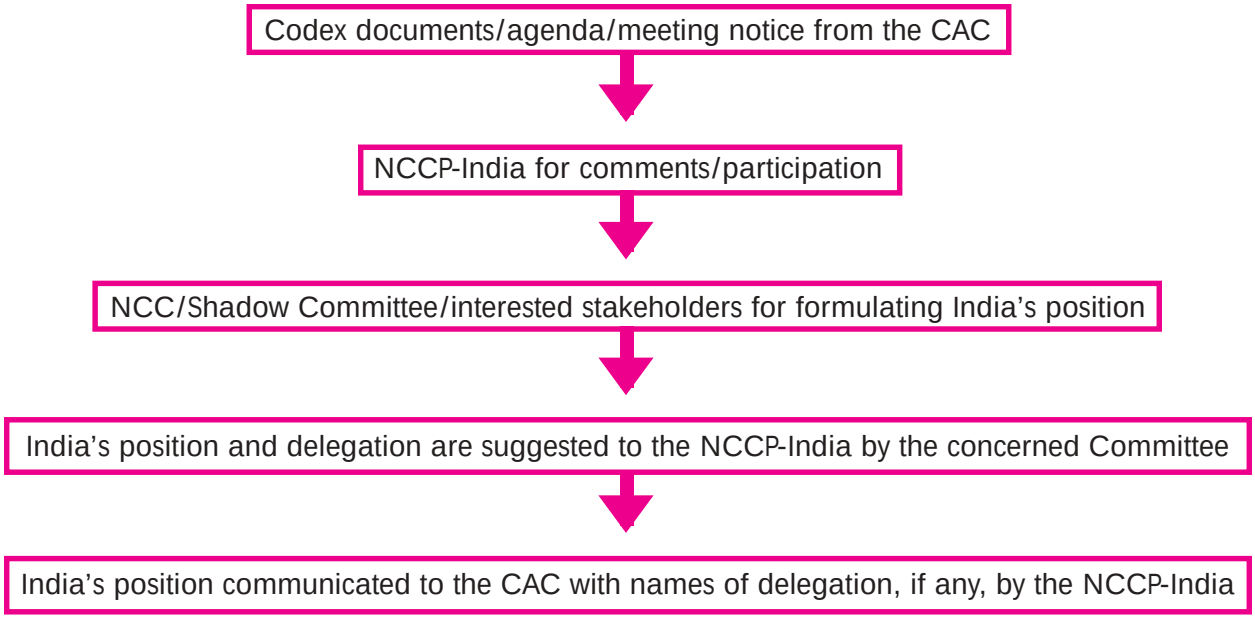
The functions and responsibilities of the Shadow Committees are more or less the same as the National Codex Committee (NCC-India) as they have been authorized by the NCC-India to formulate the national position and advise the NCCP-India accordingly. However, these Committees have to function under the overall umbrella and guidance of the NCC-India.

1.7 Criteria for Selection of Chairperson and Members of the Shadow Committee

1. The Chairperson of each Shadow Committee should be a high-level officer dealing with the subject of the Shadow Committee in his/her Department.
2. The Chairperson should be capable of setting up a Codex cell for retrieving the Codex documents electronically, making copies and circulating them to the stakeholder experts of their choice to assist the respective Committees in the preparation of India's stand. He should always endorse a copy of the communication along with the copies of the Codex document to the NCCP.
3. The members of the Shadow Committee representing the government/industry/consumers/research institutions/individual expert should have a core interest in the development of national and international standards and a knowledge of the working of Codex.

2. PROCEDURE FOR THE FORMULATION OF INDIA'S POSITION IN CODEX

The document received from the CAC by the NCCP-India is circulated to the members of the NCC or respective Shadow Committees for comments. Alternatively, the Chairpersons/members of the Shadow Committee may retrieve the documents electronically and send their comments to the NCCP. Any individual stakeholder may also contribute by downloading the Codex documents from the Codex web site: www.codexalimentarius.net (documents are available in PDF format and can be downloaded by installing Adobe Acrobat Reader 5 software) and making his comments available to the NCCP-India via e-mail: Codex-India-@nb.nic.in. A meeting of the NCC or the concerned Shadow Committee is arranged and a national brief is prepared. Written comments are sent to the Codex Secretariat in advance, a copy of which is also handed over to the delegation attending the meeting.



The procedure may be briefly depicted as shown in the next page:

3. CONCLUSION

The National Codex Committee of India, with strong support and contributions from the experts associated with the working of the Shadow Committees, and backed by scientific data generated by the research institutions in the country, is capable of protecting India's interest in the deliberations of meetings of Codex on sound scientific reasoning. This role must be maintained and strengthened to enable India to maintain a level playing field in the global food market.

Composition of National Codex Committee (2003)

1. Mr Deepak Gupta, *Chairperson*
Joint Secretary
Department of Health
Ministry of Health F.W.
New Delhi 110 011

2. Mr Naved Masood
Joint Secretary (IC)
Department of Agriculture &
Cooperation, Krishi Bhavan
New Delhi 110 001

3. Mr D.S. Negi
Joint Secretary (Dairy Development)
Division of Animal Husbandry &
Dairying, Ministry of Agriculture
Krishi Bhavan
New Delhi 110 001

4. Dr P.S. Chandurkar
Plant Protection Advisor to
Government of India
Directorate of Plant Protection
Quarantine & Storage
Ministry of Agriculture
Shastri Bhavan
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5. Mr P.K. Aggarwal
Agricultural Marketing Advisor
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Directorate of Marketing & Inspection
Nirman Bhavan
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6. Chief Director (Oils & Fats)
Ministry of Civil Supplies, Consumer Affairs & P.D.
Block 2, C.G.O. Complex, Lodi Colony
New Delhi 110 003

7. Ms Madhulika Parkash
Director (F&A)
Bureau of Indian Standards
Manak Bhavan, 9 Bahadur Shah Zafar Marg
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8. Dr V. Prakash
Director
Central Food Technological Research Institute
Mysore 570 013

9. Dr B. Shivakumar
Director
National Institute of Nutrition
Hyderabad 500 007

10. Mr R.N. Das
Joint Secretary (Sugar)
Ministry of Food &
Consumer Affairs
Department of Sugar & Oils
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11. Mr G. Venkantaramani
Director
Ministry of Food Processing Industries
Panch Sheel Bhavan
August Kranti Marg
New Delhi 110 049

12. Joint Secretary (EP)
Agriculture Division
Ministry of Commerce
Department of Commerce
Udyog Bhavan
New Delhi 110 008

13. Dr J. Bojan
Director
Marine Products & Export Development Authority
Collis Estate
Cochin 682 016

14. Director General
Directorate General of
Foreign Trade
Ministry of Commerce
Udyog Bhavan
New Delhi 110 008

15. Senior Scientist *(Quality Control)*
Spices Board, Sugandha Bhavan
NH Bypass. P.O.B. No. 2277
Palarivattam
Cochin 682 025

16. Mr Dinesh Singh
Joint Secretary
Department of Women &
Child Development
Ministry of Human Resource Development
Shastri Bhavan
New Delhi 110 001

17. Mr Anil Swarup
Chairman
Agriculture & Processed
Development Authority
3rd Floor NCUI Building
Siri Fort Institutional Area
New Delhi 110 016

18. Health Secretary
Government of Gujarat
Gandhi Nagar

19. Health Secretary
Government of Karnataka
Bangalore

20. Health Secretary
Government of West Bengal
Kolkata

21. Health Secretary
Government of Punjab
Chandigarh

22. The President
Federation of Indian Chambers of
Commerce and Industry
Federation House, Tansen Marg
New Delhi 110 001

23. The President
Confederation of Indian Industries
23 Institutional Area, Lodi Estate
New Delhi 110 003

24. Consumer Education and
Research Center
Suraksha Sankool Thaltej
Ahmedabad Gandhi Nagar
Highway
Ahmedabad 300 054

25. President
VOICE
441 (Basement), Jangpura
Mathura Road
New Delhi 110 014

26. The President
Consumer Unity & Trust Society
3-B Camac Street
Kolkata 700 016

27. The President
Citizen, Consumer and
Civic Action Group 6
II Cross Street, Karpagam Gardens, Adayar
Chennai 600 202

28. Assistant Director General (PFA)
Directorate General of Health Services
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SECTION 4

CODEX CONSULTATIVE MECHANISM

Codex Consultative Mechanism

INTRODUCTION

The role of the Codex Alimentarius Commission (CAC) has evolved with the development of the Codex itself. The task of creating a worldwide food code is immense and because of continuing research and product development, virtually endless. The finalization of food standards and their compilation into a code that is credible, authoritative and acceptable globally requires extensive consultation as well as the collection and evaluation of information, followed by the confirmation of the final results and sometimes an objective compromise to satisfy differing sound, scientifically-based views.

Creating standards that at once protect consumers, ensure fair practices in the sale of food and facilitate trade is a process that involves specialists in numerous food-related scientific disciplines, together with consumers' organizations, production and processing industries, food control administrators and traders. As more people become involved in the formulation of standards, as a result of the consultative approach adopted by the Commission, and as the Codex Alimentarius, including related codes and recommendations, covers further ground, the Commission's activities are becoming better known and its influence strengthened and widened.

The Commission is truly an international body. Article 1 of the Statutes of the CAC provides that the Commission shall…be responsible for making proposals to, and shall be consulted by, the Directors-General of the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) on all matters pertaining to the implementation of the Joint FAO/WHO Food Standards Program. Two of the salient purposes of such activities are:

- Protecting the health of the consumers and ensuring fair practices in food trade.
- Promoting the coordination of all food standards work undertaken by international governmental and non-governmental organizations.

International representation on the Commission is assured by selecting Chairpersons from different countries in the world. Since its inception, the CAC has held 25 sessions with Chairpersons from Canada, France, Germany, Hungary, Indonesia, Mexico, the Netherlands, Switzerland, Thailand, the United Kingdom and the United States of America. Vice-Chairpersons have been drawn from Australia, Canada, Costa Rica, Denmark, France, Ghana, Hungary, Indonesia, Iraq, Kenya, Mexico, the Netherlands, New Zealand, Nigeria, Norway, Poland, Senegal, the Sudan, Switzerland, Thailand, the United Kingdom and the United States.

In order to ensure regional level consultation, the Commission appoints Regional Coordinators, one each from the geographic locations: Africa, Asia, Europe, Latin America and the Caribbean, Near East, North America, South-West Pacific. So far regional representatives to the Commission have been provided by the Governments of Argentina, Australia, Brazil, Cameron, Canada, Cuba, the former Czechoslovakia, France, Germany, Ghana, India, Kenya, the Republic of Korea, Malaysia, the Netherlands, New Zealand, Poland, Senegal, Thailand, Tunisia, the United Kingdom, the United States and the former USSR.

The Commission meets every two years, alternatively at the FAO Headquarters in Rome and at the WHO Headquarters in Geneva. Plenary sessions are attended by as many as 500 people. Representations at sessions are on a country basis. To facilitate continuous contact with Member Countries, the Commission, in collaboration with national governments, has established country Codex Contact Points and many Member Countries have National Codex Committees to coordinate activity nationally. The National Codex Contact Points and National Codex Committees are required to be transparent and involve all interested stakeholders and relevant agencies. National delegations are led by senior government officials often accompanied by representatives of industry, consumers' organizations and academic institutes. As of today, 165 countries are the members of the Commission. Countries who are yet to be members of the Commission sometimes attend in an observer capacity.

A number of intergovernmental organizations and international non-governmental organizations (INGOs) also attend in an observer capacity. Although they are 'observers', the tradition of the CAC allows such organizations to put forward their points of view at every stage except in the final decision, which is the exclusive prerogative of Member Governments.

The foregoing history of consultation by the CAC makes it amply clear that the procedure of the formulation of standards of food by the Commission is a collective process, involving all relevant agencies at the international, regional and national levels and hence such a process has to be transparent and unbiased. This section makes an attempt to outline Codex step procedures, the importance of international and regional consultation and the involvement of national stakeholders in consolidating India's position in each step of the Codex decision-making process.

Codex Procedures

INTRODUCTION

The objective of the module is to make the trainees acquainted with the procedures adopted by the CAC in preparation of standards/codes/guidelines/related texts and how these documents become a benchmark in the international trading scenario.

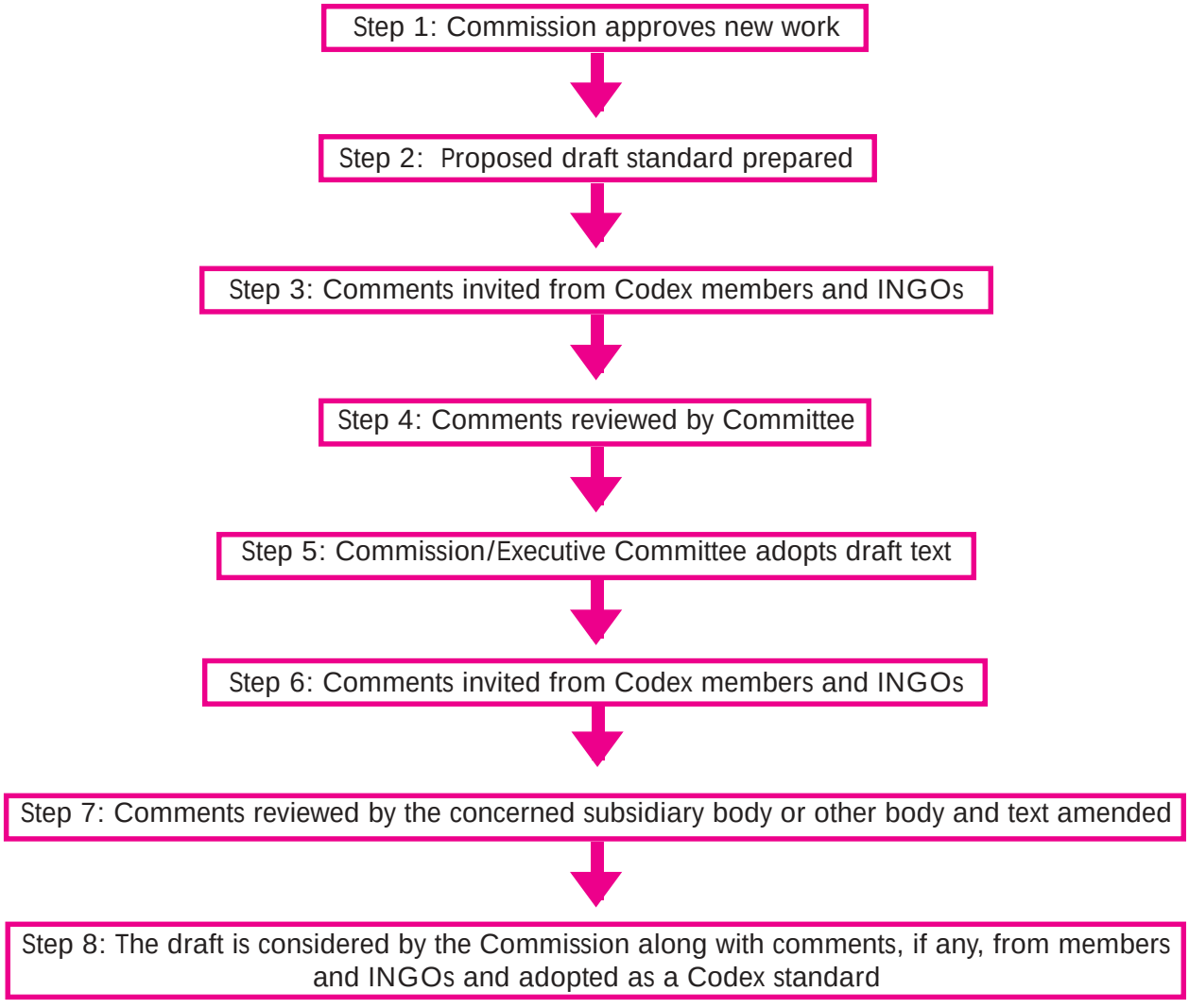
1. PROCEDURES OF FORMULATION OF STANDARDS

As stated in Section 1, Module 1, one of the principal purposes of the Commission is the preparation of food standards and their publication in the Codex Alimentarius. The legal base for the Commission's operations and the procedures it is required to follow are published in the Codex Alimentarius procedural manual, currently in its 12th edition. Like all other aspects of the Commission's work, the procedures for preparing standards are well defined, open and transparent. In essence they involve:

- The submission of a proposal for a standard to be developed by a national government or a subsidiary body/Committee of the Commission.
- A decision by the Commission or the Executive Committee (an Executive Committee is a body appointed by the Commission consisting of the Chairpersons and Vice-Chairpersons of the Commission with seven members elected by the Commission from among the members of the Commission, one each coming from each geographic location. Between sessions, the Executive Committee acts as the executive organ of the Commission) that a standard be developed as proposed. Formal criteria for the establishment of work priorities and for the establishment of subsidiary bodies exist to assist the Commission or the Executive Committee in their decision-making and in the selecting or creating the subsidiary body to be responsible for steering the standard through its development.
- The preparation of a proposed draft standard is arranged by the Commission Secretariat and circulated to Member Governments for comments.
- Comments are considered by the subsidiary body that has been allocated the responsibility for the development of a proposed draft standard, and this subsidiary body may present the text to the Commission as a draft standard.
- If the Commission adopts the draft standard, it is sent to governments a number of times in a step procedure, which, if completed satisfactorily, results in the draft becoming a Codex standard. In an accelerated procedure, the number of steps required for the development of a standard varies from a maximum of eight to a minimum of five. In some circumstances, steps may be repeated. Most standards take a number of years to develop.
- Once adopted by the Commission, a Codex standard is added to the Codex Alimentarius. The Commission makes every effort to reach an agreement on the adoption or amendment of standards by consensus. Decisions to adopt or amend standards may be made by voting only if such efforts to reach a consensus have failed.

Thus, the Codex Procedures for the formulation of standards indicate the rigorous nature of the consultative process, which may be schematically depicted as follows:

1.1. Codex Procedures for Elaboration of Standards and Related Texts



The Commission may authorize, on the basis of two-thirds of majority of votes cast, the omission of Steps 6 and 7 where such an omission is recommended by the concerned subsidiary body, based on urgency, and the likelihood of new scientific information becoming available in the immediate future.

2. LIASION BETWEEN THE CODEX SECRETARIAT AND DIFFERENT AGENCIES

The Codex Secretariat, located in Rome, is pivotal to the overall coordination with Member Countries, host countries, INGOs and international agencies as indicated below:

2.1. Codex Secretariat and Member Countries

All interactions at the country level are managed through the National Codex Contact Point (NCCP) designated by the government of each country. The NCCP in turn has to consult the National Codex Committee or Sub/Shadow Committees comprising the following stakeholders:

- Governments
- Industry
- Research Institutions and Academia
- Consumers

Such consultations at the national level have to be open, transparent, participative, responsible and unbiased so that a consolidated rational stand protecting the interests of all concerned could be projected as a Member Country's views to the Codex Committee/Commission.

2.2.Codex Secretariat and Host Country

The Commission may appoint a Member Country as the host country for a Subsidiary Body/Committee/ Task Force/Working or Drafting Groups, provided it takes up the following responsibilities:

- Appoints a Chairperson from among its own nationals.
- Provides all conference facilities, including financial, administrative support and secretarial services.
- Keeps other Member Countries informed of requirements.
- Maintains continuity in the program of work.
- Prepares a draft report jointly with the Codex Secretariat.

2.3. Codex Secretariat and INGOs

The International Non-governmental Organizations (INGOs) are those organizations having a working relationship with the FAO or the WHO or are international in structure, with a permanent directing body of experts and systematic procedures and machinery for communicating with its members in various countries. They should also be interested and concerned with the activities of Codex. These organizations, showing interest in the work of the Commission, are accorded 'Observer Status' by the Codex Secretariat on their request. The International Organization of Consumers Union (IOCU), International Dairy Federation (IDF) and International Life Science Institute (ILSI) are three such INGOs, among others having a stake in Codex work. They can participate and contribute to the work of Codex at every stage except in the final decision, which is the exclusive prerogative of the Member Countries. The purpose of collaboration with INGOs is manifold:

- To secure expert information, advice, and assistance from them.
- To enable these bodies, representing important sections of public opinion and with a standing repute in their professional and technical competence, to express the views of their members to the Commission or Codex Committees.
- To make them play an appropriate role in ensuring the harmonization of intersectoral interests among the various sections concerned in a country, regional or global setting.

2.4. Codex Secretariat and International Agencies

2.4.1 Codex and the FAO/WHO

From the very beginning, the Codex Alimentarius has been a science-based activity. Experts and specialists in a wide range of disciplines have contributed to every aspect of the code to ensure that its standards withstand the most rigorous scientific scrutiny. It is fair to say that the work of the Commission, together with that of the FAO and the WHO in their supportive roles, has provided a focal point for food-related scientific research and investigations, and the Commission itself has become an important international medium for the exchange of scientific information about food. The Codex Alimentarius has stimulated activity in the fields of food chemistry, food technology, food microbiology, and pesticides and veterinary drugs residues. Much work is carried out in the form of collaborative studies between individual pre-eminent/impartial scientists appointed in their personal right, not as government representatives or as spokespersons for organizations, laboratories, institutes and universities and Joint FAO/WHO Expert Committees and Consultations. A large amount of scientifically-based food data has been generated by expert meetings, convened and serviced jointly by the FAO and the WHO.

Two such groups, the Joint FAO/WHO Meeting on Pesticide Residues (JMPR) and the Joint FAO/WHO Meeting on Food Additives and Contaminants (JECFA), have for many years produced internationally acclaimed data that are of fundamental importance to the work of the Commission.

There is close cooperation between the JMPR and the Codex Committee on Pesticide Residues (CCPR). The CCPR identifies those substances requiring priority evaluation. After JMPR evaluation, the CCPR discusses the recommended MRLs and, if they are acceptable, forwards them to the Commission for adoption as Codex Maximum Residue Limits (MRLs).

The Codex Committee on Food Additives and Contaminants (CCFAC) and the Codex Committee on Residues of Veterinary Drugs in Food (CCVDF) identify food additives, contaminants and veterinary drug residues that should receive priority evaluation and refer them to the JECFA for assessment before incorporating them into Codex standards. The JECFA also provides scientific advice directly to the FAO and WHO Member Countries.

In addition, there are a number of Joint FAO/WHO Expert Meetings and Consultations on diversified subjects such as Risk Analysis, Food Consumption and Exposure Assessment of Chemicals, Biotechnology and Food Safety, Role of Government Agencies in Assessing the HACCP, providing inputs to the work of the Commission.

The FAO and the WHO also complement the Commission's activities significantly in a number of practical ways. To adopt Codex standards, countries require an adequate food law as well as a technical and administrative infrastructure with the capacity to implement it and ensure compliance. For many years, the FAO and the WHO have been providing assistance to developing countries to enable them to play an effective role in the Codex procedures of formulation of standards as well as to take full advantage of the Commission's work.

2.4.2 Codex and the WTO

The Uruguay Round Agreements represent a milestone in the multilateral trading system because, for the first time, they incorporated agriculture and food under operationally effective rules and disciplines.

Country participants in the round of negotiations recognized that measures ostensibly adopted by national governments to protect the health of their consumers, animals and plants could become disguised barriers to trade as well as discriminatory. Consequently, the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT) were included among the Multilateral Agreements on Trade in Goods, annexed to the 1994 Marrakech Agreement which established the World Trade Organization (WTO). Both the Agreements acknowledge the importance of harmonizing standards internationally so as to minimize or eliminate the risk of sanitary, phytosanitary and other technical standards becoming barriers to trade.

In its pursuance of harmonization, with regard to food safety, the SPS Agreement has identified and chosen the standards, guidelines and recommendations established by the Commission as reference standards. This means that Codex standards are considered scientifically justified and accepted as the benchmarks against which national measures and regulations are evaluated.

3. CONCLUSION

Codex standards are based on sound science and backed by the collective wisdom of Member Countries and international non-governmental organizations. On a number of crucial scientific issues, the CAC is assisted by the Joint Experts Committees of the FAO/WHO who have specialized experts in the field. The Codex eight-step procedure for the elaboration of standards provides an opportunity for all countries to participate in the formulation of standards and other Codex texts in an open and transparent way. At every step, the Member Countries have the opportunity to interact in the process. In order to ensure that the standards do reflect the interest of Member Countries, each Member Country should endeavor to effectively participate in the meetings of Codex. As the standards are recognized as 'Benchmarks' by the WTO, the Member Countries should make every effort to harmonize their national standards with Codex so that the world becomes a global village for trading in food without any trade barrier.

International and Regional Consultation

INTRODUCTION

This module emphasizes the importance of seeking support from other Member Countries of the Codex Alimentarius Commission and regional groups so that India's position in Codex could be collectively consolidated.

1. LIAISON WITH OTHER MEMBER COUNTRIES

India is one of the 165 Member Countries of the Commission. As the Codex decision is generally made by consensus, any point raised by India as a lone member will not cut any ice and will be lost in the crowd unless backed by a few other Member Countries. Thus the need arises for liaison with other Member Countries so as to seek their support while voicing India's views in the meetings of Codex. This could be achieved in the following ways:

- Making India's views known to the Codex Contact Point of other like-minded countries and seeking their support well in advance before the meeting.
- Circulating India's written comments to the Indian Embassies/Missions abroad so as to enable them to seek support from other Member Governments by building up a personal rapport with the concerned officials.
- Arranging informal get-togethers with the delegation of other like-minded countries in-between Codex sessions so as to explain the stand being taken by India on any particular issue and the rationale behind it.

2. LIAISON WITH REGIONAL GROUPS

2.1 Codex Coordinating Committee for Asia (CCASIA)

Codex Coordinating Committees for regions or groups of countries have been established by the Commission solely for the purpose of exercising general coordination in the preparation of standards relating to such regions or groups of countries. Only the members of the Commission belonging to that particular region or group of countries are members of the relevant Coordinating Committee. One such Committee in the region is the Codex Coordinating Committee for Asia (CCASIA) where Asian countries, including India, are members.

The Terms of Reference (TOR) of the Committee are:

- Defines the problems and needs of the region concerning food standards and food control.
- Promotes within the Committee contacts for the mutual exchange of information on proposed regulatory initiatives and problems arising from food control and stimulates the strengthening of food control infrastructures.
- Recommends to the Commission the development of worldwide standards for products of interest to the region, including products considered by the Committee to have an international market potential in the future.
- Develops regional standards for food products moving exclusively or almost exclusively in intra-regional trade.

k Draws the attention of the Commission to any aspects of the Commission's work of particular significance to the region.
k Promotes the coordination of all regional food standards work undertaken by international governmental and non-governmental organizations within the region.
k Exercises a general coordinating role for the region and such other functions as may be entrusted to it by the Commission.
k Promotes the acceptance of Codex standards and maximum limits for residues by Member Countries.

The above TORs makes it amply clear that, in order to make a dent in the Codex decision-making process, India has to interact with other like-minded groups of countries such as the CCASIA. Seeking other countries' support to project India's views as the consolidated views of the region will have a far-reaching impact on the Commission rather than as solitary views of India. Likewise, there is a need to identify countries from the broader Codex membership whose views may be consistent with India's, or where positions might align to support common views.

Though India took the lead in hosting the first meeting of the CCASIA in 1977, it could not offer the facilities for hosting any subsequent meeting till date, while other countries in the region have been taking the lead. This may be due to a number of factors. India should not only offer to host the meeting, but also explore the possibility of securing the position of the Regional Coordinator so as to have better involvement in the activities of the Codex Alimentarius Commission by coordinating the Codex activities in the region and thus consolidating its position in the matters of Codex. The position of the Coordinator will also enable India to have an entry into the working of the Executive Committee of the Commission.

2.2. South Asian Association for Regional Cooperation (SAARC)

Another important regional body which can enable India to play a pivotal role in the activities of Codex is the South Asian Association for Regional Cooperation (SAARC). Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka are the members of the SAARC, with the Secretariat at Katmandu (Nepal). The countries in the region are among the world's leading producers of agro-food products. They excel in the production of tea, coffee, sugar, cereals, milk, fruits and vegetables, spices and marine products. The rich agricultural and horticultural resources of the region, if harnessed properly, can make these nations thrive in the global market, both in fresh and processed products.

This body is yet to make any joint impact in the formulation of standards by the CAC or its subsidiary bodies, unlike most other economic groups such as the European Economic Community (EEC), Association for South East Asian Nations (ASEAN) and North American Free Trade Agreement (NAFTA). The NCCP-India is capable of taking a lead in motivating the countries of the region to participate in the meeting of the CAC and its subsidiary bodies and to take a consolidated vociferous position in the formulation of standards.

3. LIAISON WITH INGOs

A number of non-governmental organizations have been working in the field of food quality and safety by organizing workshops/seminars and bringing out technical publications/periodicals. Some of these INGOs or their member organizations such as the International Life Science Institute (ILSI), International Organization of Consumer Union (IOCU) (through the Voluntary Organization in the Interest of Consumer Education, VOICE) and the International Dairy Federation (IDF) (through the Indian Dairy Federation) have been active in India and are also keeping track of Codex activities. Maintaining liaison with them and mobilizing their support in the Codex forum will go a long way in consolidating India's position at the international level.

4. LIAISON WITH INTERNATIONAL AGENCIES

International organizations such as the FAO/WHO/World Bank/WTO have been keen to provide financial/technical support to the developing countries such as India so as to make them play a level playing field in the international market/Codex. The Commission, in its 25th (Extraordinary) Session, held in February

2003, has noted that the Trust Fund established by the FAO/WHO will go a long way in supporting the participation of the developing country in the meetings of Codex, which is considered the highest priority. India may strive hard to seek this opportunity to utilize such assistance from the FAO/WHO and other agencies by drawing up well planned and farsighted activity schedules, especially in the following areas:

- Institutional capacity-building by strengthening the NCCP-India and the national system of food quality and safety.
- Human resource development in the field of risk analysis, HACCP, equivalency, transparency, import and export inspection, and precautionary principles based on Codex documents.
- Accreditation and networking of food laboratories, sampling and analytical techniques.
- Generation of a data base applying the principles of risk analysis for presentation in the Codex forum.
- Better understanding and implementation of agreed international trade rules and in achieving India's complete participation in the multilateral trading systems/meetings of Codex.
- Information, Education and Communication (IEC) activities in the form of seminars, workshops, technical missions, briefing sessions and technical cooperation through the electronic media.

5. SIGNIFICANCE OF INDIA'S ROLE AS A MEMBER OF CODEX

India has been a member of Codex since 1970 and has been maintaining liaison with the Commission through the NCCP-India, established in 1971. Though the participation of India in the meetings of Codex remained irregular in the past due to a number of constraints, India has been trying its best to actively involve itself in all Codex activities since the date the Codex standards has become a benchmark under the SPS Agreement of the WTO (1995). Even in the post-WTO era, India has made a mark whenever it has participated in the meetings of Codex. A few success stories arising out of India's participation in Codex are:

- The CCASIA was set up on the initiative shown by India in the Commission meeting and the first meeting of the Committee was held in India in 1977.
- The products derived from cow's milk were not subjected to any special labeling about the origin of milk under the labeling provision of Codex, whereas a declaration about the origin of milk used to be imposed in case of products obtained from milk other than cow (for example, buffalo or goat). As India is the largest producer of milk in the world, with a vast potential for the export of milk products, such labeling was detrimental to the export of milk products from India. It is only through the intervention of India, with the support of the IDF and a few other countries, that such discriminatory labeling has been done away with the rational convincing approach that nutritionally buffalo milk is as good as and even superior to cow's milk. The National Dairy Development Board (NDDB), a pioneer in the milk cooperative movement in India, provided a background document to the NCCP-India for projecting the rationale on the subject in the meeting of the Commission.
- A Codex proposal for the rearing of milch animals only in a covered herd and milking through machines was nipped in the bud as this is against the practices prevailing in a developing country such as India with a sizable population of individual milk producers with one or two milch animals.
- There was a move to lower the limit of sulphur dioxide from the existing 70 ppm (parts per million-mg/kg) to 15 to 20 ppm, not practicable in a country such as India with a large number of small/medium-scale sugar industries using the sulphitation process as a means for the bleaching of sugar. The proposal lacked rationale and scientific clarity, as more sulphur dioxide is likely to be consumed through wine which has a much higher limit without having any adverse health implications. As a result of the timely intervention of India with the support of Indian sugar industries, and a few countries in the region including sugar producing ones, the proposal could be stalled.
- The CAC standards for honey and fish were about to exclude some species specific to India, which is against the interest of the export of these two commodities. Only timely intervention saved the situation.
- Proposals for the formulation of the Codex standards for pickles and chutney were mooted by India and accepted first in the CCASIA and then by the Commission.
- A proposal for a simplified HACCP system for small and medium-scale industries in the developing countries was first initiated by India and endorsed by the Commission with the support of other developing countries.
- A suggestion made by India for fixing residue limits for pesticides in spices has found favor with the Codex Committee on Pesticide Residues.

6. COORDINATION OF/RELIANCE ON EXTERNAL DATA

The importance of generating a data base, in order to convince the Codex Alimentarius Commission and its subsidiary bodies, to recommend a realistic limit of any chemical, especially contaminants, without compromising on probable health implications, could be best illustrated from the following extract of the Report of the 24th Session of the Commission held in 2001, relating to the adoption of the level of 0.02 mg/kg for lead in milk ALINORM 01/41 paragraphs 121 and 122:

"Several delegations felt that the level of 0.02 mg/kg for lead in milk was too low, and that the footnote indicating 'that for dairy products an appropriate concentration factor should apply' did not support the elaboration of a level of 0.1 mg/kg for milk fat. Other delegations felt that lower levels were necessary to protect sensitive individuals, especially children, from a contaminant with severe public health implications. The Commission adopted the levels for lead in milk (0.02 mg/kg) as proposed, and requested the Committee on Food Additives and Contaminants to re-evaluate the levels.

"The Delegation of India expressed its reservation at the fixing of these levels on the grounds that (a) there was no JECFA evaluation and (b) there was no IDF standard which was claimed to be the basis on which the level had been recommended. Similarly, the delegation stated that the level of lead adopted for fruits was more stringent than the level evaluated as safe by the JECFA, and the level was not based on global data."

The question arises, who will generate the data? As the burden of proof to justify a change in an existing standard lay with the Member Countries, the following possibilities could be explored:

- India may generate data of its own based on the risk analysis and consumption pattern of the specific food with the help of its premier Research and Development (R&D) institutions such as the Central Food Technological Research Institute, Mysore (CFTRI); National Institute of Nutrition, Hyderabad (NIN) and the Industrial Toxicological Research Center, Lucknow (ITRC) for presentation to Codex. In the case of the level of sulphur dioxide in sugar such data, based on risk analysis, vis-à-vis consumption pattern, was collated by the NIN.
- The Member Countries, including India, voicing concern on the lower level of lead in milk, may jointly undertake the generation of data for presentation to Codex. Such data may also be generated by the Member Countries of CCASIA groups if the majority of them have any reservation against the limit of lead as adopted by the Commission.
- India, in the capacity of a FAO/WHO member, may approach the JECFA to provide scientific advice based on data available with them as the JECFA, which is independent of the Commission, provides such advice directly to its members.
- India may request the Commission or the Committee on Food Additives and Contaminants to take it up with the JECFA for the development of principles of exposure assessment of lead or any other disputed contaminant and toxins on a priority basis.

7. CONCLUSION

India, with its vast potential in the sector of production of food commodities and its expertise, backed by leading research institutions, is capable and competent to become an active and efficient member of the CAC. For this purpose, the NCCP-India has to interact closely with the Member Countries of the CCASIA and SAARC so as to enable India to consolidate its position in Codex. Likewise, there is a need to identify countries from the broader Codex membership whose views may be consistent with India's, or where positions might align to support common views. The NCCP-India also has to maintain liaison with the INGOs so as to seek their support on crucial issues in the meetings of Codex. A lot could be achieved by approaching international agencies that are in a position to extend financial as well as technical cooperation to India and other developing countries in strengthening the infrastructure, generation of data, IEC activities and even participation in the meetings of Codex.

Involvement of National Stakeholders

INTRODUCTION

This module describes the importance of the involvement of national stakeholders in formulating India's views in the work of Codex in the areas of food quality and safety.

1. NATURE OF STAKEHOLDERS

As already outlined in Section 3, Modules 7 and 8 dealing with the roles and responsibilities of the NCCP-India and the NCC, the stakeholders capable of and required to be involved for coordinating India's input to Codex are:

1. State Governments

2. Concerned Central Ministries

- Ministry of Agriculture and Cooperation
- Ministry of Commerce and Industry
- Ministry of Consumer Affairs, Food and Public Distribution
- Ministry of Health and Family Welfare
- Ministry of Human Resource Development
- Ministry of Food Processing Industries

3. Commodity Promotion Boards/Export Councils

- Agricultural and Processed Food Products Export Development Authority (APEDA)
- Coffee Board
- Cashew Export Promotion Council of India
- Export Inspection Council (EIC)
- Marine Products Export Development Authority (MPEDA)
- Spices Board
- Tea Board

4. Research Institutions

- Central Food Technological Research Institute (CFTRI)
- National Institute of Nutrition (NIN)
- Industrial Toxicology Research Center (ITRC)

5. All India Industry Organizations

- Confederation of Indian Industry (CII)
- Federation of Indian Chamber of Commerce and Industry (FICCI)
- Confederation of Indian Food Trade and Industry (CIFTI) under FICCI

6. All India Consumer Organizations Affiliated to the International Consumer Union

2. PROCESSES USED

These stakeholders have been contributing to the work of the NCCP-India by virtue of their association with the National Codex Committee and its respective Shadow Committees in the capacity of members. The experts representing these agencies receive the relevant Codex documents from the NCCP-India or download them on their own from the Codex web site. They contribute to the stand projected by India at the international level by:

- Setting up a Codex Cell in their respective departments and identifying a nodal officer for liaison with the NCCP-India on all Codex matters.
- Making available written comments to the NCCP-India.
- Participating in the meeting of the NCC and the concerned Shadow Committees.
- Assisting the NCCP-India in identifying scientists/experts in different fields.
- Being a part of the Indian delegation for the Codex meetings on the subjects of their interest at their own cost.
- Initiating the spread work/follow-up action arising out of recommendations made in the Codex meetings on the subjects concerning their respective fields.

Apart from the specific stakeholders identified by the NCCP-India, any industry/consumer/individual expert, either belonging to some organization or in their individual capacity, may also contribute to the work of Codex in India by keeping themselves proactive on the subjects dealt by Codex, its possible implications on trade or consumers in India and giving their inputs to the NCCP-India.

The NCCP-India has set up a discreet e-mail address: codex-India@nb.nic.in, for facilitating smooth and quick communication with the stakeholders. A National Codex Resource Center (NCRC) has been set up with access to direct STD connections, fax, copier, computers with printers and a network connection for building up an exclusive contact with the stakeholders. The Center is also functioning as a Codex library, which is open to the stakeholders for consulting Codex documents, India's participation reports in the meetings of Codex, etc. A Codex India web site has also been designed to ensure transparency in the work of the NCCP-India and the NCC, as well as to enable all the interested stakeholders to get updated information on the subjects concerning the progress of Codex work in India.

The NCCP-India has also set up a number of Regional Codex Support Centers (RCSC) in different zones of the country to liaise with the various stakeholders in the respective regions and take into consideration their requirements/views on various Codex documents for passing on to the NCCP-India so as to reflect them in India's views in Codex forums.

3. RESPONSIBILITIES FOR INPUT

3.1 Proactive Approach

While giving inputs to the NCCP-India on matters relating to Codex work in India, the stakeholders have to be proactive on the following issues:

- What is being discussed in the agenda of Codex today and how does it impact the Indian industry.
- What should be the agenda to be proposed by India requiring consideration/reconsideration by Codex, based on a background document highlighting the scientific rationale/risk assessment /exposure assessment data.
- Non-tariff barriers being faced by the Indian industry in the export sector on flimsy grounds and ways and means to overcome them through the work of the Codex Alimentarius Commission and its subsidiary bodies.

3.2 Reconciliation with National Position

While commenting on any Codex document, the stakeholders have to ensure:

k The stand taken is in conformity with the national policy, legislation and standards – for example, in case exclusive breastfeeding for six months is advocated in Codex meetings, such a practice should also be a part of India's national policy or legislation.
k Comments on Codex documents are offered taking the approach of the harmonization of national standards with Codex.
k Views expressed protect the interest of the Indian industry as well as consumers.

3.3 Backing of Data Base

As most of the rejection of Indian commodities in the export market is due to stringent Codex requirements on mycotoxins, heavy metals, microbiological contaminants, pesticides residues and sometimes veterinary drugs in fish, the Commodity Promotion Boards/Councils/Authorities dealing with cashew, coffee, fish, spices and tea should come forward to generate chemical use patterns and residue data on heavy metals, pesticide residues and the level of mycotoxins by getting them tested in accredited laboratories so as to enable India to be present effectively at Codex forums.

Research institutions such as the CFTRI, ITRC and NIN, with vast experience in the field of food technology and safety, should not only generate data on technological need vis-à-vis the risk assessment of the chemicals such as mycotoxins, heavy metals, pesticide residues and so on under Indian conditions, but also collate available scientific studies/literature on the subject at the national/regional/international levels so as to equip the NCCP-India with the background document highlighting updated information for presentation to the international forum.

3.4 Supports from INGOs

The stakeholders, such as national non-governmental organizations, consumer organizations/dairy federation, while commenting on the Codex documents should also explore the possibilities of seeking support from their parent INGOs in the meetings of Codex towards the stand taken by India.

4. DISSEMINATION AND EXCHANGE OF INFORMATION

India's contribution to Codex is likely to suffer from transparency and collective wisdom from all sectors until and unless all stakeholders initiate action in their respective fields for the dissemination and exchange of information. For a vast country such as India, with a diversified field of interest in agriculture/industry/trade/consumer protection, the NCCP-India, even with its regional centers, will fall short of expectations. It is, therefore, incumbent on the part of stakeholders associated with the working of the NCCP-India and the NCC to disseminate and exchange information relating to Codex activities at international and national levels by:
k Holding periodical seminars/workshops.
k Arranging training programs.
k Bringing out periodical newsletters.
k Sharing information/documents.

5. CONCLUSION

A number of stakeholders representing central ministries, state governments, export promotion agencies, research institutions, industries and consumers at the national level are involved in formulating India's views on Codex. All these stakeholders have to be proactive by keeping track of the development in Codex vis-à-vis the implications of Codex standards/texts on India's export/import. They should provide technical justification/data to the NCCP-India for consolidating India's position in Codex.

SECTION

5

PARTICIPATION IN CODEX

Participation in Codex

INTRODUCTION

The officials and experts who, in 1962, laid the foundations and determined the direction taken by activities of the Joint FAO/WHO Food Standards Program and the Codex Alimentarius Commission were first and foremost concerned with protecting the health of the consumers throughout the world and ensuring fair practices in the food trade. They felt that, if all countries harmonized their food laws and adopted internationally agreed standards, such issues would be dealt with naturally. Through harmonization, they envisaged fewer barriers to trade and a freer movement of food and agricultural products among countries, which would be to the benefit of farmers/industry/producers/trade. The founders concluded that the Codex Alimentarius would be a panacea to some of the difficulties that were impeding freedom of trade, a view that is reflected in the General Principles under Purpose of the Codex Alimentarius.

Recognition of Codex standards under the SPS Agreement of the WTO is the most laudable step to achieve this purpose (See Module 5 of this manual). At the same time, such recognition has generated the momentum on the part of the Member Countries to ensure more involvement and participation in the work of Codex so that their interest is fully protected and reflected in standards formulation with an eye to harmonization. In fact, interest in Codex Alimentarius activities has been growing steadily since the Commission began. The increasing involvement of developing countries, including India, in its work has been a highlight of the progress made, as well as a vindication of the foresight shown by the founders of the Commission.

The question that arises is, how to ensure effective participation in the meetings of Codex. This section highlights the expectations from the national delegation of India for ensuring meaningful intervention in the Codex forums as well as building up expertise at the national level for responding appropriately on all Codex issues.

Participation at the International Level (National Delegations)

INTRODUCTION

The importance of meaningful participation in the Codex meetings needs no further elaboration. The detailed introduction to this module has been given in the beginning of the section. In brief, this module outlines in detail the procedures of consolidating India's position in the meetings of Codex with the effective involvement of all national stakeholders.

1. PROTOCOL FOR CODEX MEETINGS

The detailed protocol for arranging the sessions of the Commission and other Codex Committees is spelt out in the Codex Procedural Manual available online on the Codex web site: www.codexalimentarius.net. The Commission generally holds one regular session every alternate year at the headquarters of either the FAO or the WHO. In between two consecutive sessions, meetings of Subsidiary Bodies/Regional Coordinating Committees/Task Forces are also arranged, whose reports form the part of the agenda of the Commission for endorsement and further deliberation on disputed issues, if any. Notice of the date and place of each session of the Commission and other meetings of Codex are communicated to all Member Countries of the Commission at least two months before the meeting. Each Member Country of the Commission shall have one representative designated as the leader of the delegation who may be accompanied by one or more alternates and advisers. In general, decisions are made by the consensus of the majority of the members, unless there is a major disagreement on any particular issue. In the latter case, voting is resorted to, where each member of the Commission shall have one vote. An alternate or adviser shall not have the right to vote, except where substituting the leader.

2. SELECTION AND RESPONSIBILITIES OF THE LEADER OF DELEGATIONS AND DELEGATION MEMBERS

2.1 Criteria for Selection

From the foregoing paragraph it is amply clear that the responsibility for projecting the national position in the meetings of Codex solely rests with the leader of the delegation. Taking a cue from the Codex Procedural Manual, the National Codex Contact Point in India (NCCP-India) has prepared a Codex (India) Procedural Manual outlining the procedures for the smooth and effective functioning of the NCCP-India which inter alia sets out the criteria for the selection and responsibilities of the leader of the Indian delegation and delegation members. These are:

- The National Codex Committee or the concerned Shadow Committee will select (and the Secretary, National Codex Committee will appoint) by a written communication to the Secretariat of the meeting, an Indian delegate as the head of the Indian delegation to each Codex session, an alternate delegate

who acts in the absence of the Indian delegate and other members of the delegation. A copy of this communication should also be endorsed to the Embassy/High Commission of the country hosting the meeting as well as to individual members of the delegation. As far as possible, the concerned officials of the NCCP dealing with the subject should also accompany the members of the delegation so as to maintain continuity in India's stand, based on past records, as well as to reflect the national position.

- These delegates should be government officials, preferably Chairpersons of the concerned Shadow Committee or their nominee from the government departments/national institutions. Their names should be communicated in writing to the NCCP-India by their respective departments/institutions and subsequently approved by the Chairperson of the NCC. The delegate or the alternate delegate should possess the following attributes:
  - Capacities and expertise in the respective subject matter.
  - Abilities to carry nationally agreed positions based on the standard written brief prepared by the NCCP on the basis of recommendations of the NCC or the Shadow Committees, as the case may be. They should also be able to negotiate formally as well as informally with the delegates of other countries to seek their support on behalf of the country.
  - Have the authority to respond to unannounced/unforeseen issues that may arise during Codex meetings, thereby protecting the interest of India.
  - In exceptional circumstances where no government representative could be spared for the meeting of the Codex Committee, non-government officials attending such meetings may be designated as the official delegates.
- The Indian delegate, in consultation with the concerned Shadow Committee as well as the Chairperson and Secretary NCC, will select non-government members to serve on the Indian delegation to the Codex Committee. In order to facilitate the selection of a non-government person as a member of the Indian delegation, the Secretary NCC may request the person to submit a written summary of his qualifications. This should include information pertaining to his involvement/contribution to the specific subject matter of the Committee.

2.2 Responsibilities

The delegates should develop Indian positions on issues to be considered, based on contributions made by the members of the NCC/Shadow Committee as well as the past records available with the NCCP. It should be the responsibility of the Indian delegate to ascertain the Indian government's current position on each Codex committee agenda item and to draft the Indian government's response to each agenda item. Comments prepared/positions presented by the Indian delegate should be based on sound science and take into account Indian statutes, regulations, policy, interest of industry and consumers.

- Representatives of delegations to the subsidiary bodies shall, as far as possible, serve in a continuing capacity. They shall be specialists in the field of the respective subsidiary bodies and also be members of the concerned Shadow Committee at the national level.
- Intimation of the participation of all members of the Indian delegation, including delegate/alternate delegate/other experts from government/non-government organizations, should be given in writing to the Codex Secretariat by the Secretary NCC, a copy of which should be carried by each participant for production at the time of the registration of the delegation.
- All members of the Indian delegation are expected to attend the meetings of the concerned Shadow Committee so that each one of them is fully aware of the deliberations at the national level on each of the Codex agenda items and the stand to be taken at the international forum.
- The members of the delegation are expected to assist the leader of the delegation during the Codex Committee session, but the final stand/views should be decided/expressed by the leader of the delegation only. The other members of the delegation may express oral/written views on any item only with the permission of the leader of the delegation.
- Non-government members are not permitted to speak with foreign government officials on behalf of the Indian government at any Codex session. Non-government members shall not at any time negotiate or purport to negotiate for the Indian government. In case only non-government member/members represent India in any particular session and there is no government representative accompanying him, his oral/written submission in a meeting should strictly adhere to the official brief given to him by the concerned Shadow Committee/Secretary NCC. He should not take any individual position supporting

the interest of his organization, which may not be in line with the Indian government rules/regulations/standards/policy.

k The members of the delegation should be physically present throughout the entire deliberations of the meetings of Codex. They must attentively watch the submissions made by the delegates of other countries and the decision arrived at by the Chair on any particular item so that the leader could be briefed appropriately for timely intervention. In case it is decided to record opposition to any decision, irrespective of the fact as to whether the decision has been made by consensus or by vote, the leader of the delegation may request the Chair for a statement of its position to be contained in the report of the deliberations. The leader of the delegation should ensure that such a statement should make clear the extent of the opposition raised by him to a particular decision of the Commission/Committee and state whether the delegation is simply opposed to the decision or wishes for a further opportunity to consider the question.

k At the time of the adoption of the draft report of deliberations on the last day of the session/meeting, the leader of the delegation, in consultation with the other members of the delegation, should scrutinize each paragraph of the draft report thoroughly to ensure that the recommendations do reflect the factual position of deliberations. Discrepancy, if any, between the deliberations and recordings should be politely brought to the notice of the Chair for rectification and correct recording. The appendices attached to the draft report should also be examined carefully, especially the list of Indian participants with their full postal address, in order to ensure that names, designations and addresses have been recorded correctly.

3. TRAVEL ARRANGEMENTS

Delegates, alternate delegates and other members of the delegation should make their own arrangements for meeting the travel expenses from their respective departments/institutions. The letter nominating their names from their parent organization to the NCCP-India should clearly spell out the details of the budget head from which the expenditure will be met. They should have a valid passport and visa. Non-official members of the delegation representing industry or consumer should meet the expenses from their own sources. The return tickets should be arranged either by their parent/own office. The Embassy or the High Commissioner of the country hosting the meeting may be requested to arrange the accommodation and transport from the airport to the place of lodging.

4. CODE OF CONDUCT AT THE CODEX MEETINGS

k The members of the delegation should maintain official decorum throughout the entire deliberations. Any submission to be made by the delegation could be indicated to the Chair under the procedures used by the host country and they should await the permission of the Chair.

k Under no circumstances should the submissions being made by the delegation of other countries or the decision announced by the Chair be interrupted.

k In case any issue requires consultation among the members of the delegation in the midst of the meeting so as to formulate India's position, it should be whispered in such a way that the delegations of other countries are not disturbed.

k Informal consultations could be held with the delegations of other like-minded countries only during the lunch break or before or after the meeting. No across-the-table conversations should be held so as to avoid disturbing the proceedings of the meetings.

k The leader of the delegation may extend informal invitations to the delegations of other like-minded countries over a cup of tea or refreshment or dinner after the meeting so as to explain the Indian viewpoint and secure their support in the meetings when submissions are made by India. Such support should be mutual, provided India's interest is not affected.

k Every effort be made to ensure that the submissions made by the delegation are logical, rational and convincing, based on scientific data and trends on discussions held in the past.

5. INVOLVEMENT OF EMBASSIES AND HIGH COMMISSIONS

Embassies and High Commissions play an important role in enhancing the country's participation in the meetings of Codex through the promotion of India's positions in its daily business and by participating,

as a member of the delegation, or providing the country representation where a national delegate is not available to attend a Codex meeting. To enhance this capacity of India's Embassies and High Commissions throughout the world:

- A copy of the Codex (India) Procedural Manual should be made available to all the Embassies and High Commissions located in the h ost country.
- Every invitation for the meeting of Codex should be sent to the Indian Embassy/High Commission located in the country of the host country by the NCCP-India with the request to send an officer dealing with Agriculture to accompany the Indian delegation. The office of the Embassy and High Commission may also be requested to collect the entire set of the agenda of the meetings from the host country Secretariat. A copy of the written brief outlining the stand to be taken by India on each of the agenda items should also be made available to the office of the Embassy/High Commission as soon as it is ready. A request may also be made to mobilize their offices to secure support from the government of the host countries and other like-minded countries through their foreign offices, especially on the crucial issues on which India has a stake.
- The names of the members of the Indian delegation should be intimated to the Embassy/High Commission by the NCCP-India.
- The leader of the delegation, accompanied by other members, should call on the Ambassador/High Commissioner/Officer-in-Charge with prior appointment before the commencement of the Codex meeting and brief them about the meeting. A copy of the official brief for the delegation should be made available to the Embassy/High Commission prior to the meeting.
- A debriefing meeting should also be arranged so as to keep the officials informed about the deliberations in the meetings and contributions vis-à-vis achievements made by the Indian delegation. A copy of the draft report of deliberations as adopted in the meetings should be handed over to them while debriefing the officials.
- In case it is not possible to send any delegation from India, the concerned official from the Indian foreign office may be requested by the NCCP-India to participate in the meeting and send a report of participation to the NCCP-India.

6. REPORTING AND DEBRIEFING

It should be the responsibility of the leader of the delegation to submit a report of participation to the NCCP-India. The report should be submitted within a period of 30 working days from the last date of participation in the meeting.

The report should enclose additional agenda items/notes tabled in the meeting – conference room documents/position papers circulated by other Member Countries and a copy of the draft report as adopted in the meeting.

6.1 Format for Reporting

The report should be submitted in the following format, and should bear the signature of the leader and other members of the delegation with their names and designations:

a. Subject of the meeting.
b. Place of the meeting.
c. Dates of the meeting.
d. Names and designations of the leader and other members of the delegations.
e. List of additional documents as tabled in the meeting, along with a copy of each document.
f. A copy of the draft report as adopted in the meeting.
g. A summary of salient recommendations/decisions arrived at in the meeting which have economic and trade implications on India.
h. A gist of deliberations on each of the items of the agenda concerning India, covering the following points:

- Topic of the agenda.
- Document No.
- Paragraph No.
- The Indian position, as provided by the NCCP-India.

k Views of the Indian delegation as expressed in the meeting.
k Whether the views expressed are in conformity with the national policy/legislation/regulation – if not, the extent of divergence and the reasons thereof.
k Names of countries supporting India.
k Whether any informal meeting/get-together with other Member Countries was arranged and if so, the outcome thereof.
k An extract of the recommendation as arrived at in the meeting.
k Future course of follow-up action on the part of India, if any.
k Whether any issue requires attention by other Codex Committees.
k Did all members of the delegation abide by the directive of the leader and official decorum? If not, the specific instance of non-compliance.
k Additional remarks/suggestions, if any.

7. FOLLOW-UP ACTION

The follow-up action of recommendations of any Codex meeting, based on the report of participation of the delegation, forms the base for interaction in the future meetings. It is, therefore, extremely important that the NCCP-India undertakes the following steps:
k Within one month from the date of receipt of the report of participation of the Indian delegation, the NCCP-India should arrange a meeting of the concerned Shadow Committee or a meeting of the delegation with the Chairperson and the Secretary NCC, depending on the outcome of the report and the need for subsequent follow-up action. The leader of the delegation will highlight the outcome of Indian participation and subsequent follow-up action needed to be prepared for the next meeting of the concerned Committee/other Codex Committees/Commission.
k The extract of the summary of the salient recommendations/decisions, as highlighted by the Indian delegation in the participation report, should be circulated to the members of the NCC as well as to the members of the Shadow Committee.
k The NCCP should also approach the concerned industry/institutions/experts/consumer organizations for data generation and subsequent follow-up action.

8. CONCLUSION

The responsibility for projecting India's position in the meetings of Codex solely rests with the leader of the delegation. He needs to be ably assisted by experts in the field from the government/industry/consumer and, if possible, an official from the NCCP-India. The NCC-India and the respective Shadow Committees should, therefore, select a competent expert with the attributes of a leader, as mentioned in this module. Embassies and High Commissions play an important role in enhancing the country's participation in the meetings of Codex through the promotion of India's positions in its daily business and by participating, as a member of the delegation, or providing the country representation where a national delegate is not available to attend a Codex meeting. The NCCP-India should therefore ensure the active involvement of the concerned official of the Embassy of India/Office of High Commission located in the host country in the meetings of Codex. There should be appropriate procedures for the briefing and debriefing of the Indian delegation. This will go a long way in ensuring India's consistent contributions to the meetings of Codex.

Participation in Codex at the National Level (Input to National Positions)

INTRODUCTION

The objective of this module is to make the stakeholders understand and appreciate the whole gamut of Codex working procedures so that they are capable and competent to contribute collectively to the work of Codex at the national level.

1. UNDERSTANDING THE CODEX TEXT

In order to build up capabilities within the national stakeholders to respond appropriately on all Codex issues, it is imperative to understand the system of referencing Codex documents. The Commission has devised a uniform system of references for Codex documents, which is outlined in the Codex Procedural Manual. In brief, the system is:

1. The Commission paper, including reports from Committees and CAC agenda papers, are denoted as ALINORM. If the document is for a session to be held in the year 2003, it would be identified by the series ALINORM 03/1,2,3, etc (the number I, 2, 3, indicates the consecutive number of the document).
2. In all other cases of referencing Codex documents, CX, which stands for Codex, should appear first, followed by the subject code reference, followed by the year in which the session will be held (that is not necessarily the year in which the document is prepared), and followed finally by the consecutive number of the document. For example, documents prepared for a session of the Codex Regional Coordinating Committee for Asia, meeting in 2004, would be identified by the series CX/ASIA 04/1, 2, 3, etc. The only exception is the Executive Committee in which the session number is also identified, for example, CX/EXEC 03/48/ 1, 2, 3, etc. In exceptional cases where two or more meetings of a Committee or Task Force are held in the same calendar year, the same identification system will be used with the letter 'A, B, etc' following the abbreviated calendar year.
3. A 'Circular letter' from the Codex Secretariat to the Member Countries conveying requests and other information is referenced as CL 2003/I, 2, 3, etc.

2. CONTENTS OF CODEX STANDARDS AND RELATED TEXT

As per the Codex Procedural Manual, standards and related text (includes codes, guidelines and recommendations) drawn up by a Codex Committee should bear a preface outlining:

- The description of the standard or related text.
- A brief description of the scope and purpose of the standard or related text.
- All references, including the step which the standard or related text has reached in the Commission's Procedures for the Elaboration of Standards, together with the date on which the draft was approved.
- Matters in the draft standard or related text requiring endorsement or action by other Codex Committees.

3. FORMAT FOR CODEX COMMODITY STANDARDS AND THEIR CONTENT

A format for Codex Commodity Standards and their content is provided by the General Principles of the Codex Alimentarius. It includes the following categories of information:

- Scope: including the name of the standard.
- Description, essential composition and quality factors: defining the minimum standards for the food.
- Food additives: only those cleared by the FAO and the WHO may be used.
- Contaminants.
- Hygiene.
- Weights and measures.
- Labeling.
- Methods of analysis and sampling.

In addition to commodity standards, the Codex Alimentarius includes general standards which have across-the-board applications to all food and are not product-specific. There are also documents titled Principles and Guidelines (for example, Food Import and Export Inspection and Certification Systems, Principles for the Establishment and Application of Microbiological Criteria for Food); Codes and Recommendations (for example, Recommended International Code of Practice – General Principles of Food Hygiene, and other relevant Codex texts such as Code of Ethics for International Trade in Food). There are general standards or recommendations for:

- Food labeling.
- Food additives.
- Contaminants.
- Methods of analysis and sampling.
- Food hygiene.
- Nutrition and food for special dietary uses.
- Food import and export inspection and certification systems.
- Residues of veterinary drugs in food.
- Pesticide residues in food.

All the documents related to Codex Standards, Principles, Guidelines, Codes and Recommendations are classified into 13 volumes and published in hard copies. They are also available through the Internet and on CD-ROMs. The subject of each volume is outlined in Annex I. Collectively, the volumes contain general principles, general standards, definitions, codes, commodity standards, methods and recommendations. The contents list of each volume is well organized for easy reference, as illustrated by outlining the contents of Volume I A relating to General Requirements in Annex I.

4. READING THE CODEX TEXT

As soon as the text is received from the Codex Secretariat and made accessible to the stakeholders, it should be incumbent on the part of each stakeholder to ascertain:

- What is required.
- Who has made the request.
- Type of Codex text.
- Date for submitting comments, if required.
- Step at which the text has arrived.

They should also identify the agencies, if any, that should be consulted.

- Government agencies.
- Experts of research institutions/universities.
- Commodity promotion boards.
- Sub-group of peak industry bodies.
- State branches of national consumer groups.
- Other concerned organizations, if any.

5. PREPARATION OF INPUT

5.1 Issues to be Covered in the Inputs

The stakeholders should have a clear understanding as to what the comments should include.

5.1.1 Government Agencies

a. Impact of proposed draft text on national policy.
b. Impact on particular sector, including trade.
c. Technical aspects.
d. Feasibility of introducing change within legislation.
e. Time needed to respond to the Codex Secretariat through the NCCP-India.
f. Recommendations to India's position.

5.1.2 Research Institutions/Academia

k The positive as well as negative aspects of the proposal, based on available scientific data and literature survey/risk analysis.

5.1.3 Industry

a. Feasibility and impact on industrial development and text.
b. Cost/benefits to industry sector/s concerned.
c. Priority for industry and/or proposed alternatives.
d. Technical aspects.

5.1.4 Consumer Organizations

k Benefits to consumers.
  k Improve level of health protection.
  k Plus/minus impact on fraud or deception.
k Priority for consumers.
k Technical comments.

5.2 Format for Input

In order to ensure a uniformity in approach by all the stakeholders, as well as to cover all the relevant aspects in the comments to be made available to the NCCP-India, the following format has been devised:

k Name of the Codex Committee/Commission.
k Agenda document number and relevant paragraph number.
k National position based on the legislation and policy of the government.
k Impact on the proposed agenda on:
  k Domestic trade.
  k International market.
  k Consumers' interest.
k Technical/commercial or other relevant information/data in support of the proposal or against.
k Past history and earlier stand, if any.
k Other considerations such as the names of countries likely to extend support or not, based on past participation.
k Summary of overall comments.
k What should be the participation level in this work (option given below be tick-marked with a brief justification):
  k Must attend the meeting with a specific brief.
  k Submission of written comments will suffice.

- k More data needs to be generated (institute to be identified).
- k Attend the meeting with a watching brief.

The filled format should be signed by the stakeholder and sent to the office of the NCCP-India who will consolidate a national response on the issue and transmit all positions to the Codex Secretariat (it must be kept in mind that all communications from the country on matters of Codex have to be sent only by the NCCP-India or its designate).

5.3 Input for the Revision of Existing Standards

The Commission and its subsidiary bodies are committed to the revision of Codex standards and related texts as necessary, to ensure that they are consistent with and reflect current scientific knowledge. Each stakeholder, therefore, should critically examine and provide inputs to the NCCP-India for presenting to the appropriate Committee any new scientific and other relevant information that may warrant the revision of the existing Codex standards or related texts. The procedure for revision follows that used for the initial preparation of standards (see Codex Procedures under Section 4 Module 9 of this manual).

6. CONCLUSION

In order to interact effectively in matters of Codex, it is imperative on the part of each stakeholder at the national level to understand the implications of each Codex text and follow the step procedure. Every stakeholder in India should, therefore, make the utmost effort to critically examine each Codex document and provide inputs to the NCCP-India based on scientific reasoning, taking into consideration the interest of the Indian industry and consumers.

Volume-wise Description of Subjects of Codex Documents

Volume Number	Subject
Volume IA	General requirements
Volume IB	General requirements (food hygiene)
Volume 2A	Pesticide residues in food (general texts)
Volume 2B	Pesticide residues in food (maximum residue limits)
Volume 3	Residues of veterinary drugs in food
Volume 4	Food for special dietary uses (including food for infants and children)
Volume 5A	Processed and quick frozen fruits and vegetables
Volume 5B	Fresh fruits and vegetables
Volume 6	Fruit juices
Volume 7	Cereals, pulses (legumes) and derived products and vegetable proteins
Volume 8	Fats and oils and related products
Volume 9	Fish and fishery products
Volume 10	Meat and meat products; soups and broths
Volume 11	Sugar, cocoa products, chocolates and miscellaneous products
Volume 12	Milk and milk products
Volume 13	Methods of analysis and sampling

As already stated, the contents list of each volume is well-organized for easy reference. For example:

Volume 1 A: General Requirements
1. General Principles of the Codex Alimentarius
2. Definitions for the Purpose of Codex Alimentarius
3. Code of Ethics for International Trade in Foods
4. Food Labeling
5. Food Additives, including the General Standard for Food Additives
6. Contaminants in Food, including the General Standard for Contaminants and Toxins in Food
7. Irradiated Food

SECTION

6

ISSUES RELEVANT TO ALL SECTORS

Issues Relevant to All Sectors

INTRODUCTION

The following three sections of the manual will assist in appreciating the relevance to each stakeholder category, namely government, industry and consumer, of contemporary food standards measures as set down by the Codex Alimentarius Commission. Section 2, Module 1 of this manual discussed the two levels of Codex Committees, namely those dealing with horizontal issues, and those dealing with vertical issues. Section 6 of this manual deals specifically with the horizontal issues.

The modules in this section have been grouped under common themes, such as chemical residues, hygiene (including the HACCP), food labeling and nutrition, inspection and certification, methods of analysis and sampling, and, finally, food produced by organic farming (commonly known as organic food) or by applying the principles of genetic engineering/biotechnology (Genetically Modified food).

Each of these issues has relevance to stakeholder groups: government, industry and consumers. Governments should be fully conversant with issues of a horizontal nature when establishing official food control systems; industry should be able to respond to the requirements and take initiatives to ensure their products conform to contemporary practices that achieve the highest level of safety and assured quality and consumers should be conversant with the measures applied by the government and industry that provide the acceptable level of protection in terms of safety and deceptive trade practices.

The topics covered in Modules 14-19 are applicable throughout the whole food chain. However, each topic does not necessarily apply to all instances. For example, the issue of biotechnology in food may have relevance to the production, processing and trade of food products containing certain pulses or cereals, such as soyabean or cornmeal or cottonseed oil. On the other hand, the issue of biotechnology may not have any relevance to marine product industries. Similiarly, the issue of organic product labeling may apply to ground crops or products derived from ground crops, but it will not be relevant if the ground crops are produced under conventional agricultural systems.

In today's world, food production is a holistic industry. The producer of farm inputs needs to be aware that his actions can have an ultimate bearing on the consumer. Similarly, no operative in food producing and handling can act in isolation. It is for these reasons that the study of each of the modules in this section is encouraged, although some may not fully appreciate the applicability of certain modules to their specific situation. For example, a farmer producing for the domestic market may not consider Module 17 (inspection and certification systems) or Module 16 (on food labeling and nutrition) to be relevant. Further, the primary producer may have an interest in Module 14 on chemical residues, but as he relies on agents for the on-sale of the primary product, he may not have an interest in Module 18 that discusses Codex work in methods of analysis and sampling. Familiarity with such issues, in this case, would enhance the farmer's appreciation of the broader issues that impact on his business as a part of the food producing community and on him in terms of the health and safety of the nation.

Food Additives, Contaminants, Pesticide Residues and Residues of Veterinary Drugs

INTRODUCTION

The procedural manual of the Codex Alimentarius Commission defines the terms 'Food Additive', 'Contaminant', 'Pesticide Residue' and 'Residue of Veterinary Drugs' and other related terminology. The definitions of the terms referred to in this module are as follows.

Food additives mean any substance not normally consumed as a food by itself and not normally used as a typical ingredient of the food, whether or not it has nutritive value; the intentional addition of which to food for a technological (including organoleptic) purpose in the manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food results, or may be reasonably expected to result, (directly or indirectly) in it or its by-products becoming a component of or otherwise affecting the characteristics of such food. The term does not include 'contaminants' or substances added to food for maintaining or improving nutritional qualities.

Contaminants mean any substance not intentionally added to food, which is present in such food as a result of the production (including operations carried out in crop husbandry, animal husbandry and veterinary medicine), manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food or as a result of environmental contamination. The term does not include fragments, rodent hair and other extraneous matter.

Pesticide residue means any specified substance in food, agricultural commodities, or animal feed resulting from the use of a pesticide. The term includes any derivatives of a pesticide, such as conversion products, metabolites reaction products, and impurities considered to be of toxicological significance.

Veterinary drug means any substance applied or administered to any food-producing animal, such as meat or milk-producing animals, poultry, fish or bees, whether used for therapeutic, prophylactic or diagnostic purposes or for modification of physiological functions or behavior.

Residues of veterinary drugs include the parent compounds and/or their metabolites in any edible portion of the animal product, and the residues of associated impurities of the veterinary drug concerned.

Codex standards in the areas of Food Additives, Contaminants, Pesticide Residues and Residues of Veterinary Drugs are handled by the following Codex Committees:

- Food Additives and Contaminants: CODEX COMMITTEE ON FOOD ADDITIVES AND CONTAMINANTS (CX-711).
- Pesticide Residues: CODEX COMMITTEE ON PESTICIDE RESIDUES (CX-718).

k Residues of Veterinary Drugs: CODEX COMMITTEE ON RESIDUES OF VETERINARY DRUGS IN FOOD (CX-730).

The above Codex Committees get expert advice from other international bodies specializing in the subject area. The FAO/WHO Joint Expert Committee on Food Additives (JECFA), the JECFA on Veterinary Drugs, and the Joint FAO/WHO Meeting on Pesticides Residues (JMPR) play a very important role in providing independent and expert scientific recommendations to the respective Codex Committees. Expert advice is also sought from internationally recognized world experts in special subject areas through formal consultations. Such consultations have been recently held on key food safety areas such as Risk Assessment, Risk Management and Risk Communication, Expert Consultation on Emerging Pathogens, Acrylamide in Food, Safety Assessment of Biotechnology, Food Fortification, Animal Feedstuff Safety, etc. The considerations, conclusions and recommendations of the experts are provided to the world community as published reports. These are available for use by national governments, international organizations and institutions and other interested parties at all levels, including Codex and its subsidiary bodies, in carrying out their functions. These reports can be found on the web site of the FAO or the WHO.

1.CODEX COMMITTEE ON FOOD ADDITIVES AND CONTAMINANTS (CCFAC)

The main purpose of the Codex Committee on Food Additives and Contaminants (CCFAC) is to establish standards, maximum levels allowed for contaminants and food additive levels as well as other standards and Codes of Practice. The host government is the Netherlands and the Committee had the following sessions until 2001:

1. The Hague, May 19-22, 1964
2. The Hague, May 10-14, 1965
3. The Hague, May 9-13, 1966
4. The Hague, September 11-15, 1967
5. Arnhem, March 18-22, 1968
6. Arnhem, October 15-22, 1969
7. The Hague, October 12-16, 1970
8. Wageningen, May 29- June 2, 1972
9. Wageningen, December 10-14, 1973
10. The Hague, June 2-7, 1975
11. The Hague, May 31- June 6, 1977
12. The Hague, October 10-16, 1978
13. The Hague, September 11-17, 1979
14. The Hague, November 25-December 1, 1980
15. The Hague, March 16-22, 1982
16. The Hague, March 22-28, 1983
17. The Hague, April 10-16, 1984
18. The Hague, November 5-11, 1985
19. The Hague, March 17-23, 1987
20. The Hague, March 7-12, 1988
21. The Hague, March 13-18, 1989
22. The Hague, March 19-24, 1990
23. The Hague, March 4-9, 1991
24. The Hague, March 23-28, 1992
25. The Hague, March 22-26, 1993
26. The Hague, March 7-11, 1994
27. The Hague, March 20-24, 1995
28. Manila, March 18-22, 1996
29. The Hague, March 17-21, 1997
30. The Hague, March 9-13, 1998
31. The Hague, March 22-26, 1999
32. Beijing, March 20-24, 2000
33. The Hague, March 12-16, 2001

1.1 Terms of Reference

The Terms of Reference of this Committee are as follows:
- To establish or endorse permitted maximum or guideline levels for individual food additives, for contaminants (including environmental contaminants) and for naturally occurring toxicants in foodstuff and animal feeds.
- To prepare priority lists of food additives and contaminants for toxicological evaluation by the Joint FAO/WHO Expert Committee on Food Additives.
- To recommend specifications of identity and purity for food additives for adoption by the Commission.
- To consider methods of analysis for their determination in food.
- To consider and elaborate standards or codes for related subjects such as the labeling of food additives when sold as such, and food irradiation.

1.2 Adopted Codex Texts

Codex General Standard for Food Additives, which has the following components:
1. Preamble
2. Annex A: Guideline for the Development of Maximum Levels of Use for Food Additives with Numerical Acceptable Daily Intakes (ADIs)
3. Annex B: The GSFA Food Categorization System
4. Annex C: Cross-reference to Codex Commodity Standards and the GSFA Index of Food Additives
List A: JECFA 'Approved' Food Additives, with ADIs and International Numbering System (INS) Numbers
List B: INS Numbers for JECFA 'Approved' Food Additives with ADIs
5. Table 1: Additives Permitted for Use Under Specific Conditions in Certain Food Categories or Individual Food Items (see Reference No. 1).
6. Table 2: Food Categories or Individual Food Items in Which the Use of Food Additives are Permitted Under Specified Conditions
7. Table 3: Additives with Non-numerical ADIs Permitted for Use in Food in General in Accordance with Good Manufacturing Practice Unless Otherwise Specified (ALINORM 97/12A, Appendix IV)

Annex to Table 3: Food Categories and Individual Food Items Where the Use of Food Additives with Good Manufacturing Practice Limitations on Use are Not Allowed or Restricted

- International Numbering System for Food Additives
- The Principle Relating to the Carry-over of Food Additives into Food
- Codex General Standard for the Labeling of Food Additives When Sold as Such
- List of Codex Advisory Specifications for Food Additives
- General Requirements for Natural Flavorings
- Inventory of Processing Aids
- Guidelines For Simple Evaluation of Food Additive Intake

2. CODEX GENERAL STANDARD FOR CONTAMINANTS AND TOXINS (GSCTF)

The GSCTF in Food was adopted by the CAC in 1997 to reflect a horizontal approach in developing maximum limits for all contaminants of importance for food safety and for trade in all relevant food. The GSCTF is still in the development phase. The present format of the standard is given below:
- Preamble
- Annex 1: Criteria for the Establishment of Maximum Limits in Food
- Annex 2: Procedure for Risk Management Decision
- Annex 3: Format of the Standard
- Annex 4: Annotated List of Contaminants and Toxins
- Annex 5: Food Categorization System to be used in the GSCTF

The GSCTF does not yet contain figures pertaining to Maximum Limits (MLs) for contaminants and toxins in the various food groups. The MLs are presently under development by the CCFAC for the

contaminants, which would be included in the GSCTF. This is done in the form of draft standards for each individual contaminant in food.

A few of the documents published by the CAC on the subject are:
- Code of Practice for source directed measures to reduce the contamination of food with chemicals (CAC/RCP 49).
- Maximum level of aflatoxins in peanuts intended for further processing and associated sampling plan (CODEX STAN 209).
- Reduction of Aflatoxin B1 in raw materials and feeding stuff for milk-producing animals (CAC/RCP 45).
- Maximum level of Aflatoxin M1 Milk (CODEX STAN 232).

The following matters are under consideration by the Commission at its 25th Session in July 2003 or the Executive Committee at its 50th Session in June 2002. The relevant document is ALINORM 03/12.

2.1 Risk Analysis

The 34th CCFAC agreed to circulate the 'Proposed Risk Assessment Policy Statement for the Application of Risk Analysis Principles to the Standard-setting Activities of the Codex Committee on Food Additives and Contaminants (CCFAC) in Conjunction with Risk Assessments Performed by the Joint FAO/WHO Expert Committee on Food Additives (JECFA)' for comments at Step 3 and further consideration at its next meeting.

The CCFAC also agreed to inform the Codex Executive Committee and the Codex Committee on the General Principles of this document. The Discussion Paper titled 'Application of Risk Analysis Principles to the Work of the Codex Committee on Food Additives and Contaminants (CCFAC) and the Joint FAO/WHO Expert Committee on Food Additives (JECFA)' has been reviewed in the 59th Meeting of the JECFA (Geneva, June 2002). Detailed information is available on the web site: www.fao.org/es/esn/jecfa/files/heck_ra.pdf.

3. WORK IN PROGRESS ON FOOD ADDITIVES

3.1 To be Considered at Step 8 by the 25th Session of the Codex Commission (July 2003)

- Codex General Standard for Food Additives: Draft Food Additive Provisions in Table 1.
- Codex Advisory Specifications for the Identity and Purity of Food Additives.

3.2 To be Considered at Step 5/8 of the Accelerated Procedure by the 25th Session of the Codex Commission (July 2003)

- Draft Revisions to the Codex International Numbering System for Food Additives.
- Proposed Draft Revisions to the Codex General Standard for Food Additives.
- Proposed Draft Revision to the Recommended International Code of Practice for Radiation Processing of Food.

3.3 The Committee is Continuing Work on

- General Standard for Food Additives: Food Category System.
- General Standard for Food Additives: Draft Food Additive Provisions (in Table 1 and Table 3).
- General Standard for Food Additives: Revisions to the Preamble to clarify the relationship between the General Standard and Food Additive Provisions in Codex Commodity Standards and to clarify the principles for establishing Food Additive Provisions in the General Standard.
- Proposed Draft Revision to the Codex Standard for Irradiated Food.
- International Numbering System.
- Specifications for the Identity and Purity of Food Additives.

k Discussion Paper on Processing Aids and Additives Used as Carriers for other Additives.
k Discussion Paper on the Use of Active Chlorine Compounds in Food Processing.

4. WORK IN PROGRESS ON CONTAMINANTS

4.1 To be Considered at Step 8 by the 25th Session of the Codex Commission (July 2003)

k Codex General Standard for Contaminants and Toxins: Maximum Level for Patulin in Apple Juice and Apple Juice Ingredients in other Beverages.
k Codex General Standard for Contaminants and Toxins: Maximum Level for Ochratoxin A in Wheat, Barley, Rye and derived products.

4.2 Considered at Step 5 by the 50th Session of the Codex Executive Committee (June 2002)

k Proposed Draft Code of Practice for the Prevention of Mycotoxins Contamination in Cereals, including Annexes on Ochratoxin A, Zearalenone, Fumonisins, and Tricothecenes.
k Proposed Draft Code of Practice for the Reduction of Patulin Contamination in Apple Juice and Apple Juice Ingredients.

The details are available at: www.codex.org.

4.3 The Committee is Continuing Work on

k Codex General Standard for Contaminants and Toxins: Proposed Draft Principles for Exposure Assessment of Contaminants and Toxins in Food.
k Codex General Standard for Contaminants and Toxins: Draft maximum levels for lead in fish.
k Codex General Standard for Contaminants and Toxins: Maximum levels for lead in milk and milk fat.
k Codex General Standard for Contaminants and Toxins: Proposed Draft Maximum Levels for cadmium in fruit, wheat grain, milled rice, soybean and peanuts, meat of cattle, poultry, pig and sheep, horse meat, vegetables, peeled potatoes, stem and root vegetables, leafy vegetables, fresh herbs, fungi, celeriac, and mollusks.
k Codex General Standard for Contaminants and Toxins: Proposed Draft Maximum Levels for tin in liquid canned foods and solid canned food.
k Proposed Draft Code of Practice for Source Directed Measures to Reduce Dioxin and Dioxin-like PCB Contamination of Food.
k Discussion Paper on Dioxins and Dioxin such as PCBs.
k Position Paper on Chloropropanols.
k Position Paper on Aflatoxin in Tree Nuts.
k Discussion Paper on Deoxynivalenol.

4.4 New Work

k Proposed Draft Code of Practice for the Reduction of Aflatoxin Contamination in Tree Nuts.
k Proposed Draft Code of Practice for the Prevention and Reduction of Lead in Food.
k Discussion Paper on the Development of a Code of Practice for the Reduction of Aflatoxin Contamination in Peanuts.

5. CODEX COMMITTEE ON PESTICIDE RESIDUES (CCPR)

The Codex Committee on Pesticide Residues recommends to the Codex Alimentarius Commission that it establishes maximum limits for pesticide residues for specific food items or groups of food commodities. A Codex Maximum Residue Limit for Pesticide Residues (MRLPs) is the maximum concentration of a pesticide residue (expressed as mg/kg) recommended by the CAC to be legally permitted in or on food commodities and animal feed. Food derived from commodities that comply with the respective MRLPs

are intended to be toxicologically acceptable, that is, consideration of the various dietary residue intake estimates and determination, both at the national and international level in comparison with the ADI, should indicate that food complying with Codex MRLPs are safe for human consumption. Codex MRLPs are primarily intended to apply in international trade and are derived from reviews conducted by the Joint FAO/WHO Meeting on Pesticide Residues (JMPR). The host government is the Netherlands and the Committee had the following sessions until 2001:

1. The Hague, January 17-21, 1966
2. The Hague, September 18-22, 1967
3. Arnhem, September 30-October 4, 1968
4. Arnhem, October 6-14, 1969
5. The Hague, September 28-October 6, 1970
6. The Hague, October 16-23, 1972
7. The Hague, February 4-9, 1974
8. The Hague, March 3-8, 1975
9. The Hague, February 14-21, 1977
10. The Hague, May 29-June 5, 1978
11. The Hague, June 11-18, 1979
12. The Hague, June 2-9, 1980
13. The Hague, June 15-20, 1981
14. The Hague, June 14-21, 1982
15. The Hague, October 3-10, 1983
16. The Hague, May 24-June 4, 1984
17. The Hague, March 25-April 1, 1985
18. The Hague, April 21-28, 1986
19. The Hague, April 6-13, 1987
20. The Hague, April 18-25, 1988
21. The Hague, April 10-17, 1989
22. The Hague, April 23-30, 1990

5.1 Terms of Reference

The Committee has the following Terms of Reference:

1. To establish maximum limits for pesticide residues in specific food items or in groups of food.
2. To establish maximum limits for pesticide residues in certain animal feeding stuff moving in international trade where these are justified reasons for the protection of human health.
3. To prepare priority lists of pesticides for evaluation by the Joint FAO/WHO Meeting on Pesticide Residues (JMPR).
4. To consider methods of sampling and analysis for the determination of pesticide residues in food and feed.
5. To consider other matters in relation to the safety of food and feed containing pesticide residues.
6. To establish maximum limits for environmental and industrial contaminants showing chemical or other similarity to pesticides, in specific food items or groups of food.

5.2 Adopted Codex Texts

Codex has evaluated 197 pesticides and arrived at residue limits for 3,274 pesticides. The MRLs in Codex are available in a data base format through which pesticide residues can be found by the commodity or pesticides' name. The codes and names of commodities can be found in the Codex Classification of Food and Animal Feed (Section 2 of Codex Alimentarius, Second Edition, Volume 2, 1993).

6. WORK IN PROGRESS

The Codex Commission will consider the following items at its 25th Session in July 2003. The relevant document is ALINORM 03/24.

6.1 To be Considered at Step 8

- Proposed draft amendments to the 'Guidelines on Good Laboratory Practice in Pesticide Residue Analysis and the Introduction Section of the Recommended Methods of Analysis for Pesticide Residues'.
- Draft Revised Maximum Residue Limits.

6.2 To be Considered at Step 5/8

- Proposed draft and proposed draft revised Maximum Residue Limits.

6.3 To be Considered at Step 5 by the Executive Committee at its 50th Session in June 2002

- Proposed draft and proposed draft revised Maximum Residue Limits.

6.4 The Committee is Continuing Work on

- Consideration of Draft and Proposed Draft Residue Limits in Food and Feed.
- Paper on Trade Vulnerabilities Resulting from the Lengthy Codex MRL Process.
- Paper on Cumulative Risk Assessment Methodology.
- Paper on Acute Dietary Risk Assessment.
- Revision of Regional Diets and Information on Processing.
- Revision of the List of Recommended Methods of Analysis for Pesticide Residues.
- Revision of the Codex Classification of Food and Animal Feed.
- Revision of Codex Priority Lists of Pesticides for review by the JMPR.

7. CODEX COMMITTEE ON RESIDUES OF VETERINARY DRUGS IN FOOD (CCRVDF)

The Codex Committee on Residues of Veterinary Drugs in Food determines the priorities for the consideration of residues of veterinary drugs in food and recommends Maximum Residue Limits (MRLs) for veterinary drugs. A veterinary drug is defined as any substance applied or administered to a food-producing animal, such as meat or dairy animals, poultry, fish or bees, for therapeutic, prophylactic or diagnostic purposes or for the modification of physiological functions or behavior.

A Codex Maximum Limit for Veterinary Drugs (MRLVD) is the maximum concentration of residue resulting from the use of a veterinary drug (expressed in mg/kg or ug/kg on a fresh weight basis) that is adopted by the Codex Alimentarius Commission to be permitted or recognized as acceptable in or on a food. An MRLVD is based on the Acceptable Daily Intake (ADI) and indicates the amount of residue in food that is considered to be without appreciable toxicological hazard. An MRLVD also takes into account other relevant public health risks as well as food technological aspects. When establishing an MRLVD, consideration is also given to residues that occur in food of plant origin and/or the environment. Further, the MRLVD may be reduced to be consistent with good practices in the use of veterinary drugs and to the extent that practical analytical methods are available. The host government is the United States of America and the Committee had the following sessions until 2001:

1. Washington, D.C., October 27-31, 1986
2. Washington, D.C., November 30-December 4, 1987
3. Washington, D.C., October 31-November 4, 1988
4. Washington, D.C., October 24-27, 1989
5. Washington, D.C., October 16-19, 1990
6. Washington, D.C., October 22-25, 1991
7. Washington, D.C., October 20-23, 1992
8. Washington, D.C., June 7-10, 1994
9. Washington, D.C., December 5-8, 1995
10. San José (Costa Rica), October 29-November 1, 1996
11. Washington, D.C., September 15-18, 1998
12. Washington, D.C., March 28-31, 2000

7.1 Terms of Reference

The Committee has the following Terms of Reference to:
a. Determine priorities for the consideration of residues of veterinary drugs in food.
b. Recommend the maximum levels of such substances.
c. Develop Codes of Practice as may be required.
d. Consider methods of sampling and analysis for the determination of veterinary drug residues in food.

7.2 Adopted Codex Texts

k Guidelines for the establishment of a regulatory program for the control of veterinary drug residues in food (CAC/GL 16-1993).
k Glossary of terms and definitions (veterinary drug residues in food).

8. WORK IN PROGRESS

8.1 To be Considered at Step 8 by the Commission

In the recently held meeting of the CCRVDF, the following MRLs have been forwarded to be considered at Step 8 by the 25th Session of the Commission:
k Abemectin
k Carazolol
k Chlortetracycline/oxytetracycline/tetracycline
k Clenbuterol
k Cyfluthrin
k Phoxin
k Porcine somatropin

8.2 To be Considered at Steps 5/8 by the 25th Session of the Commission

k Cyhalothrin
k Ivermectin
k Linomycin

8.3 To be Considered at Step 5 of the Accelerated Procedure by the 25th Session of the Commission

k Clenbuterol
k Deltamethrin
k Dicyclanil
k Melengestrol acetate
k Trichlorofon (metrifinate)

8.4 The Committee will Continue to Work on

k Proposed draft Code of Practice to minimize and contain antimicrobial resistance.
k Proposed draft revised guidelines for the Establishment of a Regulatory Program for the control of veterinary drug residues in food.
k Revised discussion paper on Residue Issues for the Codex Committee on residues of veterinary drugs in food.
k Risk analysis principles and methodologies, including risk assessment policies, in the Codex Committee on residues of veterinary drugs in food.
k Proposed draft appendix on the prevention and control of veterinary drugs residues in milk and milk products.
k Priority list of veterinary drugs requiring evaluation and reevaluation.

- Method of analysis and sampling issues.
- Performance-based criteria.
- Identification of routine methods of analysis.

PART A

Food Hygiene and the HACCP System

INTRODUCTION

All countries need adequate food control programs to ensure that national food supplies are safe, of good quality and available in adequate amounts at affordable prices to ensure an acceptable nutritional and health status for all population groups. Food control includes all activities carried out to ensure the quality, safety and honest presentation of food at all stages from primary production, through processing and storage, to marketing, and consumption. The term has been used to describe a total national effort involving an integrated approach between the government and all segments and sectors of the food industry. Food control is linked to improvement in the health of the population, the potential for a country's economic development and the reduction of spoilage and food losses.

The Codex Alimentarius General Principles of Food Hygiene lay a firm foundation for ensuring effective food control and food hygiene. The General Principles of Food Hygiene follow the food chain from primary production through to the consumer, highlighting the key hygiene controls at each stage. A Hazard Analysis and Critical Control Point (HACCP) approach is recommended wherever possible to enhance food safety. The HACCP approach is internationally recognized as being effective in ensuring the safety and suitability of food for human consumption and in international trade.

1. CODEX GENERAL PRINCIPLES OF FOOD HYGIENE (see Reference No. 1)

The purpose is to introduce the participants to the Codex General Principles of Food Hygiene as a strong base for ensuring food safety and to their necessary relationship to the development of effective HACCP systems.

The Codex General Principles of Food Hygiene make a strong base for ensuring food hygiene. They follow the food chain from primary production through to the final consumer, highlighting the key hygiene controls at each stage, and recommend an HACCP-based approach whenever possible to enhance food safety.

1.1 Codex General Principles of Food Hygiene

- Identify the essential principles of food hygiene applicable throughout the food chain, including primary production through to the final consumer, to achieve the goal of ensuring that food is safe and suitable for human consumption.
- Recommend an HACCP-based approach as a means to enhance food safety.
- Indicate how to implement those principles.
- Provide guidance for specific codes which may be needed for sectors of the food chain, processes or commodities to amplify the hygiene requirements specific to those areas.

This manual follows the food chain from primary production to the final consumer, setting out the necessary hygiene conditions for producing food which is safe and suitable for consumption. The manual provides a baseline structure for other codes applicable to particular sectors. Such specific codes and guidelines should be read in conjunction with this manual and the Hazard Analysis and Critical Control Point (HACCP) system.

2. PRIMARY PRODUCTION

2.1 Environmental Hygiene

Potential sources of contamination from the environment should be considered. In particular, primary food production should not be carried on in areas where the presence of potentially harmful substances would lead to an unacceptable level of such substances in food.

2.2 Hygienic Production of Food Sources

The potential effects of primary production activities on the safety and suitability of food should be considered at all times. In particular, this includes identifying any specific points in such activities where a high probability of contamination may exist and taking specific measures to minimize that probability. The HACCP-based approach may assist in the taking of such measures.

Producers should as far as practicable implement measures to:
- Control contamination from air, soil, water, feed stuff, fertilizers (including natural fertilizers), pesticides, veterinary drugs or any other agent used in primary production.
- Control plant and animal health so that it does not pose a threat to human health through food consumption, or adversely affect the suitability of the product.
- Protect food sources from fecal and other contamination.

In particular, care should be taken to manage wastes, and store harmful substances appropriately. Farm programs which achieve specific food safety goals are becoming an important part of primary production and should be encouraged.

2.3 Handling, Storage and Transport

Procedures should be in place to:
- Sort food and food ingredients to segregate material which is evidently unfit for human consumption.
- Dispose of any rejected material in a hygienic manner.
- Protect food and food ingredients from contamination by pests or by chemical, physical or microbiological contaminants or other objectionable substances during handling, storage and transport.

Care should be taken to prevent, as far as reasonably practicable, deterioration and spoilage through appropriate measures, which may include controlling temperature, humidity, and/or other factors.

2.4 Cleaning, Maintenance and Personal Hygiene

Appropriate facilities and procedures should be in place to ensure that:
- Any necessary cleaning and maintenance is carried out effectively.
- An appropriate degree of personal hygiene is maintained.

3. ESTABLISHMENT: DESIGN AND FACILITIES

3.1 Location

Potential sources of contamination need to be considered when deciding where to locate food establishments, as well as the effectiveness of any reasonable measures that might be taken to protect food. Establishments should not be located anywhere where, after considering such protective measures,

it is clear that there will remain a threat to food safety or suitability. In particular, establishments should normally be located away from:

- Environmentally polluted areas and industrial activities which pose a serious threat to contaminating food.
- Areas subject to flooding, unless sufficient safeguards are provided.
- Areas prone to infestations of pests.
- Areas where wastes, either solid or liquid, cannot be removed effectively.

3.2 Equipment

Equipment should be sited so that it:

- Permits adequate maintenance and cleaning.
- Functions in accordance with its intended use.
- Facilitates good hygiene practices, including monitoring.

3.3 Premises and Rooms

3.3.1 Design and Layout

Where appropriate, the internal design and layout of food establishments should permit good food hygiene practices, including protection against cross-contamination between and during operations by food stuff. Activities should be adequately separated by physical or other effective means where cross-contamination may result. Buildings and facilities should be designed to facilitate hygienic operations by means of a regulated flow in the process, from the arrival of the raw material at the premises to the finished product. Where appropriate, blueprints or process flow diagrams should be available.

3.3.2 Internal Structures and Fittings

Structures within food establishments should be soundly built of durable material and be easy to maintain, clean and, where appropriate, able to be disinfected. In particular, the following specific conditions should be satisfied, where necessary, to protect the safety and suitability of food:

- The surfaces of walls, partitions and floors should be made of impervious material with no toxic effect in intended use.
- Walls and partitions should have a smooth surface up to a height appropriate to the operation.
- Floors should be constructed to allow adequate drainage and cleaning.
- Ceilings and overhead fixtures should be constructed and finished to minimize the build up of dirt and condensation, and the shedding of particles.
- Windows should be easy to clean, be constructed to minimize the build up of dirt and, where necessary, be fitted with removable and cleanable insect-proof screens. Where necessary, disinfect.
- Working surfaces that come into direct contact with food should be in sound condition, durable and easy to clean, maintain and disinfect. They should be made of smooth, non-absorbent materials, and be inert to food, detergents and disinfectants under normal operating conditions.

3.3.3 Equipment

Equipment and containers other than one-time-use containers and packaging coming into contact with food should be designed and constructed to ensure that, where necessary, they can be adequately cleaned, disinfected and maintained to avoid the contamination of food. Equipment and containers should be made of materials with no toxic effect in intended use. Where necessary, equipment should be durable and movable or capable of being disassembled to allow for maintenance, cleaning, disinfection and monitoring. It should also facilitate inspection for pests.

3.3.3.1 Food Control and Monitoring Equipment

In addition to the general requirements, equipment used to cook, heat treat, cool, store or freeze food should be designed to achieve the required food temperatures as rapidly as necessary in the interests

of food safety and suitability, and maintain them effectively. Such equipment should also be designed to allow temperatures to be monitored and controlled. Where necessary, such equipment should have an effective means of controlling and monitoring humidity, airflow and any other characteristic likely to have a detrimental effect on the safety or suitability of food. These requirements are intended to ensure that:

- Harmful or undesirable micro-organisms or their toxins are eliminated or reduced to safe levels or their survival and growth are effectively controlled.
- Where appropriate, critical limits established in the HACCP-based plans can be monitored.
- Temperatures and other conditions necessary to food safety and suitability can be rapidly achieved and maintained.

3.4 Containers for Waste and Inedible Substances

Containers for waste, by-products and inedible or dangerous substances should be specifically identifiable, suitably constructed and, where appropriate, made of impervious material. Containers used to hold dangerous substances should be identified and, where appropriate, be lockable to prevent malicious or accidental contamination of food.

3.5 Water Supply

An adequate supply of potable water with appropriate facilities for its storage, distribution and temperature control should be available, whenever necessary, to ensure the safety and suitability of food. Potable water should be as specified in the latest edition of the WHO guidelines for drinking water quality, or water of a higher standard. Non-potable water for use in fire control, steam production, refrigeration and other similar purposes where it would not contaminate food shall have a separate system. Non-potable water systems shall be identified and shall not connect with, or allow reflux into, potable water systems.

3.6 Drainage and Waste Disposal

Adequate drainage and waste disposal systems and facilities should be provided. They should be designed and constructed so that the risk of contaminating food or the potable water supply is avoided.

3.7 Cleaning

Adequate facilities, suitably designated, should be provided for cleaning food, utensils and equipment. Such facilities should have an adequate supply of hot and cold potable water, where appropriate.

3.8 Personal Hygiene Facilities and Toilets

Personal hygiene facilities should be available to ensure that an appropriate degree of personal hygiene can be maintained and to avoid contaminating food. Where appropriate, facilities should include:

- Adequate means for hygienically washing and drying hands, including washbasins and a supply of hot and cold or suitably temperature-controlled water.
- Lavatories of appropriate hygienic design.
- Adequate changing facilities for personnel.

Such facilities should be suitably located and designated.

3.9 Temperature Control

Depending on the nature of the food operations undertaken, adequate facilities should be available for heating, cooling, cooking, refrigerating and freezing food, for storing refrigerated or frozen food, monitoring food temperatures and, when necessary, controlling ambient temperatures to ensure the safety and suitability of food.

3.10 Air Quality and Ventilation

Adequate means of natural or mechanical ventilation should be provided, in particular to:
- Minimize air-borne contamination of food, for example, from aerosols and condensation droplets.
- Control ambient temperatures.
- Control odors that might affect the suitability of food.
- Control humidity, where necessary, to ensure the safety and suitability of food.

Ventilation systems should be designed and constructed so that air does not flow from contaminated areas to clean areas and, where necessary, they can be adequately maintained and cleaned.

3.11 Lighting

Adequate lighting, natural or artificial, should be provided to enable the undertaking to operate in a hygienic manner. Where necessary, lighting should not be such that the resulting color is misleading. The intensity should be adequate to the nature of the operation. Lighting fixtures should, where appropriate, be protected to ensure that food is not contaminated by breakages.

3.12 Storage

Where necessary, adequate facilities for the storage of food, ingredients and non-food chemicals such as cleaning materials, lubricants and fuels should be provided. Where appropriate, food storage facilities should be designed and constructed to:
- Permit adequate maintenance and cleaning.
- Avoid pest access and harborage.
- Enable food to be effectively protected from contaminating during storage.
- Where necessary, provide an environment which minimizes the deterioration of food, for example, by temperature and humidity control.

The type of storage facilities required will depend on the nature of the food. Where necessary, separate, secure storage facilities for cleaning materials and hazardous substances should be provided.

4. CONTROL OF OPERATIONS

4.1 Key Aspects of Hygiene Control Systems

4.1.1 Time and Temperature Control

Inadequate food temperature control is one of the most common causes of food-borne illness or food spoilage. Such controls include the time and temperature of cooking, cooling, processing and storage. Systems should be in place to ensure that the temperature is controlled effectively where it is critical to the safety and suitability of food.

Temperature control systems should take into account:
- The nature of the food, for example, its water activity, pH and likely initial level and types of micro-organisms.
- The intended shelf-life of the product.
- The method of packaging and processing.
- How the product is intended to be used, for example, further cooking/processing or ready-to-eat.

Such systems should also specify tolerable limits for time and temperature variations. Temperature recording devices should be checked at regular intervals and tested for accuracy.

4.1.2 Specific Process Steps

Other steps which contribute to food hygiene may include, for example:
- Chilling

- Thermal processing
- Irradiation
- Drying
- Chemical preservation
- Vacuum or modified atmospheric packaging

5. MICROBIOLOGICAL AND OTHER SPECIFICATIONS

Management systems should offer an effective way of ensuring the safety and suitability of food. Where microbiological, chemical or physical specifications are used in any food control system, such specifications should be based on sound scientific principles and state, where appropriate, monitoring procedures, analytical methods and action limits.

5.1 Microbiological Cross-contamination

Pathogens can be transferred from one food to another, either by direct contact or by food handlers, contact surfaces or the air. Raw, unprocessed food should be effectively separated, either physically or by time, from ready-to-eat foods, with effective intermediate cleaning and, where appropriate, disinfections.

Access to processing areas may need to be restricted or controlled. Where risks are particularly high, access to processing areas should be only via a changing facility. Personnel may need to be required to put on clean protective clothing, including footwear, and wash their hands before entering.

Surfaces, utensils, equipment, fixtures and fittings should be thoroughly cleaned and, where necessary, disinfected after raw food, particularly meat and poultry, has been handled or processed.

5.2 Physical and Chemical Contamination

Systems should be in place to prevent the contamination of food by foreign bodies such as glass or metal shards from machinery, dust, harmful fumes and unwanted chemicals. In manufacturing and processing, suitable detection or screening devices should be used, where necessary.

5.3 Incoming Material Requirements

No raw material or ingredient should be accepted by an establishment if it is known to contain parasites, undesirable micro-organisms, pesticides, veterinary drugs or toxic, decomposed or extraneous substances which would not be reduced to an acceptable level by normal sorting and/or processing. Where appropriate, specifications for raw materials should be identified and applied.

Raw materials or ingredients should, where appropriate, be inspected and sorted before processing. Where necessary, laboratory tests should be made to establish fitness for use. Only sound, suitable raw materials or ingredients should be used. Stocks of raw materials and ingredients should be subject to effective stock rotation.

6. PACKAGING

Packaging design and materials should provide adequate protection for products to minimize contamination, prevent damage, and accommodate proper labeling. Packaging material or gases, where used, must be non-toxic and not pose a threat to the safety and suitability of food under the specified conditions of storage and use. Where appropriate, reusable packaging should be suitably durable, easy-to-clean and, where necessary, disinfect.

7. Water

7.1 In Contact with Food

Only potable water should be used in food handling and processing, with the following exceptions:

- For steam production, fire control and other similar purposes not connected with food.
- In certain food processes, for example, chilling, and in food handling areas, provided this does not constitute a hazard to the safety and suitability of food.

Water re-circulated for reuse should be treated and maintained in such a condition that no risk to the safety and suitability of food results from its use. The treatment process should be effectively monitored. Re-circulated water which has received no further treatment and water recovered from processing of food by evaporation or drying may be used, provided this does not constitute a hazard to the safety and suitability of food.

7.2 As an Ingredient

Potable water should be used wherever necessary to avoid food contamination.

7.3 Ice and Steam

Ice should be made from potable water only. Ice and steam should be produced, handled and stored to protect them from contamination. Steam used in direct contact with food or food contact surfaces should not constitute a threat to the safety and suitability of food.

8. MANAGEMENT AND SUPERVISION

The type of control and supervision needed will depend on the size of the business, the nature of its activities and the types of food involved. Managers and supervisors should have enough knowledge of food hygiene principles and practices to be able to judge potential risks, take appropriate preventive and corrective action, and ensure that effective monitoring and supervision takes place.

9. DOCUMENTATION AND RECORDS

Where necessary, appropriate records of processing, production and distribution should be kept and retained for a period that exceeds the shelf-life of the product. Documentation can enhance the credibility and effectiveness of the food safety control system.

10. ESTABLISHMENT: MAINTENANCE AND SANITATION

10.1 Maintenance and Cleaning

Establishments and equipment should be kept in an appropriate state of repair and condition to:

- Facilitate all sanitation procedures.
- Function as intended, particularly at critical steps.
- Prevent contamination of food, for example, from metal shards, flaking plaster, debris and chemicals.

Cleaning should remove food residues and dirt, which may be a source of contamination. The necessary cleaning methods and materials will depend on the nature of the food business. Disinfection may be necessary after cleaning.

Cleaning chemicals should be handled and used carefully and in accordance with the manufacturer's instructions and stored, where necessary, separated from food, in clearly identified containers to avoid the risk of contaminating food.

10.2 Cleaning Procedures and Methods

Cleaning can be carried out by the separate or the combined use of physical methods, such as heat, scrubbing, turbulent flow, vacuum cleaning or other methods that avoid the use of water, and chemical methods using detergents, alkalis or acids.

Cleaning procedures will involve, where appropriate:
- Removing gross debris from surfaces.
- Applying a detergent solution to loosen soil and bacterial film and hold them in solution or suspension.
- Rinsing with water to remove loosened soil and residues of detergent.
- Dry cleaning or other appropriate methods for removing and collecting residues and debris.
- Where necessary, disinfection.

10.3 Cleaning Programs

Cleaning and disinfection programs should ensure that all parts of the establishment are appropriately clean and should include the cleaning of cleaning equipment.

Cleaning and disinfection programs should be continually and effectively monitored for their suitability and effectiveness and, where necessary, documented.

Where written cleaning programs are used, they should specify:
- Areas, items of equipment and utensils to be cleaned.
- Responsibility for particular tasks.
- Method and frequency of cleaning.
- Monitoring arrangements.

Where appropriate, programs should be drawn up in consultation with relevant specialists.

10.4 Cleaning of Equipment

The manufacturer should have a written cleaning and sanitation program for all equipment, which includes:
- The name of the responsible person.
- The frequency of the activity.
- Chemicals and concentration used.
- Temperature requirements.
- Procedures for cleaning and sanitizing.

The procedures for cleaning and sanitizing are different, depending on whether the equipment is cleaned out of place (COP), for example, hand-cleaned or cleaned in place (CIP).

For COP equipment, the procedures should be specified as follows:
- Identification of equipment and utensils.
- Disassembly/reassembly instructions as required for cleaning and inspection.
- Identification of areas on equipment requiring special attention.
- Method of cleaning, sanitizing and rinsing.

For CIP equipment, the procedures should be specified as follows:
- Identification of lines and/or equipment.
- CIP set-up instructions.
- Method of cleaning, sanitizing and rinsing.
- Disassembly/reassembly instructions as required for cleaning and inspection.

10.5 Pest Control Systems

Pests pose a major threat to the safety and suitability of food. Pest infestations can occur where there are breeding sites and a supply of food. Good hygiene practices should be employed to avoid creating an environment conducive to pests. Good sanitation, the inspection of incoming materials and good monitoring can minimize the likelihood of infestation and thereby limit the need for pesticides.

10.6 Waste Management

Suitable provision must be made for the removal and storage of waste. Waste must not be allowed to accumulate in food handling, food storage, and other working areas and the adjoining environment except so far as is unavoidable for the proper functioning of the business.

Waste stores must be kept appropriately clean.

The following additional points should be considered:
- Adequate facilities and equipment should be provided and maintained for the storage of waste and inedible material prior to removal from the establishment. These facilities should be designed to prevent contamination.
- Containers used for waste should be clearly identified, leakproof and, where appropriate, kept covered.
- Waste should be removed and containers cleaned and sanitized at an appropriate frequency to minimize contamination potential.

10.7 Monitoring Effectiveness

Sanitation systems should be monitored for effectiveness, periodically verified by means such as audit pre-operational inspections or, where appropriate, the microbiological sampling of the environment and food contact surfaces. They must be regularly reviewed and adapted to reflect changed circumstances.

11. ESTABLISHMENT: PERSONAL HYGIENE

11.1 Personal Cleanliness

Food handlers should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing, head covering and footwear. Cuts and wounds, where personnel are permitted to continue working, should be covered by suitable waterproof dressings.

Personnel should always wash their hands when personal cleanliness may affect food safety, for example:
- At the start of food handling activities.
- Immediately after using the toilet.
- After handling raw food or any contaminated material, where this could result in the contamination of other food items; they should avoid handling ready-to-eat food, where appropriate.

11.2 Personal Behavior

Personnel engaged in food handling activities should refrain from any such behavior which could result in contamination of food, for example:
- Smoking.
- Spitting.
- Chewing or eating.
- Sneezing or coughing over unprotected food.

Personal effects such as jewelery, watches, pins or other items should not be worn or brought into food handling areas if they pose a threat to the safety and suitability of food.

11.3 Visitors

Visitors to food manufacturing, processing or handling areas should, where appropriate, wear protective clothing and adhere to the other personal hygiene provisions in this section.

12. TRANSPORTATION

12.1 General Considerations

Food must be adequately protected during transport. The type of conveyance or containers required depends on the nature of the food and the conditions under which it has to be transported.

Where necessary, conveyance and bulk containers should be designed and constructed so that they:
- Do not contaminate food for packaging.
- Can be effectively cleaned and, where necessary, disinfected.
- Permit the effective separation of different food or food from non-food items, where necessary, during transport.
- Provide effective protection from contamination, including dust and fumes.
- Can effectively maintain any temperature, humidity, atmosphere and other conditions necessary to protect food from harmful or undesirable microbial growth and deterioration likely to render it unsuitable for consumption.
- Allow any necessary temperature, humidity and other conditions to be checked.

12.2 Use and Maintenance

Conveyance and containers for transporting food should be kept in an appropriate state of cleanliness, repair and condition. Where the same conveyance or container is used for transporting different food, or non-food, effective cleaning and, where necessary, disinfection should take place between loads. Where appropriate, particularly in bulk transport, containers and conveyance should be designated and marked for food use only and be used only for that purpose.

13. TRAINING

13.1 Awareness and Responsibilities

Food hygiene training is fundamentally important. All personnel should be aware of their role and responsibility in protecting food from contamination or deterioration. Food handlers should possess the necessary knowledge and skill to enable them to handle food hygienically. Those who handle strong cleaning chemicals or other potentially hazardous chemicals should be instructed in safe handling techniques.

13.2 Training Programs

Factors to take into account in assessing the level of training required include:
- The nature of the food, in particular its ability to sustain growth of pathogenic or spoilage micro-organisms.
- The manner in which the food is handled and packed, including the probability of contamination, the extent and nature of processing or further preparation before final consumption.
- The conditions under which the food will be stored.
- The expected length of time before consumption.

13.3 Instruction and Supervision

Periodic assessments of the effectiveness of training and instruction programs should be made as well as routine supervision and checks to ensure that procedures are being carried out effectively.

Managers and supervisors of food processes should possess the necessary knowledge of food hygiene principles and practices to be able to judge potential risks and take the necessary action to remedy deficiencies.

13.4 Refresher Training

Training programs should be routinely reviewed and updated, where necessary. Systems should be in place to ensure that food handlers remain aware of all the procedures necessary to maintain the safety and suitability of food.

14. CONCLUSION

Training in good hygiene practices is a challenge as the number of personnel involved in the food business increases and the personnel trained to perform the relevant tasks correctly remain limited to the middle-level quality assurance or production personnel. This situation needs to change drastically to ensure food quality and safety at the domestic and international levels.

PART B

The Hazard Analysis and Critical Control Point (HACCP) System

INTRODUCTION

The objective is to introduce the trainees to the history and background of the Hazard Analysis and Critical Control Point (HACCP) system and its importance as a food safety management system in identifying and controlling food safety hazards.

The HACCP system for managing food safety concerns grew from two major developments. The first breakthrough was associated with W.E. Deming, whose theories of quality management are widely regarded as a major factor in turning around the quality of Japanese products in the 1950s. Dr Deming and others developed Total Quality Management (TQM) systems, which emphasized a total systems approach to manufacturing that could improve quality, while lowering costs.

The second major breakthrough was the development of the HACCP concept itself. The HACCP concept was pioneered in the 1960s by the Pillsbury Company, the United States Army, the US National Aeronautics and NASA, as a collaborative development for the production of safe food for the US space programs. Pillsbury introduced and adopted the HACCP as the system that could provide the greatest safety, while reducing dependence on end-product inspection and testing.

Recognizing the importance of the HACCP to food control, the 20th Session of the Codex Alimentarius Commission held in Geneva, Switzerland, adopted the 'Guidelines for the application of Hazard Analysis Critical Control Point' (see Reference No. 2).

1. ADVANTAGES OF THE HACCP

The HACCP system, as it applies to food safety management, uses the approach of controlling critical points in food handling to prevent food safety problems. The system is science-based and systematic and identifies specific hazards and measures for their control to ensure the safety of food. The HACCP is based on prevention and reduces the reliance on end-product inspection and testing.

The HACCP system can be applied throughout the food chain from the primary producer to the consumer. Besides enhancing food safety, other benefits of applying the HACCP include a more effective use of resources, savings to the food industry and a more timely response to food safety problems. The HACCP enhances the responsibility and degree of control at the level of the food industry. A properly implemented HACCP system leads to the greater involvement of food handlers in understanding and ensuring food safety, thus providing them with renewed motivation in their work. Implementing the HACCP does not mean undoing quality assurance procedures or good manufacturing practices already established by a company. It does, however, require a revision of these procedures as part of the systematic approach and for their appropriate integration into the HACCP plan.

The application of the HACCP system can aid inspection by food control regulatory authorities and promote international trade by increasing the buyer's confidence. Any HACCP system should be capable of accommodating change, such as advances in equipment design, changes in processing procedures or technological developments.

2. APPLICATION OF THE HACCP

While the application of the HACCP to all segments and sectors of the food chain is possible, it is assumed that all sectors should be operating according to good manufacturing practices (GMPs) and the Codex General Principles of Food Hygiene. The ability of an industry segment or sector to support or implement the HACCP system depends on the degree of its adherence to these practices.

The successful application of the HACCP requires the full commitment and involvement of management and the workforce. It requires a multi-disciplinary approach which should include, as appropriate, expertise in agronomy, veterinary health, microbiology, public health, food technology, environmental health, chemistry, engineering, etc, according to the particular situation. The application of the HACCP system is compatible with the implementation of TQM systems such as the ISO 9000 series.

3. HACCP AND TRADE

Significant implications for the Codex Alimentarius Commission arise from the Final Act of the Uruguay Round, which was held in September 1986, the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement).

The purpose of the SPS Agreement is to ensure that measures established by governments to protect human, animal and plant life and health, in the agricultural sector only, are consistent with obligations prohibiting arbitrary or unjustifiable discrimination on trade between countries where the same conditions prevail and are not disguised restrictions on international trade.

The application of the HACCP as a public policy requires a definition of the role of government in the utilization of the HACCP process. Food exporting countries may require additional resources to enhance their food industries to meet the requirements. Adequate steps should be taken to facilitate food trade, such as the assessment of food safety, training of personnel, technology transfer and strengthening of the national food control system.

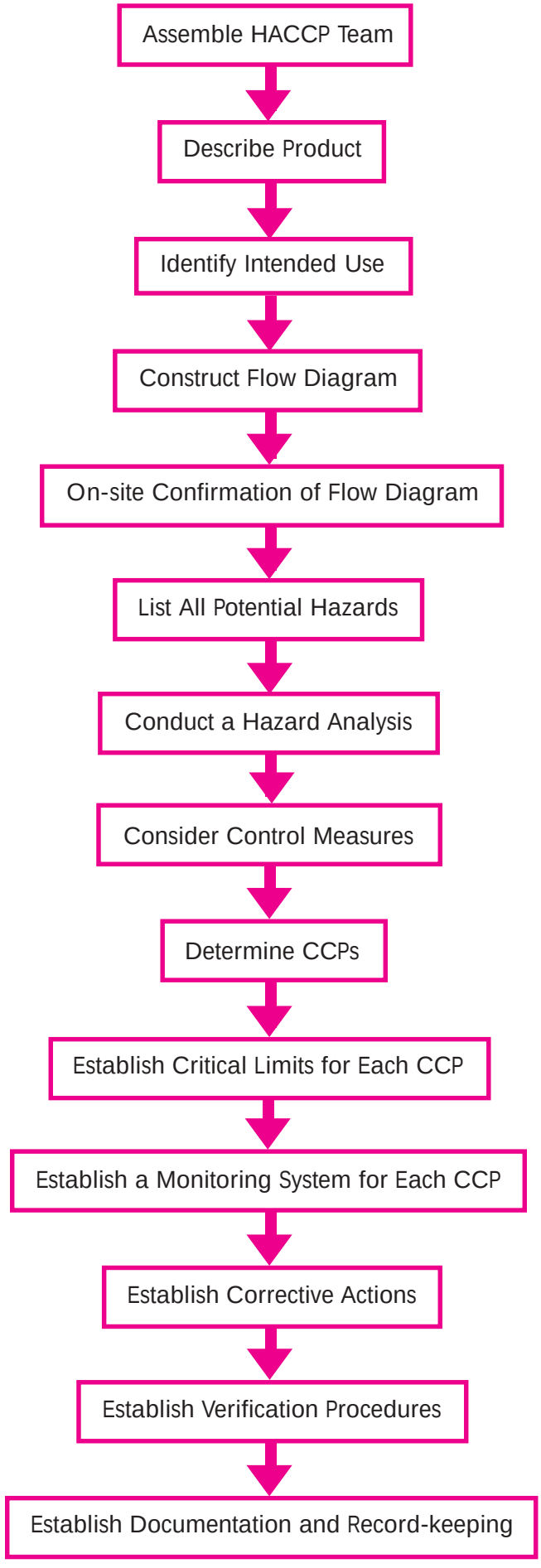
4. TRAINING

Food industries and food control regulatory agencies worldwide have shown an interest in implementing the HACCP system. A common understanding about the terminology and approaches for application will greatly enhance its adoption and will lead to a harmonized approach to food safety among countries all over the world. Many countries have integrated, or are in the process of integrating, the HACCP system into their regulatory mechanisms. In many countries, the application of the HACCP system to food may become mandatory. As a result, there is a tremendous demand, particularly in developing countries, for training in the HACCP system and for the development and assembly of reference materials to support this training.

5. OBJECTIVES OF THE FAO/WHO APPROACH TO THE HACCP

The objectives of the FAO/WHO approach to the HACCP include:

- Promotion of the implementation of the HACCP system based on the harmonized Codex General Principles of Food Hygiene and GMPs.
- Development of a program to train trainers who are in a position to train others who can apply the knowledge gained.
- Identification and provision of appropriate reference and training materials on the application of the HACCP to support the training.


Assemble HACCP Team
Describe Product
Identify Intended Use
Construct Flow Diagram
On-site Confirmation of Flow Diagram
List All Potential Hazards
Conduct a Hazard Analysis
Consider Control Measures
Determine CCPs
Establish Critical Limits for Each CCP
Establish a Monitoring System for Each CCP
Establish Corrective Actions
Establish Verification Procedures
Establish Documentation and Record-keeping

k Provision of training to individuals involved to varying degrees with the preparation, monitoring, administration and verification of the HACCP plans.
k Enhancement of the role of science and risk assessment in the development of the HACCP system.
k Creation of a framework for determining the equivalence of food safety control programs through a harmonized approach to the application of the HACCP.

6. APPLICATION OF THE HACCP PRINCIPLES

The application of HACCP principles consists of the following tasks as identified in the logical sequences.

6.1. Assemble HACCP Team

The food operation should assure that the appropriate product-specific knowledge and expertise is available for the development of an effective HACCP plan. Optimally, this may be accomplished by assembling a multi-disciplinary team. Where such expertise is not available on-site, expert advice should be obtained from other sources. The scope of the HACCP plan should be identified. The scope should describe which segment of the food chain is involved and the general classes of hazards to be addressed, for example, does it cover all classes of hazards or only selected classes?

6.2. Describe Product

A full description of the product should be drawn up, including relevant safety information such as: composition, physical/chemical structure, packaging, durability and storage conditions and method of distribution.

6.3. Identify Intended Use

The intended use should be based on the expected uses of the product by the end user or consumer. In specific cases, vulnerable groups of the population, for example, institutional feeding hospitals may have to be considered.

6.4. Construct Flow Diagram

The HACCP team should construct the flow diagram. The flow diagram should cover all steps in the operation. When applying the HACCP to a given operation, consideration should be given to steps preceding and following the specified operation.

6.5 On-site Confirmation of Flow Diagram

The HACCP team should confirm the processing operation against the flow diagram during all stages and hours of operation and amend the flow diagram where appropriate.

6.6. Principles of the HACCP

6.6.1 List All Potential Hazards Associated with Each Step, Conduct a Hazard Analysis, and Consider Any Measures to Control Identified Hazards (Principle 1)

The HACCP team should list all hazards that may be reasonably expected to occur at each step from the primary production, processing, manufacture, and distribution until the point of consumption.

The HACCP team should next conduct a hazard analysis to identify for the HACCP plan, whose hazards are of such a nature that their elimination or reduction to acceptable levels is essential to the production of safe food. In conducting the hazard analysis, the following should be included, wherever possible:
k The likely occurrence of hazards and the severity of their adverse health effects.
k The qualitative and/or quantitative evaluation of the presence of hazards.

- Survival or multiplication of micro-organisms of concern.
- Production or persistence in foods of toxins, chemicals or physical agents.
- Conditions leading to the above.

The HACCP team must then consider what control measures, if any, exist which can be applied for each hazard.

More than one control measure may be required to control a specific hazard(s) and more than one hazard may be controlled by a specified control measure.

6.6.2. Determine Critical Control Points (Principle 2)

There may be more than one CCP at which control is applied to address the same hazard. The determination of a CCP in the HACCP system can be facilitated by the application of a decision tree, which indicates a logic reasoning approach. Application of a decision tree should be flexible, given whether the operation is for production, slaughter, processing, storage, distribution or for any other reason. It should be used for guidance when determining CCPs. This example of a decision tree may not be applicable to all situations. Other approaches may be used. Training in the application of the decision tree is recommended.

An example of the decision tree to identify critical control points is shown later.

6.6.3 Establish Critical Limits for Each CCP (Principle 3)

Critical limits must be specified and validated if possible for each Critical Control Point. In some cases more than one critical limit will be elaborated at a particular step. Criteria often used include measurements of temperature, time, moisture level, available chlorine, and sensory parameters such as visual appearance and texture.

6.6.4 Establish a Monitoring System for Each CCP (Principle 4)

Monitoring is the scheduled measurement or observation of a CCP relative to its critical limits. The monitoring procedures must be able to detect loss of control at the CCP. Further, monitoring should ideally provide this information in time to make adjustments to ensure the control of the process to prevent violating the critical limits. Where possible, process adjustments should be made when monitoring results indicate a trend towards loss of control at a CCP. The adjustments should be taken before a deviation occurs. Data derived from monitoring must be evaluated by a designated person with the knowledge and authority to carry out corrective actions when indicated.

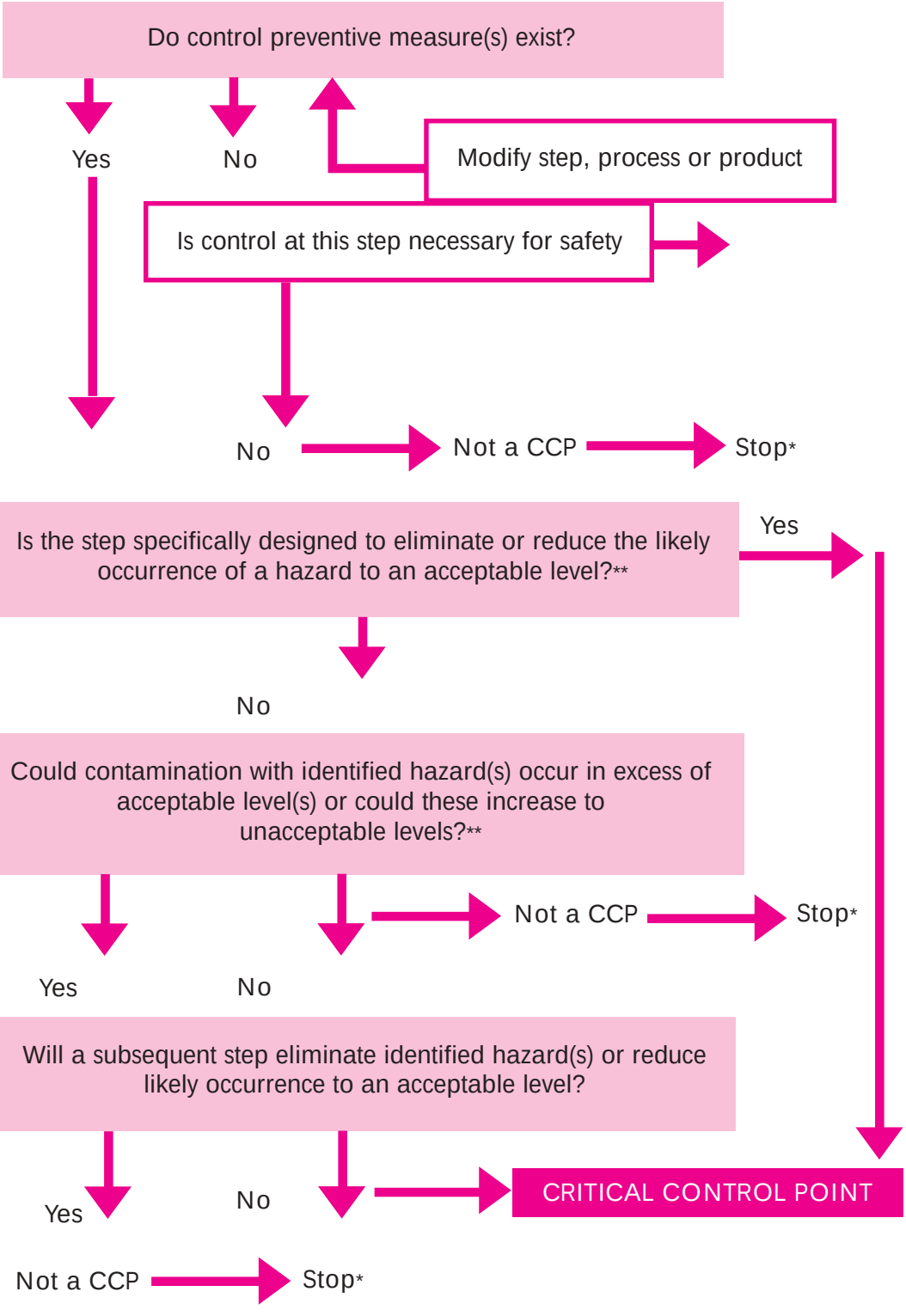
6.6.5 Establishment of Corrective Actions (Principle 5)

Specific corrective actions must be developed for each CCP in the HACCP system in order to deal with deviations when they occur.

6.6.6. Establishment of Verification Procedures (Principle 6)

Establish procedures for verification. Verification and auditing methods, procedures and tests, including random sampling and analysis, can be used to determine if the HACCP system is working correctly. The frequency of verification should be sufficient to confirm that the HACCP system is working effectively.

Example of the Decision Tree to Identify Critical Control Points



*Proceed to the next identified hazard in the described process.

**Acceptable and unacceptable levels need to be defined within the overall objectives in identifying the CCPs of the HACCP plan.

6.6.7. Establishment of Documentation and Record-keeping (Principle 7)

Efficient and accurate record-keeping is essential to the application of the HACCP system. HACCP procedures should be documented. Documentation and record-keeping should be appropriate to the nature and size of the operation.

7. CONCLUSION

To date the emphasis has been on the export industry which has been beneficial and is important for an exporter. However, often food being processed in the smaller plants supply the larger export plants so it is important for all producers along the chain to improve their standards. There is a need to strengthen the domestic food industry. It would be in the overall interest of the reputation of India as a food producer and exporter if the standards of hygiene through the GMPs/HACCP were strengthened in all industries. Every effort should be made to strengthen smaller food industries (many of which supply the domestic market) through the transfer of information and lessons learned from the larger export food plants. Available information within the country should be used.

In some instances, where infrastructure and facilities are poor, it may be ineffective to implement a HACCP system. Lack of an effective GHP program may result in food safety hazards and, therefore, care should be taken to strengthen the GHP as an integral component of the HACCP system or as a first step.

REFERENCES

1. *Recommended International Code of Practice – General Principles of Food Hygiene.* CAC/RCP/. 1969. Rev. 3.1997. Amd.(1999).
2. F*AO Training Manual on Food Hygiene and the Hazard Analysis and Critical Control Point (HACCP) System.*
3. For further references visit: www.who.int/fsf/Documents/smallHACCPconsulreport.pdf; www.fao.org/es/esn

Food Labeling, Nutrition and Food for Special Dietary Uses

INTRODUCTION

The provisions on food labeling in the Codex standards are required to be included by reference to the Codex General Standard for the Labeling of Pre-packaged Food (CODEX STAN 001A 1985 [Rev. 1-1991]-1991). Exemptions from or in addition to the general standards which are necessary for its interpretation in respect to the product concerned should be justified fully and should be restricted as much as possible.

Information specified in each draft standard should normally be limited to the following:
- A statement that the product shall be labeled in accordance with the Codex General Standard for the Labeling of Pre-packaged Food (CODEX STAN 001A 1985 [Rev. 1- 1991]).
- The specified name of the food.
- Date, marking and storage instructions.

Where the scope of the Codex standard is not limited to pre-packaged food, a provision for the labeling of non-retail containers may be included.

Codex standards in the areas of Food Labeling and Nutrition and Food for Special Dietary Uses are handled by the following Codex Committees.

Food Labeling: CODEX COMMITTEE ON FOOD LABELING (CX-714)

Nutrition and Food for Special Dietary Uses: CODEX COMMITTEE ON NUTRITION AND FOOD FOR SPECIAL DIETARY USES (CX-720)

1. CODEX COMMITTEE ON FOOD LABELING (CCFL)

The Codex Committee on Food Labeling (CCFL) is responsible for the elaboration of general texts on labeling and the endorsement of labeling provisions in the individual Codex standards. The host government is Canada and the Committee held the following sessions up to 2001:

1. Ottawa, June 21-25, 1965
2. Ottawa, July 25-29, 1966
3. Ottawa, June 26-30, 1967
4. Ottawa, September 23-28, 1968
5. Rome, April 6, 1970
6. Geneva, June 28-29, 1971
7. Ottawa, June 5-10, 1972
8. Ottawa, May 28-June 1, 1973
9. Rome, June 26-27, 1974
10. Ottawa, May 26-30, 1975
11. Rome, March 25-26, 1976

12. Ottawa, May 16-20, 1977
13. Ottawa, July 16-20, 1979
14. Rome, November 28-30, 1979
15. Ottawa, November 10-14, 1980
16. Ottawa, May 17-21, 1982
17. Ottawa, October 12-21, 1983
18. Ottawa, March 11-18, 1985
19. Ottawa, March 9-13, 1987
20. Ottawa, April 3-7, 1989
21. Ottawa, March 11-15, 1991
22. Ottawa, April 26-30, 1993
23. Ottawa, October 24-28, 1994
24. Ottawa, May 14-17, 1996
25. Ottawa, April 15-18, 1997
26. Ottawa, May 26-29, 1998
27. Ottawa, April 27-30, 1999
28. Ottawa, May 5-9, 2000
29. Ottawa, May 1-4, 2001

1.1 Terms of Reference

The Terms of Reference of the CCFL are given below:
a. To draft provisions on labeling applicable to all food.
b. To consider, amend if necessary, and endorse draft-specific provisions on labeling prepared by the Codex Committees drafting standards, Codes of Practice and guidelines.
c. To study specific labeling problems assigned to it by the Commission.
d. To study problems associated with the advertisement of food with particular reference to claims and misleading descriptions.

1.2 Adopted Texts

- Codex General Standard for the Labeling of Pre-packaged Food (Codex Stan 001A 1985 [Rev. 1- 1991]).
- Codex General Standard for the Labeling of and Claims for Pre-packaged Food for Special Dietary uses (Codex Stan 146-1985).
- Codex General Standard for the Labeling of Food Additives when sold as such (Codex Stan 107-1981).
- Codex General Guidelines on Claims (CAC/GL01-1979 [Rev. 1-1991]).
- Codex General Guidelines on Nutrition Labeling (CAC/GL02 1979 [Rev. 1-1993]).
- Codex General Guidelines for Use of Nutritional Claims.
- Codex Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Food (CAC/GL 32-1999).
- General Guidelines for Use of the Term 'Halal'.

The recent meeting of the CCFL held at Halifax, Canada, during May 6-10, 2002, arrived at the following summary and conclusion.

1.3 Matters for Adoption by the 50th Session of the Executive Committee

The Committee:
- Agreed to advance to Step 5 the Proposed Draft Amendment to the Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Foods.
- Proposed Draft Revised Section 5 – Criteria.
- Agreed to advance to Step 5 the Proposed Draft Amendment to the Guidelines on Nutrition Labeling.
- Agreed to advance to Step 5 the Proposed Draft Guidelines for Use of Nutrition and Health Claims.

1.4 Other Matters of Interest to the Commission

The Committee:
- Endorsed the labeling provisions in the Draft Standard submitted for consideration.
- Agreed to return to Step 6 the Draft Amendment to the General Standard for the Labeling of Pre-packaged Food (Draft Recommendations for the Labeling of Food Obtained through Certain Techniques of Genetic Modification/Genetic Engineering): Definitions.
- Agreed to return to Step 6 the Draft Amendment to the General Standard for the Labeling of Pre-packaged Food (class names).
- Agreed to return to Step 3 the Proposed Draft Guidelines for the Labeling of Food and Food Ingredients Obtained through Certain Techniques of Genetic Modification/Genetic Engineering: Labeling Provisions.
- Agreed to return to Step 3 the Proposed Draft Revised Annex 2 (Permitted Substances) in the Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Food.
- Agreed to return to Step 3 the Proposed Draft Amendment to the General Standard for the Labeling of Pre-packaged Food (Quantitative Declaration of Ingredients).
- Agreed to discuss further the need to undertake new work on the amendment of the General Standard for the Labeling of Pre-packaged Food concerning the country of origin labeling and to discuss the need for new work on traceability and misleading claims at its next session.

2. CODEX COMMITTEE ON NUTRITION AND FOOD FOR SPECIAL DIETARY USES (CCNFSDU)

The Codex Committee on Nutrition and Food for Special Dietary Uses is responsible for studying nutritional problems referred to by the Codex Alimentarius Commission. The Committee also drafts general provisions, as appropriate, on the nutritional aspects of all food and develops standards, guidelines, or related texts for food for special dietary uses. The host government is the Federal Republic of Germany and the Committee had the following sessions up to 2001:

1. Freiburgh in Breisgau, May 2-5, 1966
2. Freiburgh in Breisgau, November 6-10, 1967
3. Cologne, October 14-18, 1968
4. Cologne, November 3-7, 1969
5. Bonn, November 30- December 4, 1970
6. Bonn, December 6-10, 1971
7. Cologne, October 10-14, 1972
8. Bonn Bad Godesberg, September 9-14, 1974
9. Bonn, September 22-26, 1975
10. Bonn, February 28-March 4, 1977
11. Bonn Bad Godesberg, October 23-27, 1978
12. Bonn Bad Godesberg, September 29-October 3, 1980
13. Bonn Bad Godesberg, September 20-24, 1982
14. Bonn Bad Godesberg, January 24-February 1, 1985
15. Bonn Bad Godesberg, January 12-16, 1987
16. Bonn Bad Godesberg, September 29-October 7, 1988
17. Bonn Bad Godesberg, February 18-22, 1991
18. Bonn Bad Godesberg, September 28-October 2, 1992
19. Bonn Bad Godesberg, March 27-31, 1995
20. Bonn Bad Godesberg, October 7-11, 1996
21. Berlin, September 21-25, 1998
22. Berlin, June 19-23, 2000

2.1 Terms of Reference

The CCNFSDU has the following Terms of Reference:

a. To study specific nutritional problems assigned to it by the Commission and advise the Commission on general nutrition issues.

b. To draft general provisions, as appropriate, concerning the nutritional aspects of all food.
c. To develop standards, guidelines or related texts for food for special dietary uses, in cooperation with other Committees, where necessary.
d. To consider, amend if necessary, and endorse provisions on nutritional aspects proposed for inclusion in Codex standards, guidelines and related texts.

2.3 Adopted Codex Texts

- Codex General Standard for the Labeling of and Claims for Pre-packaged Food for Special Dietary Uses, CODEX STAN 146-1985.
- General Principles for the Addition of Essential Nutrients to Food, CAC/GL 09-1987 (amended 1989, 1991).
- Codex Standard for Infant Formula, CODEX STAN 72-1981 (Rev. 1997).
- Statement on Infant Feeding, CAC/Miscellaneous 2-976.
- Codex Standard for Canned Baby Food, CODEX STAN 73-1981 (amended 1985, 1987, 1989).
- Codex Standard for Processed Cereal-based Food for Infants and Children, CODEX STAN 74-1981 (amended 1985, 1987, 1989, 1991).
- Codex Standard for Follow-up Formula, CODEX STAN 156-1987 (amended 1989).
- Guidelines on Formulated Supplementary Food for Older Infants and Young Children, CAC/GL 8-1991.
- Advisory Lists of Mineral Salts and Vitamin Compounds for Use in Food for Infants and Children, CAC/GL 10-1979 (amended 1983, 1991).
- Recommended International Code of Hygienic Practice for Food for Infants and Children (including Microbiological Specifications and Methods for Microbiological Analysis), CAC/RCP 21-1979 (amended 1981).
- Codex Standard for Special Dietary Food with Low-sodium Content (including Salt Substitutes), CODEX STAN 53-1981 (amended 1983).
- Codex Standard for 'Gluten-free Food', CODEX STAN 118-1981 (amended 1983).
- Codex Standard for the Labeling of and Claims for Food for Special Medical Purposes, CODEX STAN 180-1991.
- Codex Standard for Formula Food for Use in Weight Control Diets, CODEX STAN 181-1991.
- Standard for Formula Food for Use in Very Low Energy Diets for Weight Reduction, CODEX STAN 203-1995.

The Committee continues work on:
- Proposed Draft Revised Standard for Processed Cereal-based Food for Infants and Young Children.
- Proposed Draft Revised Standard for Infant Formula.
- Proposed Draft Guidelines for Vitamin and Mineral Supplements.
- Proposed Draft Revision of the Advisory List(s) of Mineral Salts and Vitamins.
- Compounds for the Use in Foods for Infants and Children.

When new scientific information becomes available, the Committee plans to resume work on:
- Discussion Paper on Energy Conversion Factors.
- Guidelines for Use of Nutrition Claims – Draft Table of Conditions for Nutrient Contents Claims (Part B contains Provisions on Dietary Fiber).
- Proposed Draft Revised Standards for Gluten-free Food.

Food Import Control, Export Inspection and Certification System

INTRODUCTION

No country in the world is capable of competing and making a mark in international trade until and unless it develops a sound system for the inspection and certification for import and export. In the case of food, a country can rely on Codex documents on the Food Import and Export Inspection and Certification System. It can either harmonize its system with Codex procedures or develop a system of its own which could at best be considered as 'equivalent' to the measures outlined by the Codex.

The object of this module is to expose the trainees to the Codex work in the areas of Food Import and Export Inspection and Certification System.

1. CODEX COMMITTEE ON FOOD IMPORT AND EXPORT CERTIFICATION AND INSPECTION SYSTEMS (CX-733)

In 1991, a decision was made at the FAO/WHO Conference on Food Standards, Chemicals in Food Trade to ask the Codex Alimentarius Commission to establish a new Committee to deal with import/export problems in relation to certification and inspection procedures. During the discussion at the 19th meeting of the Commission (1991), it appeared difficult to set the Terms of Reference for this proposed new Committee. Many delegations were not convinced with the need for the formation of a new Committee mainly because other Codex Committees could handle the problem of import and export as well.

In the end, it was decided to have the proposed Terms of Reference assessed by the new Committee, designated as the Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS), during its first session. The revised Terms of Reference would then be assessed again by the CAC. Likewise, the need to continue with this Committee would be reassessed after its second session.

The Committee endeavors to develop principles and guidelines for food inspection and certification systems with a view to harmonize methods and procedures for international food trade. The Government of Australia hosts the CCFICS and its present Chairman is Mr Gregory Read. Since the inception of the CCFICS in the Codex structure, the Committee has met 11 times and has finalized various standards, which have been approved by the CAC. The place and date of various sessions is given below:

1. Canberra, September 21-25, 1992
2. Canberra, November 29-December 3, 1993
3. Canberra, February 27-March 3, 1995
4. Sydney, February 19-23, 1996
5. Sydney, February 17-21, 1997

6. Melbourne, February 23-27, 1998
7. Melbourne, February 22-26, 1999
8. Adelaide, February 21-25, 2000
9. Perth, December 11-15, 2000
10. Brisbane, Australia, February 25-March 1, 2002
11. Adelaide, Australia, December 2-6, 2002

The Terms of Reference set by the Committee after extensive discussions at its first session held during September 21-25, 1992, at Canberra, Australia, and later by the Commission, are as follows.

a. To develop principles and guidelines for the food import and export inspection and certification system with a view to harmonize methods and procedures which protect the health of consumers, ensure fair trading practices and facilitate international trade in food stuff.
b. To develop principles and guidelines for the application of measures by competent authorities of exporting and importing countries to provide assurance, where necessary, that food stuff comply with requirements, especially statutory health requirements.
c. To develop guidelines for the utilization, as and when appropriate, of quality assurance systems to ensure that food stuff conforms with requirements and to promote the recognition of these systems in facilitating trade in food products under bilateral/multilateral arrangement by countries.
d. To develop guidelines and criteria with respect to the format, declarations and languages of such official certificates as countries may require with a view towards international harmonization.
e. To make recommendations for information exchange in relation to food import/export control.
f. To consult, as necessary, with other international groups working on matters related to food inspection and certification systems.
g. To consider other matters assigned to it by the Commission in relation to food inspection and certification systems.

2. IMPORTANCE OF THE CCFICS TOWARDS THE HARMONIZATION OF INTERNATIONAL FOOD TRADE

Recent changes in the international environment arising from the conclusion of the Uruguay Round of multilateral trade negotiations have clearly redefined the role of Codex standards, particularly the Codex Committees dealing with horizontal standards, for example, the CCFICS, CCFH, CCPR, etc. Under the SPS Agreement, which was enforced in January 1995, Codex standards, Codes of Practice, recommendations and guidelines have been granted the status of a reference point for international harmonization and serve as a guide to resolve trade disputes.

Variations in the procedures of national food control systems involving monitoring and sampling, detection and analytical methods, certification, import/export regulations, application of standards and food safety requirements can give rise to trade restrictions. At times, countries have developed standards that are not science-based and can act as a non-tariff barrier to trade. Therefore, as a part of the harmonization process, each government must ensure that the legislation underlying its country's food control system is scientifically-based and must work to establish equivalency and transparency among national food control systems.

The main instrument to assist countries in the harmonization of food standards is the Codex Alimentarius Commission and its horizontal committees. The CCFICS is one of the important horizontal committees of the CAC, that is, the standards, Codes of Practice, recommendations and guidelines formulated by this Committee are applied horizontally to all food stuff traded internationally and can serve as a useful tool for harmonization.

3. ADOPTED CODEX TEXTS

Some of the salient documents brought out by the CCFICS in the areas of Import and Export Quality Control of food are as follows.

3.1 Principles for Import and Export Inspection and Certification (CAC/GL 20-1995)

Inspection and the requirement for certificates are in use worldwide in order to guarantee food safety, the quality of foodstuff and fair trade practices. In some areas such as meat and meat products, trade without a certificate would no longer be possible. Although the application of inspection and certification systems has contributed a great deal to the emergence of world trade, they conceal a great risk. It is thus important to base the establishment and application of such systems on right principles, so that they cannot be misused, to protect the interest of trade. Inspections must be carried out at all times in production and during distribution. The inspection system used must, however, take into account the type of foodstuff and the probable hazards. It is, therefore, important to base such systems on a number of basic principles that guarantee optimum protection for consumers, while facilitating trade.

With the adoption of the above guidelines, rules have been set for government-to-government assurances that basic quality requirements – including food safety – are met. The principles recognize the equivalence of different systems in achieving the identical food safety goals.

3.2 Guidelines for the Design, Operation, Assessment and Accreditation of the Import and Export Inspection and Certification System (CAC/GL 26-1997)

These guidelines provide a framework for the development of import and export inspection and certification systems consistent with the Principles for Food Import and Export Inspection and Certification. They are intended to assist countries in the application of requirements and the determination of equivalency, thereby protecting consumers and facilitating trade in foodstuff. The document deals with the recognition of equivalence of inspection and/or certification systems and not with standards related to specific food products or their components (for example, food hygiene, additives and contaminants, labeling and quality requirements). Application by governments of the guidelines presented in this document should help build and maintain the necessary confidence in the inspection and certification system of an exporting country and facilitate fair trade, taking into consideration the expectations of consumers for an appropriate level of protection. These guidelines are risk assessment-based, recognize equivalency, and have a special chapter on transparency and consumer confidence. In addition, they have an annex which enunciates the Guidelines on Procedures for Conducting an Assessment and Verification by an Importing Country of Inspection and Certification Systems of an Exporting Country.

3.3 Guidelines for the Judgment of Equivalence Agreements Regarding the Food Import and Export Inspection and Certification System (CAC/GL 34-1999)

The above guidelines provide practical guidance for governments desiring to enter into bilateral or multilateral equivalence agreements concerning the food import and export inspection and certification system. The guidelines also contain some international definitions, purpose of agreement, scope and type of agreements, consultative process and implementation of agreement. Once the agreement is signed, it is obligatory that each party should promptly notify the other party or parties of any proposed new or revised measures that pertain to the agreement. The appendix to these guidelines covers the essential features and contents of Equivalence Agreements, which are very useful in developing these agreements.

3.4 Guidelines for the Exchange of Information in Food Control Emergency Situations (CAC/GL 19-1995)

These guidelines specify the term ‘food control emergency situations’ as situations where there is a clearly identified risk of serious untoward health effects associated with the consumption of certain food. In most cases, the nature of the agent causing such health effects will be known (for example, an identified microbiological or chemical agent). However, emergency situations may arise where the consumption of a certain foodstuff is associated with serious health effects, but the agent causing these effects has not been identified. Such situations are also covered by these guidelines.

These guidelines highlight the fact that the food control authorities in exporting countries should promptly notify by telecommunication the appropriate authorities in countries which have imported or are the destination of food with which an emergency situation has arisen. The initial information may often be incomplete and should, therefore, be supplemented by further notification(s) as and when the situation develops and more detailed information becomes available. The appropriate countries should keep their public informed of food emergency situations.

The food control authorities in importing countries, who detect problems during the import control of foodstuff, which they consider to be so serious as to indicate a food control emergency situation, should inform the exporting country promptly by telecommunication. These guidelines stress upon rapid information exchange in food control emergency situations. In this way, risks to human health can be minimized and the foodstuff concerned can be rapidly identified and removed from the market. This helps to prevent unwarranted action against other food from the same country, which are not involved in the emergency situation. Further, it is important that each country should identify a primary Contact Point for food control emergency situations, which can act as the national focal point for information exchange in such situations. It is important to mention here that these guidelines are under revision to include the development of guidance on the appropriate elements for a food emergency control plan.

3.5 Guidelines for Generic Official Certificate Formats and the Production and Issuance of Certificates

These guidelines concern the design and use of official and officially recognized certificates that attest to attributes of food presented for international trade. Certificates are required in the circumstances to ensure product safety and wholesomeness, or otherwise facilitate trade. These guidelines do not deal with the matter of animal and plant health since these are not under the mandate of Codex. In the earlier sessions of the CCFICS, some of the countries pointed out that a generic official certificate format would not be useful and a commodity-specific approach should be adopted as the nature of foodstuff varies widely. After extensive discussions at the 8th and 9th Sessions of the CCFICS, the document was advanced to the CAC at Step 8 for adoption. These guidelines were formally adopted at the 23rd Session of the CAC.

4.ONGOING WORK

The Committee has discussed a number of important issues during its sessions, which constitute the fundamental building blocks for food import and export inspection and certification systems. Some of the important agenda items, which are under discussion at various steps, are as follows.

4.1 Draft Guidelines for Food Import Control System

Control of food import is essential to ensure food supply and to prevent the ‘dumping’ of lesser quality food. The work on the above guidelines was initiated by the CCFICS at the behest of the delegation of Mexico at its 6th Session. These guidelines are intended to specify the elements, administration and management of the food import control system and also provide guidance on implementation. These guidelines would also help in the establishment of an effective food import control system to help ensure the quality and safety and facilitation of international trade of food. At the 10th Session of the CCFICS, held at Brisbane, Australia, February 25-March 1, 2002, the above guidelines were discussed extensively and several modifications were incorporated into the text. The Committee has completed the work and has recommended the guidelines for adoption at Step 8 by the CAC. These guidelines provide a framework for the development and operation of an import control system to protect consumers and facilitate fair practices in food trade, while ensuring that unjustified technical barriers to trade are not introduced. The guideline is consistent with the Codex Principles for Food Import and Export Inspection and Certification and provides specific information about imported food control that is an adjunct to the Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems. The agreed upon text for the guidelines can be found in Appendix II of ALINORM 03/30.

4.2 Draft Guidelines on the Judgment of Equivalence of Sanitary Measures Associated with Food Inspection and Certification Systems

The Committee completed work on the Draft Guidelines on the Judgment of Equivalence of Sanitary Measures Associated with Food Import and Export Inspection and Certification Systems and recommended the guidelines for adoption at Step 8 by the CAC. This is a major step forward for Codex and responds to real needs identified by the World Trade Organization (WTO) and others. The CCFICS Working Group in charge of the development of the document meeting between the 10th and 11th Sessions of the CCFICS made major changes to the document, incorporating a section on the context of equivalence, incorporating concepts from the WTO SPS Committee's decision on equivalence, expanding upon the 'objective basis for comparison' and enhancing the section on 'judgment of equivalence'. Recognizing and concurring with these changes, the CCFICS made only a few additional modifications to the document. The agreed upon text for the guidelines can be found in Appendix II of ALINORM 03/30A.

4.3 Proposed Draft Guidelines for the Utilization and Promotion of Quality Assurance (QA) Systems to Meet Requirements in Relation to Food

This document had been revised to a 'principles only' document, based on the recommendations of the 10th Session of the CCFICS and the efforts of a working group.

While recognizing that establishing guidance with respect to the use of QA systems was a part of the Terms of Reference of the CCFICS, the Committee could not reach any consensus on the merit of continuing work on the guidelines document. It was noted that the appropriate use of QA systems within the food import and export inspection and certification systems was already covered within existing CCFICS texts (for example, Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems). Additionally, country comments submitted on the current document expressed widely divergent views on the appropriate use and recognition of QA systems by competent authorities. Several delegations argued that, because QA systems were intended for voluntary application only, it was not within the purview of the CCFICS to develop guidelines on their use.

As a result of these divergent views and a lack of consensus on continuing work on the subject, the Committee agreed to discontinue work on these guidelines.

4.4 Proposed Draft Revision to the Codex Guidelines for the Exchange of Information in Food Control Emergency Situations

The Committee previously had agreed to undertake a revision of the existing Codex Guidelines for the Exchange of Information in Food Emergency Situations, to include the development of guidance on the appropriate elements for a food emergency control plan. The document considered at the 11th Session was developed by a Drafting Group for consideration by Member Countries. Several delegations expressed the view that the document should not incorporate significant elements of risk management, particularly the inclusion of the sections dealing with the development of national food emergency control plans. These delegations indicated that the document should focus on revisions specific to the exchange of information in food safety emergency situations. While there was not a clear consensus on this approach, there also was not a clear consensus to retain the initial scope of the document.

The Committee agreed to recast the document as a set of principles with the corresponding narrative that would also incorporate the information contained in the existing Guidelines for the Exchange of Information in Food Emergency Situations.

The Committee agreed upon the inclusion of the following principles:

k All relevant information should be shared to enable potentially affected countries to make informed risk management decisions. An importing country detecting a food safety emergency should inform the exporting country without delay. Similarly, an exporting country should inform potentially affected trading partners and all other official contact points without delay.

k Information flow should be transparent and continuous during all phases of the risk analysis process (risk assessment as appropriate to the circumstances, risk management and risk communication) to enable the continuous evaluation and development of the emergency response.
k The exchange of information on food safety emergencies should be between the competent authorities and occur through official contact points.
k Competent authorities should provide clear, relevant, factual and timely information to the industry, consumers, other relevant stakeholders and the media on the status of the food safety emergency.
k To enable the exchange of information, countries should have a food safety emergency action plan.
k In order to implement the above principles, countries should incorporate appropriate provisions in their food safety emergency action plans, where these exist.

The Committee returned the document to Step 2 for redrafting by the working group and for consideration at Step 3 by the CCFICS at its next session.

4.5 Discussion Paper on the Judgment of Equivalence of Technical Regulations Associated with Food Import and Export Inspection and Certification Systems

In prior sessions, the Committee had, as an outgrowth of work on the judgment of equivalence with respect to SPS measures, initiated work on Proposed Draft Guidelines on the Judgment of Equivalence of Technical Regulations with Respect to Food Import and Export Inspection and Certification Systems. At the 10th Session of the CCFICS, the Committee returned the document to a discussion paper status, noting a concern with the apparent lack of need for the work and a request for specific examples to illustrate the utility of equivalence with respect to technical regulations and/or conformity assessment systems.

At the 11th Session of the CCFICS, many delegations pointed out that there were no examples (as noted in the discussion paper) where a judgment of equivalence with respect to technical regulations or conformity assessment systems had been undertaken and, thus, there was no need for this work.

Other delegations, however, expressed a different view, noting that, while equivalence with respect to technical regulations was unlikely, equivalence with respect to the conformity assessment systems was a potential need and that work should, therefore, continue on this aspect.

Several delegations suggested an expansion of the scope of the guidelines to include mutual recognition agreements. They also suggested that the WTO Committee on Technical Barriers to Trade might be consulted on the operation and understanding of equivalence and mutual recognition with respect to the TBT Agreement.

A suggestion was also made that the discussion paper could help differentiate and define the difference in recognition of equivalence between the SPS and TBT Agreements.

The Committee agreed to convene a working group to develop a new discussion paper on the subject, based on the Committee's discussion on the subject.

4.6 Discussion Paper on 'Traceability'/Product Tracing in the Context of the Food Import and Export Inspection and Certification System

The CCFICS, at its 10th Session, agreed to undertake work on product tracing/'traceability' and requested that a working group should prepare a discussion paper for consideration by the 11th Session of the CCFICS. The discussion paper provided information on the role of 'traceability'/product tracing in food import and export inspection and certification systems, provided potential elements for a definition of product tracing, presented a brief review of the existing CCFICS texts with respect to product tracing and presented a framework for the future in-depth analysis of the CCFICS texts with respect to product tracing.

It was argued that, although product tracing was being considered by other international organizations (such as the ISO), it would be best addressed in Codex, as the global and science-based international standard-setting body for food safety.

The Committee generally supported the analysis and approach outlined in the discussion paper as a basis for continued discussions on product tracing within the CCFICS. The Committee also agreed that, in accordance with the Codex Executive Committee's opinion, product tracing should be justified as having a food safety objective as one of the SPS measures or having a legitimate objective as a TBT measure.

The Committee agreed that:
1. Development of specific guidance on product tracing was premature at this time.
2. Continued development of the subject with respect to food import and export inspection and certification systems was appropriate.
3. Such work could inform other Codex Committees engaged in considering product tracing, particularly the Codex Committee on General Principles (CCGP).

The Committee noted and agreed that the responsibility for the development of a definition for product tracing rested with the CCGP, although the CCFICS could inform the CCGP in this regard. The Committee also agreed that the CCFICS was responsible for product tracing related to food inspection and certification systems.

The Committee agreed to reconvene the working group under the chairmanship of Switzerland, requesting the working group to develop a new discussion paper on product tracing which would contain:
- An in-depth analysis of existing CCFICS texts with respect to product tracing, employing the framework developed earlier by the working group.
- An analysis of the appropriateness and need for the CCFICS to develop specific guidance on the practical implementation of product tracing and, if developed, how it would be progressed within the CCFICS.

The Committee also agreed that the working group would take into account the discussion at the 11th CCFICS, the comments submitted for the session, and the various discussions that have and will occur on product tracing within Codex, including discussions in the Regional Coordinating Committees and in the CCGP. The United States of America will continue to be a key member of the working group.

5. OTHER BUSINESS AND FUTURE WORK

In the light of the Codex Draft Medium-term Plan for 2003-2007 provision to 'establish systematic procedures for the review of existing standards to ensure their continued relevance and application', the Committee agreed to request comments on the appropriateness of reviewing previously adopted CCFICS texts. Such a need, for example, appears particularly appropriate with respect to the Codex Guidelines for the Development of Equivalent Agreements Regarding Food Import and Export Inspection and Certification Systems in light of the completion of work on Guidelines for the Judgment of Equivalence of Sanitary Measures with Respect to Food Import and Export Inspection and Certification Systems.

5.1 Discussion Paper on the Establishment of a Data Base on Importing Country Legislation

Although the work related to the above data base has been discontinued in the CCFICS, yet this is being covered under the section because of the pioneering work done by the Indian delegation to the 7th Session of the CCFICS. At the 6th Session of the CCFICS, concerns were expressed by several delegations regarding the lack of information on the importing country requirements pertaining to SPS measures, thereby resulting in the rejection of foodstuff at the entry point. Therefore, the Indian delegation, assisted by delegations from several other countries, presented a discussion paper at the 7th Session of the CCFICS, which highlighted the following aspects:
- Background
- Objectives
- General consideration for data base
- Elements of data base
- Format of information in data base

Many delegations, while appreciating the work carried out by the Indian delegation, felt that the development of a web-based data base should continue, as it would facilitate the process of

harmonization. It is rather unfortunate that such an important item was dropped from the list of agenda items of the future CCFICS sessions, mainly because at the 23rd Session of the CAC it was decided that this issue falls outside the purview of the Codex Commission.

6. BENEFITS FROM THE WORK OF THE CCFICS

International trade in food has been growing as countries rely on each other to secure an adequate and varied food supply through the import and export of food products. With globalization, countries will have wider access to export markets, but such access will have to be accompanied by greater competition and the need to develop consumers' confidence on the quality and safety of food supply. While the onus is on the food industry to produce food exports that are safe and of high quality, governments are responsible for providing effective national food control systems capable of playing advisory and regulatory roles. Food control agencies need to assure consumers that the food imports comply with food standards. As the volume of trade increases, difficulties arise because each country has established laws and standards independently. Therefore, there is a need to harmonize the food import and export certification systems globally and to set international guidelines and rules. In this regard, the CCFICS has done pioneering work and has been establishing standards/guidelines which can be used by the Codex Member Countries. This is particularly challenging to developing countries such as India.

India can derive a lot of benefits by incorporating various principles and guidelines, for example, Principles for Import and Export Inspection and Certification, Guidelines for Judgment of Equivalence Agreement and Guidelines for Design, Operation, Assessment and Accreditation of Import and Export Inspection and Certification Systems, which have been elaborated by the CCFICS under its own Import and Export Quality Control System. By doing so, the country can strengthen the quality assurance systems in the food industry and food control systems, which will facilitate international food, trade to/ from India. In addition, when the food control systems in India would be based on Codex standards, there shall be no obligation to prove that standards are based on the Principle of Science and Risk Analysis. This will also lead to flexibility on the part of the national food control authority to prioritize the use of often-limited resources and to concentrate on risk analysis and scientific investigations, which may be specific to India.

Methods of Analysis and Sampling

INTRODUCTION

This module is relevant to the government as well as to the industry and other private laboratories engaged in the sampling and testing of food and food products meant for human consumption or for surveillance purposes. It aims to introduce the work of the Horizontal Codex Committee with the prime responsibility for identifying appropriate methods for analysis and/or sampling of commodities or aspects relevant to food products from international sources. The module refers to the work of other Codex Committees with a specific charter for elaborating and/or identifying internationally agreed methods for determining maximum residue levels of agricultural and veterinary chemicals and for determining maximum permitted limits for contaminants in food. It suggests the synergies between the work of these Committees and the relevance to laboratory practices.

Assuring the safety and quality of food depends, among other things, on the reliability of analytical tests. The reliability of analytical tests, in turn, depends not only on the availability of reliable analytical methods, but also on the experience of the analyst and on the maintenance of 'Good Laboratory Practices' (GLPs). Without appropriate professionally qualified analysts who are competent in their field, trained and experienced staff in appropriate laboratory skills, adequate laboratory facilities, well-maintained and reliable testing equipment, materials and chemicals, and quality controls, good analytical practice will not be achieved.

In a harmonized world trade situation, it is also important that testing methods are agreed upon so that countries are not disadvantaged by the lack of sophistication of equipment, or find themselves in the situation of not being able to satisfy demands for more stringent testing regimes than necessary to assure the product meets required parameters. Many countries have experienced these non-tariff trade barriers over recent decades. The Codex Alimentarius Commission has elaborated a large body of guidance for Member Countries that would be reflected in considerations of a challenge by one trading partner against another under the dispute settlement processes of the World Trade Organization. Accordingly, the work of Codex provides the internationally agreed benchmark for methods of sampling and analysis.

1. CODEX FRAMEWORK FOR ESTABLISHING METHODS OF ANALYSIS AND SAMPLING

The Codex Alimentarius Commission (CAC) has adopted a standard format for the elaboration of commodity standards.[14] This format is intended for use as a guide by subsidiary bodies of the CAC with the objective of achieving, as far as possible, a uniform presentation of commodity standards. Procedures for the elaboration of methods of analysis and sampling and the cross-committee relations for elaborating methods of analysis and sampling are detailed in the Codex Procedural Manual.[15]

[14]Procedural manual of the Codex Alimentarius Commission, pp 77-81, 12th edition, Rome 2003. [15]Procedural manual, pp 86-88.

1.1 Principles for the Establishment of Codex Methods of Analysis and Sampling

The CAC has adopted guidelines for the inclusion of specific provisions in Codex standards and related texts. In doing so, principles for the establishment of Codex methods of analysis and principles for the establishment or selection of Codex sampling procedures have been set out in the CAC Procedural Manual.[16]

1.1.1 Methods of Analysis

Codex methods of analysis are primarily intended as international methods for the verification of provisions in Codex standards. They should be used for reference, in calibration of methods in use, or, introduced for routine examination and control purposes. The four types of methods of analysis defined by Codex are:

- Type I: Defining methods which determine a value that can only be arrived at in terms of the method per se and serves by definition as the only method for establishing the accepted value of the item measures. Examples include the Howard Mould Count, Reichert-Meissl value, loss on drying, salt in brine by density.
- Type II: Reference methods where Type I methods do not apply. It should be selected from Type III methods, and recommended for use in cases of dispute and for calibration purposes. An example is the Potentiometric Method for halides.
- Type III: Alternative approved methods meet the criteria required by the CCMAS for methods that may be used for control, inspection or regulatory purposes. Examples include the Volhard Method or the Mohr Method for chlorides.
- Type IV: The tentative method has been used traditionally or else has been recently introduced but for which the criteria required for acceptance by the CCMAS have not yet been determined. Examples include chlorine by X-ray fluorescence and the estimation of synthetic colors in food.

The general criteria for the selection of methods of analysis and analytical terminology has also been adopted for use by Commodity Committees.[17]

1.1.2 Sampling

Codex methods of sampling are designed to ensure that fair and valid sampling procedures are used when food is being tested for compliance with a particular Codex commodity standard. The sampling methods are intended for use as international methods designed to avoid or remove difficulties which may be created by diverging legal, administrative and technical approaches to sampling and by diverging interpretation of results of analysis in relation to lots or consignments of food, in the light of the relevant provision/s of the applicable Codex standard. The types of sampling plans and procedures used by Codex are:

- Sampling plans for commodity defects. These are normally applied to visual defects such as loss of color, misgraded for size, etc, and for extraneous matter.
- Sampling plans for net contents. Applied to pre-packaged food generally and are intended to serve to check compliance of lots or consignments with provisions for net contents.
- Sampling plans for compositional criteria. Such plans are normally applied to analytically determined compositional criteria, such as loss on drying in white sugar, etc. They are predominantly based on variable procedures with unknown standard deviation.
- Specific sampling plans for health-related properties. These are generally applied to heterogeneous conditions such as in the assessment of microbiological spoilage, microbial by-products or sporadically occurring chemical contaminants.

The procedural manual provides a number of general instructions for the selection of methods of sampling, including instructions on the procedure for the taking of samples and the sampling protocol.[18]

[16]Procedural manual, pp 64-74. [17]Procedural manual, pp 65-66. [18]Procedural manual, p 73.

1.2 Revision of the Principles for the Establishment of Codex Methods of Analysis

The 26th Session of the CCMAS (2002) recommended to the CAC the adoption and inclusion in the procedural manual working instructions for the implementation of the criteria approach in Codex.[19] This will assist in achieving consistency when Codex Committees develop the criteria for endorsement by the CCMAS. The CCMAS has also recommended further additions to the Analytical Terminology for Codex Use. If adopted by CAC, these changes will appear in the 13th edition of the procedural manual.

2. OVERVIEW OF THE CODEX COMMITTEE

The primary work in relation to methods of analysis and sampling is handled by the Codex Committee on Methods of Analysis and Sampling (CCMAS). In addition, and where necessary, Codex Commodity Committees determine methods of analysis and sampling for specific commodities. These are endorsed by the CCMAS before being adopted by the CAC. There are a number of Codex Committees that are not subordinate to the CCMAS, that is, they do not rely on the CCMAS for the endorsement of their recommendations to the Commission (see Terms of Reference below). These other Codex Committees have produced some very valuable work that may be adopted by the government, industry and other laboratories in their pursuit of the harmonization of laboratory performance standards and testing regimes with the international benchmark requirements.

The CCMAS was established in 1965 and is hosted by the Government of Hungary. Its terms of reference include the following functions:

- Define the criteria appropriate to Codex methods of analysis and sampling.
- Serve as a coordinating body for Codex with other international groups working in methods of analysis and sampling and quality assurance systems for laboratories.
- Specify reference methods of analysis and sampling appropriate to Codex standards that are generally applicable to a number of food items.
- Consider, amend, and, if necessary, endorse, methods of analysis and sampling proposed by other Codex Committees, except those for residues of pesticide or veterinary drugs in food, the assessment of microbiological quality and safety in food, and the assessment of specification for food additives.
- Elaborate sampling plans and procedures as may be required.
- Consider specific sampling and analysis problems submitted to it by the Commission or any of its Committees.
- Define procedures, protocols, guidelines or related texts for the assessment of food laboratory proficiency, as well as quality assurance systems for laboratories.

3. CODEX STANDARDS, GUIDELINES AND RECOMMENDATIONS

The recommended methods of analysis and sampling across all commodity sectors are set out in Codex Standard 234: Recommended Methods of Analysis and Sampling. This standard is continuously under review and is updated as recommendations are adopted by the Codex Alimentarius Commission.

As required in its Terms of Reference, the CCMAS coordinates the work of other international groups working in methods of analysis and sampling and quality assurance systems for laboratories. In the examples given below, it will be noted that these international groups include bodies such as:

- Association of Official Analytical Chemists (AOAC)
- International Standards Organization (ISO) or inter alia
- International Union of Pure and Applied Chemistry (IUPAC)

A number of texts developed by other international agencies that have been adopted either directly by Codex, or referenced in related Codex texts, such as:

- Guidelines for the use of recovery information in an analytical measurement, developed by IUPAC.[20]

[19]ALINORM 03/23, para 42 and Appendix II. [20]Pure Applied Chemistry, Vol 71, pp. 337-348, 1999.

k General requirements for the competence of calibration and testing laboratories, ISO/IEC.[21]
k The international harmonized protocol for the proficiency testing of (chemical) analytical laboratories, IUPAC[22] and AOAC.
k Harmonized guidelines for international quality control in analytical chemistry laboratories, IUPAC.[23]
k Calibration and testing laboratory accreditation systems – general requirements for operation and recognition, ISO.[24]

3.1 Recommended Methods of Analysis and Sampling

The Recommended Methods of Analysis and Sampling, Codex Standard 234, is presented in two parts. The first part deals with methods of analysis and sampling by alphabetical order of commodity categories and names. This covers the following commodities:
k Cereals, pulses and legumes and derived products.
k Cocoa products and chocolates.
k Fats and oils and related products.
k Fish and fishery products.
k Food for special dietary uses.
k Fruit juices.
k Milk and milk products.
k Natural mineral waters.
k Processed fruits and vegetables.
k Processed meat and poultry products and soups and broths.
k Quick frozen fruits and vegetables.
k Sugar and honey.
k Miscellaneous products, including edible cassava flour, food grade salt, gari, mayonnaise, vinegar, mercury in fish, vinyl chloride monomer, polyunsaturated fatty acids and saturated fatty acids for nutritional labeling purposes.

Part II of the Codex Standard 234 lists the methods of analysis and sampling by alphabetical order of provision. This list commences with the recommended method of analysis and sampling for the first entry: acidity in fats and oils, honey, table olives, milk powders and cream powders, pickled cucumbers, grated desiccated coconut, edible casein products, and vinegar. It runs, alphabetically, through to zinc in fruit juices and vinegar.

3.2 Food Control Laboratory Management

Codex has adopted certain protocols for the quality assurance of laboratories engaged in food control that have been agreed by international agencies. Codex Guideline 28-1995, Rev. 1-1997 references the following published texts on International Harmonized Protocol for the Proficiency Testing of (Chemical) Analytical Laboratories, Protocol for the Design, Conduct and Interpretation of Method Performance Studies,[25] and Harmonized Guidelines for Internal Quality Control in Analytical Chemistry Laboratories.[26]

3.3. Assessment of Competence of Testing Laboratories

Another text adopted by the 22nd CAC in 1997 is the Guidelines for the Assessment of the Competence of Testing Laboratories Involved in the Import and Export Control of Food. These guidelines were sent to all Member Countries and associate members of the FAO and WHO as an advisory text. This text has been provided for individual governments to decide what use they wish to make of the guidelines. It provides a framework for the implementation of quality assurance measures to ensure the competence of testing laboratories involved in the import and export of food.

[21]ISO/IEC Guide 25:1990. [22]Pure and Applied Chemistry 65 (1993) 2132-2133. [23]Pure and Applied Chemistry 67 (1995) 649-666. [24]ISO/IEC Guide 58:1993. [25]Pure and Applied Chemistry, 67 (1995), 331-343. [26]Pure and Applied Chemistry, 67 (1995), 649-666.

4. ONGOING CODEX WORK RELATED TO METHODS OF ANALYSIS AND SAMPLING

In addition to the endorsement of the methods of analysis in commodity standards and methods for additives, contaminants and the detection of irradiated food, the CCMAS was, at the time of preparation of this manual (early 2003), considering a number of topics of importance.

4.1 Guidelines for Single-laboratory Validation of Methods of Analysis

Single-laboratory validation is important in the field of residue analysis in order to address new hazards. The 26th Session of the CCMAS agreed to criteria that require method validation referenced by the internationally recognized protocol 'Harmonized IUPAC Guidelines for the Single Laboratory Validation of Methods of Analysis'. This validation method is embedded in a quality system complying with ISO/IEC 17025. These guidelines have been recommended to other Codex horizontal committees determining methods of analysis, such as the Committee on Pesticide Residues, Committee on Residues of Veterinary Drugs in Food, and the Committee on Food Additives and Contaminants, as the use of single-laboratory validation was considered especially important to their work.[27]

4.2 General Guidelines for Sampling

Sampling plans are required which ensure that fair and valid procedures are used when food is being controlled for compliance with a particular Codex commodity standard. The purpose of the guidelines on sampling is to help those responsible for sampling to select sampling plans that are appropriate for statistical inspections under specifications laid down by Codex standards. The guidelines are aimed at Codex Commodity Committees, which are adopted by national governments that accept the Codex standard. The guidelines can also be used, if applicable, by governments in case of international trade disputes. Currently at Step 5 of the elaboration procedure, it may be anticipated that these guidelines will be adopted by the CAC in 2005.[28]

4.3 Measurement of Uncertainty

Analysts should be aware of the uncertainty associated with each analytical result. The measurements of uncertainty may be derived by a number of procedures, and food analysis laboratories are required, for Codex purposes, to be in control, use collaboratively tested methods when available, and verify their application before taking them into routine use. Hence laboratories have available to them a range of analytical data which can be used to estimate their measurement of uncertainty. The Codex proposed Draft Guidelines on Measurement of Uncertainty,[29] at Step 5 of the Codex procedure, draw on a number of procedures and matrices agreed by international agencies. They are recommended for use by governments.

4.4 Evaluating Acceptable Methods of Analysis

The Proposed Draft Guidelines for Evaluating Acceptable Methods of Analysis[30] are intended to assist countries in the application of requirements for trade in foodstuff in order to protect the consumer and to facilitate fair trade. Laboratories involved in the evaluation must comply with Codex guidelines on the competence of testing laboratories involved in the import and export of food (CAC/GL 27). These draft guidelines were at Step 3 of the elaboration procedure following the 24th Session of CCMAS (2002).

4.5 Methods of Analysis for Food Derived from Biotechnology

The CCMAS, as a result of requests by the Codex Committee on Food Labeling and the Task Force on Food Derived from Biotechnology, considered the methods of analysis for food derived from biotechnology. In view of the absence of precise provisions for genetically modified organisms and of the difficulties with the practical application of methodology in this area, it was proposed that the CCMAS develops

[27]ALINORM 03/23, paras 95-104 and Appendix III. [28]ALINORM 03/23, paras 7-9 and Appendix IV. [29]ALINORM 03/23, paras 43-52 and Appendix V. [30]ALINORM 03/23, paras 20-26 and Appendix VII.

recommendations with respect to quality control measures in laboratories, offering GM analysis and specific criteria for methods of analysis. Further work will be undertaken in this area of interest by Codex members.[31]

The Ad Hoc Intergovernmental Task Force on Food Derived from Biotechnology is developing a list of methods for the detection and identification of food derived from biotechnology.[32] This list will subsequently be endorsed by the CCMAS.

5. CONCLUSION

Laboratory personnel and food-producing industries should become aware of the Codex adopted methods of analysis and sampling with an aim to harmonizing national requirements. This will lead to improving overall food quality and safety at the national level. Public and private analysts will have a major interest in the design of laboratory procedures, including proficiency testing, international quality control of the laboratory, and assessment of competency. All laboratories engaged in the import and/or export of food products should ultimately achieve accreditation with either an independent national accrediting agency or an international accrediting body. Accreditation demonstrates the competencies of the laboratory and its procedures and, in turn, provides consumer assurance and facilitates trade with other countries.

CODEX TEXTS

1. CODEX STAN 234 1999 – Recommended Methods of Analysis and Sampling
2. CODEX STAN 230 2001– Lead: Maximum Levels
3. CODEX STAN 231 2001– General Codex Methods for the Detection of Irradiated Foods
4. CODEX STAN 232 2001– Aflatoxin M1 in Milk: Maximum Levels
5. CODEX STAN 233 1969– Sampling Plans for Pre-packaged Food
6. CAC/GL 27 1997– Assessment of the Competence of Testing Laboratories Involved in the Import and Export Control of Food
7. CAC/GL 28 1995 – Food Control Laboratory Management: Recommendations
8. CAC/GL 33 1999– Methods of Sampling for Pesticide Residues for the Determination of Compliance With MRLs
9. CAC/GL 37 2001 – Use of Recovery Information in Analytical Measurement
10. CAC/GL 40 1993 – Analysis of Pesticide Residues: Guidelines on Good Laboratory Practice in Pesticide Residue Analysis
11. CAC/GL 41 1993 – Analysis of Pesticide Residues Portion of Commodities to Which Codex MRLs Apply and Which is Analyzed

[31]ALINORM 03/23, paras 71-81. [32]ALINORM 03/23, paras 82-86.

PART A

Organically Produced Food

INTRODUCTION

By the beginning of the 1990s, the demand for organically produced food had become evident within the international food trade with the prime market being the countries of the European Union. A number of other countries, including Australia, Canada, and the United States of America, were taking an interest in the trade potential of this food and the implications for labeling that would prevent deception in the marketplace. As a result, the Codex Regional Coordinating Committee for North America and the South West Pacific recommended that the Codex Alimentarius Commission might consider the labeling issue within the work of the Codex Committee on Food Labeling, in view of the growing production and international trade in organically produced food, with the intention of facilitating trade and preventing misleading claims.

The 19th Session of the Commission (1991) adopted the CCNASWP recommendation. This set in train a decade of deliberations within the Codex Committee on Food Labeling that would result in the elaboration of Codex Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Food.[33] The guidelines cover all issues throughout the food chain – from describing the organic production system, processing, marketing, inspection and certification to the labeling of organically produced food.

The guidelines are intended to facilitate the harmonization of requirements for organic products at the international level. They may also provide assistance to governments wishing to establish national regulations in this area. The guidelines were adopted at the 23rd Session of the Codex Alimentarius Commission (1999) with the exception of the sections concerning livestock production and livestock products, and bee-keeping and bee products which were adopted at the 24th Session of the Commission (2001).

The complete text (GL32-1999, Rev. 1-2001) is available on the Codex web site: www.codexalimentarius.net.

1. GUIDELINES FOR THE PRODUCTION, PROCESSING, LABELING AND MARKETING OF ORGANICALLY PRODUCED FOOD

At the outset, the foreword to the guidelines states that they have been prepared for the purpose of providing an agreed approach to the requirements that underpin the production of, and the labeling and claims for, organically produced food.

The aims of the guidelines are to:

- Protect consumers against deception and fraud in the marketplace and unsubstantiated product claims.
- Protect producers of organic produce against the misrepresentation of other agricultural produce as being organic.
- Ensure that all stages of production, preparation, storage, transport and marketing are subject to inspection and comply with these guidelines.

[33] GL 32 –1999, Rev.1-2001.

k Harmonize provisions for the production, certification, identification, and labeling of organically grown produce.
k Provide international guidelines for organic food control systems in order to facilitate the recognition of national systems as equivalent to the purpose of imports.
k Maintain and enhance organic agricultural systems in each country so as to contribute to local/ global preservation.

The foreword also notes that the guidelines are a first step to the official international harmonization of the requirements for organic products as the experience with the development of requirements and their implementation is very limited throughout Codex Member Countries. There are also significant differences in the consumer perception of organic production systems between regions, although due to the work of Codex these perceptions are clearly merging.

Requirements for organically produced food differ from those for other agricultural products insofar as production procedures are an intrinsic part of the identification and labeling of, and claims for, organic products. Accordingly, Codex has reserved the term 'organic' to denote products that have been produced in accordance with organic production standards and certified by a duly constituted certification body or authority.

2. CONTENT OF THE GUIDELINES

The structure and content of the guidelines are in accordance with the format and content of the Codex standards as set down in the Commission's Procedural Manual 12th edition. They cover the following.

Section 1: Scope

This section establishes the parameters of the guidelines insofar as products carry, or intend to carry, descriptive labeling referring to organic production methods on unprocessed plant and plant products, livestock and livestock products, and processed agricultural crop and livestock products intended for human consumption. Care is taken to ensure that food products bearing other terms commonly used in the marketplace and associated with organic foods, such as biodynamic, biological, ecological or words of similar intent, also trigger the requirements of the guidelines.

The section on scope stresses that the guidelines apply without prejudice to other Codex provisions, government, production, preparation, marketing, labeling and inspection of the defined products. This ensures that the guidelines are complementary to other Codex provisions.

An important feature of the organic system is the prohibition on all materials or products produced from genetically engineered or modified organisms. The opportunity was taken in developing the section on the scope of the guidelines to make this statement, which is repeated at other points throughout the text.

Section 2: Description and Definition

A general description of the organic production methods is included at this point in the text as well as the definition of certain terms that, wherever suitable for the purpose of the guidelines, draw on Codex-adopted definitions.

Section 3: Labeling and Claims

The labeling and claims provisions included in the guidelines are in addition to those set out in the Codex General Standard for the Labeling of Pre-packaged Food (see Module 16 of this training manual).

The labeling of organic products is integral to conveying the method of agricultural production, and providing confidence that the product has been derived from an approved inspection and certification system. The labeling of products in the conversion or 'transition to organic' is allowed after 12 months

of production with organic methods, in accordance with additional criteria intended to prevent consumer confusion. The 'organic' claim is allowed for products containing only organic ingredients, with a tolerance of 5 per cent. The labeling of products with less than 95 per cent organic ingredients or less than 95 per cent ingredients of agricultural origin, the calculation of the percentage, and the declaration of ingredients 'in conversion', was given extensive consideration during the drafting of the guidelines. However, the differences in the regulations applied and the approaches taken by Codex Member Countries did not allow the Committee on Food Labeling to establish detailed provisions for these products. General criteria were, therefore, defined, as a basis for governments to establish specific labeling provisions, with the understanding that further harmonization would be considered in the future.

Section 4: Rules of Production and Preparation

The guidelines establish the minimum requirements for the production and processing of food products that carry 'organic' labeling. These requirements are given in the 'Principles of Organic Production' set out in Annex 1 of the document CAC/GL 32 1999 Rev. 2001. They address:

A. Plants and Plant Products, Including:
- Conversion periods.
- Fertility and biological activity of the soil.
- Control of pests, diseases and weeds.
- Seeds and vegetative reproductive material.
- Plants growing in natural and forest areas.

B. Livestock and Livestock Products, Including:
- The contribution of livestock to the organic farming system.
- Stocking rates of livestock appropriate to the region.
- Sources and origin of breeds, strains and breeding methods.
- Conversion of livestock to the organic system.
- Nutritional requirements, including specific feedstuff and nutritional elements and additives and processing aids in feedstuff.
- Health care.
- Husbandry, transport and slaughter.
- Housing and free-range conditions.
- Manure management.
- Bee-keeping and bee products.

C. Handling, Storage, Transportation and Packaging, Specifically Addressing the Maintenance of the Integrity of the Product Throughout the Processing Phase, Including:
- Pest management.
- Processing and manufacturing.
- Packaging.
- Storage and transport.

Section 4 recognizes that production methods may not, in themselves, be sufficient to produce safe, quality organic food products. In such cases, the list of substances provided in Annex 2 of the guidelines or substances approved by individual countries that meet the Codex criteria in Section 5 may be used.

The lists of substances agreed by Codex include:
- Substances for the use in soil fertilizing and conditioning.
- Substances for plant pest and disease control.
- Ingredients of non-agricultural origin, that is, food additives, carriers, flavorings, micro-organisms, enzymes, minerals, vitamins, essential fatty and amino acids.
- Processing aids.

Section 5: Requirements for the Inclusion of Substances

This section establishes the minimum criteria for Codex evaluation of new substances for inclusion in lists in Annex 2 of the document referred to in Section 4. These criteria are recommended to Codex Member Governments for determining approved substances where the Codex lists of substances do not meet specific needs to ensure the safety or quality of a product bearing an 'organic' claim. The Codex guidelines recognize that the determination of substances by governments should also take into account all relevant and applicable statutory and regulatory provisions. To this end, the guidelines set out specific conditions to be applied in cases where products may be exposed to substances that do not meet the conditions expressed by the guidelines.

Section 6: Inspection and Certification Systems

Inspection and certification systems are used to verify the labeling of, and claim for, organically produced food. The development of these systems should take into account the Codex Principles for Food Import and Export Inspection and Certification[34] and the Codex Guideline for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems.[35]

It is important that private inspection and certification systems are recognized officially. Official accreditation of the systems will ensure their compliance with international standards. Annex 3 of the guidelines sets out the minimum requirements for the officially recognized inspection and certification systems.

Section 7: Imports

This section sets out requirements for the marketing of the 'organic' product to ensure both, the integrity of the organic product and to protect consumers against deceptive practices. Accordingly, imports should be under the supervision of the competent authority, even if all statutory food safety requirements are met. The responsibilities of the importing country in ensuring the integrity of the product through to the consumer are set down in the guidelines, including the importance of record-keeping.

Section 8: Ongoing Review of the Guidelines

The purpose of the guidelines is to provide advice to Member Governments and international organizations. As organic production methods are continually evolving, and more countries are introducing organic systems or recognizing formally that many traditional farming methods satisfy the organic requirements, there is a need for the guidelines to be reviewed on an ongoing basis. Thus there is a provision for the Codex Committee on Food Labeling to review the guidelines every four years and, in order to ensure that the Codex guidelines provide timely advice to Member Governments, the lists of inputs included in Annex 2 may be reviewed every two years.

Related Reading

Codex Alimentarius Commission: Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Food. GL 32-1999. Rev. 1-2001. www.codexalimentarius.net

[34]CAC/GL 20-1995. [35]CAC/GL 26-1997.

PART B

Food Derived from Biotechnology

INTRODUCTION

Biotechnology is an area of science and technology that is developing very rapidly, with many potential applications for improving the quantity and quality of the food supply. As for any new food technology, the safety of the products derived from this technology needs to be carefully assessed. Food derived from biotechnology, or genetically modified food and food ingredients, have already become available worldwide with the aim of enhancing productivity, decreasing the use of certain agricultural chemicals, modifying the inherent properties of crops, improving the nutritional value or even increasing shelf-life.

While scientists are engaged in the research and cultivation of genetically modified crops, consumers and food experts are concerned with the safety of such food and the potential adverse affects they may bring to human health and the environment. Countries are responding to their national demands, which has resulted in the adoption of different regulations/positions in relation to the trade of such food and food ingredients within their countries.

The Codex Alimentarius Commission is addressing this issue through the work of two of its Subsidiary Committees:
1. An Ad Hoc Intergovernmental Task Force on Food Derived from Biotechnology set up specifically to develop standards, guidelines or recommendations, as appropriate, for food derived from biotechnology.
2. The Codex Committee on Food Labeling (CCFL) that is addressing the labeling issues which will ultimately be taken up in the Codex General Standard for the Labeling of Pre-packaged Food.

The FAO and the WHO held two Joint Expert Consultations on Food Derived from Biotechnology during 2000 and 2001.[36] The outcome of this Expert Consultation has been of particular importance to the work of the Codex Ad Hoc Intergovernmental Task Force on Food Derived from Biotechnology.

1. AD HOC INTERGOVERNMENTAL TASK FORCE ON FOOD DERIVED FROM BIOTECHNOLOGY

The Ad Hoc Codex Intergovernmental Task Force was established by the 23rd Session of the Codex Alimentarius Commission (1999) and hosted by the Government of Japan. Its objectives are to develop standards, guidelines or recommendations, as appropriate, for food derived from biotechnology or traits introduced into food by biotechnology, on the basis of scientific evidence, risk analysis and having regard, where appropriate, to other legitimate factors relevant to the health of consumers and the promotion of fair trade practices.

Its specific Terms of Reference are to:
a. Elaborate standards, guidelines, or other principles, as appropriate, for food derived from biotechnology.
b. Coordinate and closely collaborate, as necessary, with appropriate Codex Committees within their mandate as relates to food derived from biotechnology.

[36]See Section 2, Module1 for an explanation on the role of Expert Consultation in the work of Codex.

c. Take full account of the existing work carried out by national authorities, the FAO, the WHO, other international organizations and other relevant international forums.

The Intergovernmental Task Force is required to complete its work within a four-year period. In that time, it must submit a preliminary report to the Commission in 2001, a mid-term report, where appropriate to the Executive Committee in 2002, and a full report in 2003.

The Intergovernmental Task Force has relied on the independent expert scientific advice provided by Joint FAO/WHO Expert Consultations. Issues presented by the Intergovernmental Task Force to the Expert Consultations for specific advice include:

- Identification of the overarching scientific principles that should be applied to the safety and nutritional assessment of food derived from biotechnology.
- The role, and limitations, of substantial equivalence in the safety and nutritional assessment of food derived from biotechnology.
- Alternative strategies to substantial equivalence that should be used for the safety and nutritional assessment of food derived from biotechnology.
- The scientific approach/es that can be used to monitor and assess possible unintended/unexpected adverse effects in food derived from biotechnology.
- The scientific approach/es that can be used to assess the potential allergenicity of food derived from biotechnology.
- The scientific approach/es that can be used to assess the possible human health risks arising from the use of antibiotic resistance marker genes in plants and micro-organisms derived from biotechnology.

At the time of the preparation of this training manual, the Intergovernmental Task Force had:

- Prepared Draft Principles for the Risk Analysis of Food Derived from Modern Biotechnology.
- Prepared Draft Guidelines for the Conduct of Safety Assessment of Food Derived from Recombinant-DNA Plants and a proposed draft annex on the assessment of allergenicity. This work took into account the outcome of the Joint FAO/WHO Expert Consultation on Food Derived from Biotechnology, Rome, January 2001.
- Commenced work on the Proposed Draft Guideline for the Conduct of Safety Assessment of Modified Micro-organisms in Food.
- Prepared a list of methods validated by inter-laboratory studies for the detection or identification of food, or food ingredients, derived from techniques that use biotechnology. The Codex Committee for the Methods of Analysis and Sample (CCMAS) will be involved in the development of this list, and the FAO, WHO and the FAO/IAEA Joint Division for Nuclear Techniques in Food Agriculture will be encouraged, in conjunction with national/regional institutions, to develop and maintain information methods under development and not yet validated.

The outcome of this work may be found in the working papers and reports of the Ad Hoc Intergovernmental Task Force at: www.codexalimentarius.net.

2. CODEX COMMITTEE ON FOOD LABELING

Work in relation to the labeling of food derived from biotechnology falls under the mandate of the Codex Committee on Food Labeling (CCFL). There has been a strong polarization of views of both Member Governments and international non-government organizations and, as a result, the CCFL has not been able to make Step 8 recommendations to the Commission, despite a decade of discussions.

A major stumbling block to progress within the CCFL has been an inability to reach an agreement on the use of specific terms. Many countries have reserved in national regulations the term 'modern biotechnology' as occurs in the Cartegena Protocol on Biosafety. Other countries have generally used the term 'genetically modified/engineered'; this has been favorably supported by some INGOs. Thus a compromise solution will need to be reached on this matter.

An area on which the CCFL achieved consensus was in relation to the declaration of allergens. The 24th Session of the Codex Alimentarius Commission (2001) adopted a recommendation from the CCFL on the declaration of allergens on labels of products containing food obtained through

certain techniques of genetic modification/genetic engineering. This recommendation will be carried over as an amendment to Section 4.2.2 of the General Standard for the Labeling of Pre-packaged Food.[37]

A further important area of work is the potential mandatory labeling of food obtained through certain techniques of genetic modification/genetic engineering. Two options have been developed, on which discussions commenced at the 27th Session of the CCFL (1999) and on which consensus had not been reached at the time of the preparation of this training manual. India, along with a number of other countries, has supported the mandatory labeling of such food by Codex.

The options under discussion are as follows:
Option 1: Would require labeling when the products obtained through biotechnology differ significantly from the corresponding food as regards the composition, nutritional value or intended use.
Option 2: Would require the declaration of the method of production for:
- Food and ingredients composed of or containing genetically modified/engineered organisms.
- Food or food ingredients produced from, but not containing, genetically modified/engineered organisms if they contain protein or DNA resulting from gene technology or differ significantly from the corresponding food.

Option 2 has raised a number of issues of concern including the enforcement, methodology, economic cost, consumer perception and difficulties likely to be faced by developing countries.

The labeling of food derived from biotechnology is a major issue for India as its delegation at the CCFL has been seeking to achieve mandatory labeling as set out in Option 2. India has hosted a meeting of the CCFL Working Group for the Labeling of Food Derived from Biotechnology in order to demonstrate the level of its commitment to this issue within Codex.

3. EXPERT ADVICE ON FOOD DERIVED FROM BIOTECHNOLOGY

The WHO and the FAO promote scientific research in food safety and the development of principles and guidelines to be used by its Member Countries to assure the safety of their food supplies. This has been done through the convening of consultations of international experts and making these recommendations available to Member Countries and to the public.

The Joint Expert Committee on Food Additives (JECFA)[38] has been evaluating, since 1956, the safety aspects of food additives, contaminants and residues of veterinary drugs and has already evaluated products produced from genetically modified micro-organisms. The methods of production and specifications of identify and purity are important components of the safety evaluation of such substances. Substances that have been evaluated range from enzymes such as chymosins, to BST (Bovine Somatrotropin), a veterinary drug used to enhance milk production, and the PST (Porcine Somatrotropin) hormone.

Since the establishment of the Codex Intergovernmental Task Force on Food Derived from Biotechnology was established, three Joint FAO/WHO Expert Consultations have been convened to address safety issues relating to food derived from biotechnology. The 1st Expert Consultation, held during May 29-June 2, 2000, in Geneva, addressed the overall aspects of the safety assessment of genetically modified food of plant origin and responded to five specific questions presented to it by the 1st Session of the Codex Ad Hoc Intergovernmental Task Force on Food Derived from Biotechnology. The 2nd Expert Consultation, held in Rome during January 22-25, 2001, specifically addressed the issue of allergenicity of food derived from biotechnology. The 3rd Expert Consultation, held in Geneva during September 24-28, 2001, studies the issue of the safety assessment of food derived from genetically modified micro-organisms.

[37]CODEX STAN 1-1985 (Rev. 2-2001). [38]The work and role of the JECFA is covered in Section 6, Module 14 of this training manual.

REFERENCES

1. *Copies of reports and working papers for the Codex Ad Hoc Intergovernmental Task Force on Food Derived from Biotechnology, and the Codex Committee on Food Labeling*. www.codexalimentarius.net
2. *Cartegena Protocol on Biosafety*. www.biodiv.org
3. *Report of the Joint FAO/WHO Expert Consultations on Food Derived from Biotechnology*. May 27-June 2, 2000. www.fao.org/es/ESN/Control.htm
4. *Report of the Joint WHO/FAO Expert Consultation on International Guidelines for the Safety Assessment of Food Derived from Biotechnology.* 1996. www.who.int.fsf.Gmfood.scientific_advice_index.htm
5. R*eport on the WHO Consultation on the Application of the Principle of Substantial Equivalence to the Safety Evaluation of Food and Food Components from Plants Derived by Modern Biotechnology*. 1995. www.who.int.fsf.Gmfood.scientific_advice_index.htm
6. *WHO Consultation on the Health Aspects of Marker Genes in Genetically Modified Plants*. 1993. www.who.int.fsf.Gmfood.scientific_advice_index.htm
7. *WHO Consultation on Strategies for Assessing the Safety of Food Produced by Biotechnology*. 1990. www.who.int.fsf.Gmfood.scientific_advice_index.htm
8. *Regional Status of Biotechnology in Agriculture.* www.fao.org.th/APARRI_Biotech.htm
9. *WHO Study on Modern Food Biotechnology, Human Health and Development*. www.who.int/fsf/Gmfood/mega_study_index.htm

SECTION

7

INDUSTRY-SPECIFIC ISSUES

Industry-specific Issues

INTRODUCTION

Section 7 is the second part of the three sections of this training manual devoted to increasing the appreciation of specific food quality and safety issues through the work of the Codex Alimentarius Commission and to enhance the broad understanding of the steps that link primary producers, food handlers, food processors and traders with contemporary food quality and safety requirements. This section follows on from the horizontal issues that cross all food sectors that were covered in Section 6.

The Codex texts introduced in this section cover the adopted and ongoing work of Codex with respect to the major food-producing industries in India, namely fats and oils; marine products; dairy products; cereals and cereal products; fruits and vegetables, including fresh and processed; meat and meat products, including animal feedstuff; sugar and sweetening agencies, including honey and artificial sweetening agents; mineral and packaged drinking water; spices and condiments, including food grade salt. The section also addresses the large industry sector in India known as the street food industries. This food sector has a major responsibility in assuring the safety and quality of food sold for direct consumption.

The existence of international standards, guidelines, codes and recommendations for industry-wide food and feed safety demonstrates the need for all food production sectors to take on a greater level of responsibility and accountability to minimize food safety risks. Many of the concepts presented in the Codex standards, guidelines, codes and recommendations will be quite new to the users of this manual. They will stimulate an interest in changing the ways of at least some of the industries to improve upon the existing procedures being followed in the production, handling, storage, processing, and trading of food and food products. Change for the sake of change is not always beneficial, but change for the sake of progress is a tangible and sensible process that often leads to the expansion of opportunities, a reinvigoration of insight and effort, and, importantly, for food-producing and handling industries, contributes to improving the overall health status of the nation. The modules in Section 7 are elective and should be selected on the basis of relevance to the trainees.

At the conclusion of the section, the framework for a case study has been given in order to provide a degree of practical experience in reading a relevant Codex text against the national requirements and identifying differences between the two, particularly as they may affect the operations of the industry. Thus, at the conclusion of this section, trainees will be familiar with the relevant Codex text and be able to identify the differences between the Codex and the national requirements and also identify any constraints that this might present to the economic viability of the industry and in achieving the safety and quality of the food product.

Fats and Oils Industry

INTRODUCTION

1. CODEX COMMITTEE ON FATS AND OILS (CX-709)

The Codex Committee on Fats and Oils is responsible for elaborating standards for fats and oils of animal, vegetable, and marine origin. The Committee held its 18th Session in London in February 2003. The host government is the United Kingdom and until 2001 the Committee had met 17 times. Details are given below:

1. London, February 25-27, 1964
2. London,, April 6-8, 1965
3. London, March 29-April 1, 1966
4. London, April 24-28, 1967
5. London, September 16-20, 1968
6. Madrid, November 17-20, 1969
7. London, March 25-29, 1974
8. London, November 24-28, 1975
9. London, November 28-December 2, 1977
10. London, December 4-8, 1978
11. London, June 23-27, 1980
12. London, April 19-23, 1982
13. London, February 23-27, 1987
14. London, September 27-October 1, 1993
15. London, November 4-8, 1996
16. London, March 8-12, 1999
17. London, February 19-23, 2001

1.1 Terms of Reference

The CCFO has the following Terms of Reference.

k To elaborate worldwide standards for fats and oils of animal, vegetable and marine origin, including margarine and olive oil.

1.2 Adopted Codex Texts

k Codex General Standard for Edible Fats and Oils Not Covered by Individual Standards, CODEX STAN 19-1981.
k Codex Standard for Edible Soya Bean Oil, CODEX STAN 20-1981.
k Codex Standard for Edible Arachis Oil, CODEX STAN 21-1981.

k Codex Standard for Edible Cottonseed Oil, CODEX STAN 22-1981.
k Codex Standard for Edible Sunflower Seed Oil, CODEX STAN 23-1981.
k Codex Standard for Edible Rapeseed Oil, CODEX STAN 24-1981.
k Codex Standard for Edible Maize Oil, CODEX STAN 25-1981.
k Codex Standard for Edible Sesame Seed Oil, CODEX STAN 26-1981.
k Codex Standard for Olive Oil, Virgin and Refined, and for Refined Olive-Pomace Oil, CODEX STAN 33-1981.
k Codex Standard for Edible Mustard Seed Oil, CODEX STAN 34-1981.
k Codex Standard for Edible Low Erucic Acid Rapeseed Oil, CODEX STAN 123-1981.
k Codex Standard for Edible Coconut Oil, CODEX STAN 124-1981.
k Codex Standard for Edible Palm Oil, CODEX STAN 125-1981.
k Codex Standard for Edible Palm Kernel Oil, CODEX STAN 126-1981.
k Codex Standard for Edible Grape Seed Oil, CODEX STAN 127-1981.
k Codex Standard for Edible Babassu Oil, CODEX STAN 128-1981.
k Codex Standard for Edible Palm Olein, CODEX STAN 194-1995.
k Codex Standard for Edible Palm Stearin, CODEX STAN 195-1995.
k Codex Standard for Lard, CODEX STAN 28-1981.
k Codex Standard for Rendered Pork Fat, CODEX STAN 29-1981.
k Codex Standard for Premier Jus, CODEX STAN 30-1981.
k Codex Standard for Edible Tallow, CODEX STAN 31-1981.
k Codex Standard for Minarine, CODEX STAN 135-1981.
k Recommended International Code of Practice for Storage and Transport of Edible Oils and Fats in Bulk, CAC/RCP 36-1987.

1.3 Horizontal Issues

As may be perused from the above text, a number of provisions fall within the purview of the horizontal committees. These are as follows:
k Codex Committee for General Principles for the format.
k Codex Committee on Food Additives and Contaminants for regulating the use of additives and occurrence of contaminants, as the case may be.
k Codex Committee on Pesticide Residues for the limit of pesticides.
k Codex Committee on Food Hygiene for the hygiene provisions relating to the preparation, handling and establishment of the microbiological criteria of the products covered in both the standards. The documents referred to are the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3-1997).
k Other relevant Codex texts such as Codes of Hygienic Practice and Commodity-specific Codes of Practices.
k Codex Committee on Labeling for the general labeling provisions in both the standards.
k Codex Committee on Methods of Analysis and Sampling.

1.4 Future Work

The Committee at its next session will consider the following work for the future:
k Draft Standard for Olive Oils and Olive-Pomace Oils.
k Proposed Draft Amendments to the Standard for Named Vegetable Oils:
  k Super palm oil.
  k Mid-oleic sunflower oil.
  k Inclusion of new desmethysterol data and tocopherol and tocotrienol data for palm olein, palm stearin, rapeseed oil (high erucic acid) and mustard oil.
  k Inclusion of new data on Table 3 expressed in mg/kg.
k Draft Standard for Fat Spreads.
k Proposed Draft Amendments to the List of Acceptable Previous Cargoes and of Banned Immediate Previous Cargoes.

2. CONCLUSION

The Codex Committee for Fats and Oils develops standards for all types of edible fats and oils of animal, vegetable and marine origins based on data available to it by Member Countries. It is important to ensure that these standards take into account the characteristics of Indian products and protect Indian economic interest.

Marine Products Industry

INTRODUCTION

The objective of this module is to acquaint the trainees with the practices being/to be followed in the marine products industry, right from production to retail marketing, so as to ensure the safety of fish and fishery products for human consumption The trainees working in this industry will appreciate and understand the full implication of this module. They are expected to improve upon the practices prevalent in their respective industry, based on this module.

The Codex Alimentarius Commission (CAC) has done considerable work in this sector. A Code of Practice for Marine Products Industry (CAC/RCP 9-1976) has been developed by the Codex Committee on Fish and Fishery Products from the merging of the individual codes plus a section on aquaculture and a section on frozen surimi. These codes were primarily of a technological nature, offering general advice on the production, storage and handling of fish and fishery products on board fishing vessels and on shore. It also deals with the distribution and retail display of fish and fishery products. This combined Code of Practice has been further modified to incorporate the Hazard Analysis Critical Control Point (HACCP) approach described in the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3 1997), Annex: HACCP System and Guidelines for its Application (Supplement to Codex Volume 1B). A prerequisite program is described in the code covering technological guidelines and the essential requirements of hygiene in the production of fish and fishery products, which are safe for human consumption, and otherwise meet the requirements of the appropriate Codex product standards. The code also contains guidance on the use of the HACCP, which is recommended to ensure the hygienic production of fish and fishery products to meet health and safety requirements.

Within this code, a similar systematic approach has been applied to the essential quality, composition and labeling provisions of the appropriate Codex product standards. Throughout the code this is referred to as 'Defect Action Point (DAP) Analysis'.

The Codex Committee on Fish and Fishery Products recommended at its 20th Session that defects of a commercial nature, that is, workmanship defects, which had been removed from Codex fish product standards, be transferred to the appropriate Codex Code of Practice for optional use between buyers and sellers during commercial transactions. The Committee further recommended that this detail should be described in a section on Final Product Specifications, which now appear as Appendices II-XI of this document. A similar approach to the HACCP has been incorporated into the code as guidelines for the control of defects (DAP Analysis).

This code will assist all those who are engaged in the handling and production of fish and/or fishery products, or are concerned with their storage, distribution, export, import and sale in attaining safe and wholesome products which can be sold on the national or international markets and meet the requirements of the Codex standards.

HOW TO USE THE CODE

The aim of this code is to provide a user-friendly document as background information and guidance for the elaboration of fish and shellfish process management systems, which would incorporate Good Management Practice (GMP), as well as the application of the HACCP in countries where these, as yet, have not been developed. In addition, it could be used for the training of fishermen and employees of the fish processing industry.

The practical application of this international code, with regard to national fisheries, would hence require some modifications and amendments, taking into account local conditions and specific consumer requirements. This code, therefore, is not intended to replace the advice or guidance of trained and experienced technologists regarding the complex technological and hygienic problems, which might be unique to a specific geographical area or specific fishery. In fact, it is intended to be used as a supplement in such instances.

This code is divided into separate, though interrelated, sections. It is intended that in order to set up a HACCP or DAP program, these should be consulted as appropriate.

SECTION 1: SCOPE

This Code of Practice applies to the growing, harvesting, handling, production, processing, storage transportation and retail of fish and fishery products from marine and freshwater sources, which are intended for human consumption.

SECTION 2: DEFINITIONS

Being acquainted with the definitions is important and will aid the overall understanding of the code.

SECTION 3: PREREQUISITE PROGRAM

Prior to the application of the HACCP to any segment of the fish processing chain, that segment must be supported by prerequisite programs based on good hygienic practice or as required by the competent authority. The establishment of prerequisite programs will allow the HACCP team to focus on the HACCP application to food safety hazards, which are directly applicable to the product, and the process selected, without undue consideration and repetition of hazards from the surrounding environment. The prerequisite programs would be specific within an individual establishment or for an individual vessel and will require monitoring and evaluation to ensure their continued effectiveness.

Reference should be made to the International Recommended Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3 1997), Annex: HACCP System and Guidelines for its Application for further information to assist with the design of the prerequisite programs for a processing facility or vessel. It should be noted that some of the issues listed below, for example, those related to damage, are designed to maintain quality rather than food safety and are not always essential to a prerequisite program for a food safety-oriented HACCP system.

HACCP principles can also be applied to defect action points.

3.1 Fishing and Harvesting Vessel Design and Construction

There are many different types of fishing vessels used throughout the world, which have evolved in particular regions to take account of the prevailing economics, environment and types of fish caught or harvested. This section attempts to highlight the basic requirements for cleanability, minimizing damage, contamination and decomposition to which all vessels should have regard to the extent possible in order to ensure the hygienic, high quality handling of fresh fish intended for further processing and freezing.

The design and construction of a fishing vessel and vessels used to harvest farmed fish should take into consideration the following:

- For ease of cleaning and disinfection.
- To minimize contamination.
- To minimize damage to fish.
- To minimize damage during the harvesting of aquaculture fish.

3.2 Processing Facility Design and Construction

The processing facility should include a product flow-through pattern that is designed to prevent potential sources of contamination, minimize process delays, which could result in a further reduction in fish quality, and prevent cross-contamination of finished products from raw materials. Fish are highly perishable food and should be handled carefully and chilled without undue delay. The fish processing facility, therefore, should be designed for the rapid processing and storage of fish and fishery products.

The design and construction of a fish processing facility should take into consideration the following:

- For ease of cleaning and disinfection.
- To minimize contamination.
- To provide adequate lighting.

3.3 Design and Construction of Equipment and Utensils

The equipment and utensils used for the handling of fishery products on a vessel or in a processing facility will vary greatly depending on the nature and type of operation involved. During use, they are constantly in contact with the fish. The condition of the equipment and utensils should be such that it minimizes the build-up of residues and prevents them from becoming a source of contamination.

The design and construction equipment and utensils should take into consideration the following:

- For ease of cleaning and disinfection.
- To minimize contamination.
- To minimize damage.

3.4 Hygiene Control Program

The potential effects of harvesting and the handling of products, on-board vessel handling or in-plant production activities on the safety and suitability of fish should be considered at all times. In particular, this includes all points where contamination may exist and specific measures should be taken to ensure the production of a safe and wholesome product. The type of control and supervision needed will depend on the size of the operation and the nature of its activities.

- A permanent cleaning and disinfection schedule.
- Designation of personnel for cleaning.
- Maintenance of premises, equipment and utensils.
- Pest control systems.
- Supply of:
    - Water
    - Ice
    - Steam
- Waste Management.

3.5 Personal Hygiene and Health

Personal hygiene and facilities should be such to ensure that an appropriate degree of personal hygiene can be maintained to avoid contaminating fish by maintaining proper facilities and equipment and personnel hygiene.

3.6 Transportation

Vehicles should be designed and constructed:

- So that walls, floors and roofs, where appropriate, are made of a suitable corrosion-resistant material with smooth non-absorbent surfaces. Floors should be adequately drained.
- Where appropriate, with chilling equipment to maintain chilled fish during transport to a temperature as close as possible to 0°C or, for frozen fish and fishery products, to maintain a temperature of -18°C or colder.
- To provide the fish with protection against contamination, exposure to extreme temperatures and the drying effects of the sun or wind.
- To permit the free flow of chilled air around the load when fitted with mechanical refrigeration.

3.7 Traceability and Recall Procedures

Experience has demonstrated that a system for the recall of a product is a necessary component of a prerequisite program because no process is fail-safe. Traceability, which includes lot identification, is essential to an effective recall procedure.

- Managers should ensure that effective procedures are in place to effect the complete traceability and rapid recall of any lot of fishery product from the market.
- Appropriate records of processing, production and distribution should be kept and retained for a period that exceeds the shelf-life of the product.
- Each container of fish or fishery product intended for the final consumer or for further processing should be clearly marked to ensure the traceability of the producer and of the lot.
- Where there is an immediate health hazard, products produced under similar conditions, and are likely to present a similar hazard to public health, may be withdrawn. The need for public warnings should be considered.
- Recalled products should be held under supervision until they are destroyed, used for purposes other than human consumption, or reprocessed in a manner to ensure their safety.

3.8 Training

Fish hygiene training is fundamentally important. All personnel should be aware of their role and responsibility in protecting fish from contamination and deterioration. Fish handlers should have the necessary knowledge and skill to enable them to handle fish hygienically. Those who handle strong cleaning chemicals or other potentially hazardous chemicals should be instructed in safe handling techniques. Each fish processing facility should ensure that individuals have received adequate and appropriate training in the design and proper application of a HACCP system and process control. Training of personnel in the use of the HACCP is fundamental to the successful implementation and delivery of the program in fish processing establishments. The practical application of such systems will be enhanced when the individual responsible for the HACCP has successfully completed a course given by or certified by a competent authority. Managers should also arrange for adequate and periodic training of every employee in the establishment so that they understand the principles involved in the HACCP.

SECTION 4: GENERAL CONSIDERATIONS FOR THE HANDLING OF FRESH FISH AND SHELLFISH

Unless they can be reduced to an acceptable level by normal sorting and/or processing, no fish and shellfish should be accepted if it is known to contain parasites, undesirable micro-organisms, pesticides, veterinary drugs or toxic, decomposed or extraneous substances known to be harmful to human health. When fish and shellfish determined as unfit for human consumption are found, they should be removed and stored separately from the catch and either reworked and/or disposed of in a proper manner. Potential hazards, which have been known to be associated with fresh fish and shellfish, are described in Section 4.1. All fish and shellfish deemed fit for human consumption should be handled properly, with particular attention paid to time and temperature control.

4.1 Potential Hazards Associated with Fresh Fish and Shellfish

- Biological hazards
  - Parasites
  - Bacteria
  - Viral contamination
  - Biotoxins
  - Scombrotoxin
  - Phycotoxins
  - Ciguatoxin
  - Tetrodotoxin
- Chemical hazards
- Physical hazards

4.2 Time and Temperature Control

Temperature is the single-most important factor affecting the rate of fish deterioration and the multiplication of micro-organisms. For species prone to scombroid toxin production, time and temperature control may be the most effective method in controlling food safety. It is, therefore, essential that fresh fish, fillets and other shellfish and their products, which are to be chilled, should be held at a temperature as close as possible to 0^{o} C.

- Minimize the deterioration of fish – time.
- Minimize the deterioration of fish – temperature control.

4.3 Minimize the Deterioration of Fish Handling

Poor handling practices can lead to the damage of fresh fish, which can accelerate the rate of decomposition and increase unnecessary post-harvest losses. It can be minimized in this way:

- Fish should be handled and conveyed with care, particularly during transfer and sorting, in order to avoid physical damage such as puncture, mutilation, etc.
- Where fish are held or transported live, care should be taken to maintain factors that can influence fish health (for example, CO^2, O^2, temperature, nitrogenous wastes, etc).
- Fish should not be trampled or stood upon.
- Where boxes are used for the storage of fish, they should not be overfilled or stacked too deeply.
- While fish are on deck, exposure to the adverse effect of the elements should be kept to a minimum in order to prevent unnecessary dehydration.
- Finely divided ice should be used where possible, which can help minimize damage to fish and maximize cooling capacity.
- In refrigerated water storage areas, the density of the fish should be controlled to prevent damage.

SECTION 5: HAZARD ANALYSIS CRITICAL CONTROL POINT (HACCP) AND DEFECT ACTION POINT (DAP) ANALYSIS

The Hazard Analysis Critical Control Point (HACCP) is a science-based system which is aimed at preventing food safety problems from occurring, rather than reacting to the non-compliance of the finished product. The HACCP system accomplishes this by the identification of specific hazards and the implementation of control measures.

An effective HACCP system should reduce the reliance on traditional end-product testing. Section 5 explains the principles of the HACCP as it applies to the handling and processing of fish and fishery products. However, the code can only provide guidance on how to use these principles and offer suggestions as to the type of hazards, which may occur in the various fish and fishery products. The HACCP plan, which ought to be incorporated into the food management plan, should be well-documented and as simple as possible. This section will demonstrate one format which may be considered in the development of the HACCP plan.

Section 5 also explains how a similar approach involving many of the principles can apply to the broader application. This covers the essential quality, composition and labeling provisions of Codex standards or other non-safety requirements, which in this case are referred to as Defect Action Point Analysis. This approach for defect analysis is optional and other techniques, which achieve the same objective, may be considered.

5.1 HACCP Principles

5.2 Defect Action Point Analysis

5.3 Application

Refer: FAO Food Quality and Safety Systems – A training manual on Food Hygiene and the Hazard Analysis and Critical Control Point (HACCP) system.

SECTION 6: PROCESSING OF FRESH, FROZEN AND MINCED FISH

In the context of recognizing controls at individual processing steps, this section provides examples of potential hazards and defects and describes technological guidelines, which can be used to develop control measures and corrective action. At a particular step only the hazards and defects, which are likely to be introduced or controlled at that step, are listed. These should be recognized in preparing a HACCP and/or DAP plan. However, within the scope of this Code of Practice it is not possible to give details of critical limits, monitoring, record-keeping and verification for each of the steps, since these are specific to particular hazards and defects.

In general, the processing of fresh, frozen fish and minced fish will range in sophistication. In its simplest form, the processing of fresh and frozen fish may be presented in a raw state such as dressed, fillets, and minced to be distributed in markets and institutions or used in processing facilities. For the latter, the processing of fresh, frozen and minced fish is often an intermediate step to the production of value-added products (for example, smoked fish as described in Section 12, canned fish as described in Section 13, frozen breaded or battered fish as described in Section 15). Traditional methods often prevail in the design of a process. However, modern scientific food technology has an increasingly important role in enhancing the preservation and shelf-stability of a product. Regardless of the complexity of a particular process, the fabrication of the desired product relies on the consecutive execution of individual steps. As stressed by this code, the application of appropriate elements of the prerequisite program (Section 3) and HACCP principles (Section 5) at these steps will provide the processor with reasonable assurance that the essential quality, composition and labeling provisions of the appropriate Codex standard will be maintained and food safety issues controlled.

A flow diagram will provide guidance to some of the common steps involved in a fish fillet preparation line, and three examples of final product types: modified atmosphere packaging (MAP), minced and frozen fish. As in the further processing of fresh fish in a MAP product, or minced or frozen fish, the section titled ‘Fish Preparation’ is used as the basis for all the other fish processing operations (Sections 7-15), where appropriate.

6.1 Finfish Preparation

- Raw, fresh or frozen fish reception (Processing Step 1).
  - Sensory evaluation of fish.
- Chilled storage (Processing Steps 2 and 14).
- Frozen storage (Processing Steps 3 and 20)
- Control thawing (Processing Step 4).
- Washing and gutting (Processing Steps 6 and 7).
- Filleting, skinning, trimming and candling (Processing Steps 8 and 9).

6.2 Processing of Modified Atmosphere Packed Fish

This section is designed to augment the processing of the fresh fish section with additional operation steps pertaining specifically to the modified atmosphere packing of fish.

- Weighing (Processing Step 10).
- Modified atmosphere packaging (Processing Step 11).
- Labeling (Processing Steps 12 and 18).
- Metal detection (Processing Steps 13 and 19).

6.3 Processing of Frozen Fish

This section is designed to augment the processing of fresh fish with additional operational steps pertaining specifically to the processing of frozen fish.

- Glazing (Processing Step 16).

6.4 Processing of Minced Fish

This section is designed to augment the processing of fresh fish (prior to mincing) and the processing of frozen fish (after mincing), with additional steps pertaining specifically to the processing of minced fish.

- Mincing fish using the mechanical separation process (Processing Step 21).
- Washing of minced fish (Processing Step 22).
- Blending and application of additives and ingredients to minced fish (Processing Steps 23 and 24).
- Wrapping and packing (Processing Steps 17 and 25).

6.5 Packaging, Labels and Ingredients

- Reception: Packaging, labels and ingredients (Processing Steps 26 and 28).
- Storage: Packaging, labels and ingredients (Processing Steps 27 and 29).

SECTION 7: PROCESSING OF MOLLUSCAN SHELLFISH
SECTION 8: PROCESSING OF LOBSTERS AND CRABS
SECTION 9: PROCESSING OF SHRIMPS AND PRAWNS
SECTION 10: PROCESSING OF CEPHALOPODS
SECTION 11: PROCESSING OF SALTED FISH
SECTION 12: PROCESSING OF SMOKED FISH

Refer: Joint FAO/WHO Food Standard Program, CX/FFP 00/4, www.codexalimentarius.net.

SECTION 13: PROCESSING OF CANNED FISH AND SHELLFISH

In the context of recognizing controls at individual processing steps, this section provides examples of potential hazards and defects and describes technological guidelines which can be used to develop control measures and corrective action. At a particular step, only the hazards and defects, which are likely to be introduced or controlled at that step, are listed. It should be recognized in preparing an HACCP and/or DAP plan. The Hazard Analysis Critical Control Point (HACCP) and Defect Action Point (DAP) Analysis provide guidance for the application of the principles of the HACCP and DAP analysis. However, within the scope of this Code of Practice it is not possible to give details of critical limits, monitoring, record-keeping and verification for each of the steps since these are specific to particular hazards and defects. This section deals with the processing of heat processed sterilized canned fish and shellfish products which have been packed in hermetically sealed rigid or semi-rigid containers and are intended for human consumption.

As stressed by this code, the application of appropriate elements of the prerequisite program and HACCP principles (Section 5) at these steps will provide the processor with a reasonable assurance that the essential quality, composition and labeling provisions of the appropriate Codex standard will be maintained and food safety issues controlled.

- General: Addition to Prerequisite Program (CAC/PRC 23-1979, Rev. 2, 1993)
- Identification of Hazards and Defects
  - Hazards.
  - Defects.
- Processing Operations
  - Raw materials reception.
  - Fish and shellfish (Processing Step 1).
  - Container and packaging materials (Processing Step 1).
  - Other ingredients (Processing Step 1).
  - Storage of raw material, containers and packaging materials.
  - Fish and shellfish (Processing Step 2).
  - Containers and packaging (Processing Step 2).
  - Other ingredients (Processing Step 2).
  - Unwrapping, unpacking (Processing Steps 3 and 4).
  - Thawing (Processing Step 5).
  - Fish and shellfish preparatory processes (Processing Step 6).
  - Fish preparation (gutting, trimming).
  - Preparation of molluscs and crustaceans.
- Pre-cooking and Other Treatments
  - Pre-cooking.
  - General considerations.
  - Pre-cooking schedule.
  - Control of the quality of pre-cooking oils and other fluids.
  - Cooling.
  - Smoking.
  - Use of brine and other dips.
  - Packing in containers (filling, sealing and coding) (Processing Step 8).
  - Filling.
  - Sealing.
  - Coding.
  - Handling of containers after closure – staging before heat processing (Processing Step 9).
  - Thermal processing (Processing Step 10).
  - Sterilization schedule.
  - Heat processing operation.
  - Monitoring of heat processing operation.
  - Cooling (Processing Step 11).
  - Monitoring after heat processing and cooling.
  - Labeling, casing and storage of finished products (Processing Steps 12 and 13).
  - Transportation of finished products (Processing Step 14).

SECTION 14: PROCESSING OF FROZEN SURIMI

- General considerations of hazards and defects for frozen surimi production.
- Fish preparation.
- Meat separation process.
- Washing and de-watering process.
- Refining process.
- Final de-watering process.
- Mixing and addition of adjuvant ingredients process.

- Packaging and weighing.
- Freezing operation.
- Dismantling freezing pan.
- Metal detection.
- Boxing and labeling.
- Frozen storage.
- Raw material reception – packaging and ingredients.
- Raw material storage – packaging and ingredients.

SECTION 15: PROCESSING OF COATED FISHERY PRODUCTS

- General addition to prerequisite program.
- Identification of hazards and defects.
- Processing operations.

SECTION 16: AQUACULTURE PRODUCTION

- Introduction.
- Identification of hazards.
- Product dispatch.
- Intended use.
- Flow diagram.
- Development of the HACCP plan.
- Site selection.
- Water quality.
- Feed supply and feeding.
- Production facilities.
- Harvesting and handling.
- Training.
- Records.
- Documentation.
- Review and verification.

SECTION 17: TRANSPORTATION

- Vehicles should be designed and constructed.
- To minimize damage and the rate of decomposition of fish and fishery products before transportation.

SECTION 18: RETAIL

- To minimize the rate of decomposition of fish during retail.

REFERENCES

1. *Joint FAO/WHO Food Standards Program*. CX/FFP 00/4.
www.codexalimentarius.net

Dairy Products Industry

INTRODUCTION

1. The Codex Committee on Milk and Milk Products (CCMMP) has a relatively short history, that is, it was established in 1993. However, its predecessor, the Joint FAO/WHO Committee of Government Experts on the Code of Principle Concerning Milk and Milk Products, was established in 1958 and pre-dates even the Codex Alimentarius Commission, which was established in 1962. The Committee of government experts operated under the Codex Rules of Procedure. It established a number of Codex Standards for Milk Products with the notable exception that it could finalize standards without reference to the Codex Alimentarius Commission. Two factors were important in its operation:

- There was a close working relationship with the International Dairy Federation (IDF).
- The Code of Principle Concerning Milk and Milk Products is the foundation reference document.

Some critics of the Milk Committee were concerned with the apparent dominance of the IDF in the working of the Committee and wanted that the standards elaborated by this Committee should also follow the 8-Step procedure, which is considered to be more democratic.

Sessions held by the Joint FAO/WHO Committee on the subject:

1. Rome, Italy, September 8-12, 1958
2. Rome, Italy, April 13-17, 1959
3. Rome, Italy, February 22-26, 1960
4. Rome, Italy, March 6-10, 1961
5. Rome, Italy, April 2-6, 1962
6. Rome, Italy, June 17-21, 1963
7. Rome, Italy, May 4-8, 1964
8. Rome, Italy, May 24-29, 1965
9. Rome, Italy, June 20-25, 1966
10. Rome, Italy, August 25-31, 1967
11. Rome, Italy, June 10-15, 1968
12. Rome, Italy, July 7-12, 1969
13. Rome, Italy, June 15-20, 1970
14. Rome, Italy, September 6-11, 1971
15. Italy, September 25-30, 1972
16. Italy, September 10-15, 1970
17. Rome, Italy, April 14-19, 1975
18. Rome, Italy, September 13-18, 1976
19. Rome, Italy, June 12-17, 1978
20. Rome, Italy, April 26-30, 1982
21. Rome, Italy, June 2-6, 1986
22. Rome, Italy, November 5-9, 1990

1.1 Terms of Reference

The Terms of Reference of the CCMMP are:
'To establish international codes and standards concerning milk and milk products.'
Subsequently, this Committee was renamed the Codex Committee on Milk and Milk Products with New Zealand as the host government. The sessions held and the Terms of Reference are given below.

Sessions
1. Rome, November 28-December 2, 1994
2. Rome, May 27-31, 1996
3. Montevideo (Uruguay), May 18-22, 1998

Terms of Reference

To elaborate worldwide standards, codes and related texts for milk and milk products. These Terms of Reference for this Codex Committee are unique in their reference to the Code of Principles. No other Codex Committee has such a reference point. That is why the reconsideration of the Code of Principles

Table 1: Milk Products Covered by Codex Commodity Standards

Product Group	Standard	Codex Reference
Fatty milk products	Butter	STAN A-1
	Dairy spreads	STAN A-16
Preserved milk products	Evaporated milk	STAN A-3
	Sweetened condensed milk	STAN A-4
	Milk and cream powders	STAN A-5
	Whey powders	STAN A-15
	Edible casein products	STAN A-18
	Lactose	STAN A-11
Cheese and related products	Cheese	STAN A-6
	Subordinate standards	
	• Cheese in brine	STAN A-17
	• Unripened cheese, including fresh cheese	STAN A-19
	• Individual cheese standards	C-series
	Whey cheese	STAN A-7
	Processed cheese	STAN A-8
Fresh milk products	Fermented milk	STAN A-11
	Creams	STAN A-9
Ice creams	Edible ice mixes	STAN 137
Hygiene code	Code of hygienic practice for dried milk	CAC/RCP 31
Milk preservation	Guidelines for the preservation of raw milk by the lactoperoxidase system	CAC/GL 13

was taken up from the first session of the Committee, which was held in Rome from November 28 to December 2, 1994.

Most of the earlier Codex Milk Products Standards date back to the 1960s and their content was outdated and too detailed (Table 1). An updating was, therefore, urgently needed and thus the CCMMP came into existence. The CCMMP is now a full-fledged member of the so-called 'Commodity' Committees of Codex.

2. ROLE OF INTERNATIONAL DAIRY FEDERATION (IDF)

The International Dairy Federation (IDF) was established in Brussels in 1903 to promote, through international cooperation and consultation, the solution of scientific, technical and economic problems in the international dairy field. It is one of the many international organizations assisting the CAC in its work in establishing international standards.

In 1958, the IDF was given a formal position as technical advisor to the joint FAO/WHO organization Committee of government experts on the Code of Principles concerning Milk and Milk Products. The IDF maintained its role as technical advisor even after the Milk Committee was formally integrated into the Codex system as the Codex Committee on Milk and Milk Products. According to the procedural manual of the CAC, the IDF's recommendations are used to guide industry protocol when issues regarding milk and milk products or individual standards of cheese arise.

The IDF keeps itself well-informed about Codex activities and the elaboration of international food regulations, specially milk and milk products, via participation in the CAC and its subsidiary bodies. Currently, the IDF's involvement in the CCMMP is as follows:

- Status as observer.
- Attend meetings.
- Prepare initial draft standards and related texts.
- Act as technical advisor upon request.
- Submit comments.
- Prepare new work.

Apart from the participation in the CCMMP, the IDF also actively participates in relevant horizontal committees that have a direct impact on milk and milk products standards such as:

- General Principles (CCGP)
- Food Hygiene (CCFH)
- Food Labeling (CCFL)
- Food Additives and Contaminants (CCFAC)
- Method of Analysis and Sampling (CCMAS)
- Import/Export Inspection and Certification System (CCFICS)
- Residues of Veterinary Drugs in Food (CCRVDF)
- Nutrition and Food for Special Dietary Uses (CCNFSDU)
- Pesticide Residues (CCPR)

3. RECENT WORK OF THE CCMMP

The CCMMP has been doing pioneering work in revising the standards for milk products. So far, 11 standards have been finalized and adopted by the CAC. Some of the important standards of the Committee and the improvisation of the standards due to interventions made by the Indian delegation at various sessions are presented below.

4. GENERAL STANDARD FOR USE OF DAIRY TERM

It is important to mention that during the course of revision, the 'Code of Principles Concerning Milk and Milk Products' was re-drafted and named the 'General Standard for Use of Dairy Terms'.

These general standards define milk, milk products and composite milk products, and specify how and when milk and dairy terms may be used. The importance of this standard can be judged from the fact that it has been referred to in the Terms of Reference of the CCMMP. At the second session of the Committee held in Rome from May 27-31, 1996, and at the 23rd Session of the Codex Alimentarius Commission, the Indian delegations were successful in getting the following changes.

4.1 Definition of Milk

The definition of milk as proposed by the IDF was somewhat vague because it covered the entire range of animals which produce milk. Besides cow, buffalo, sheep and goat, the list, inter alia, included animals which normally were not domesticated for milking purposes. India proposed the following definition, which was accepted and is part of the standard: 'Milk is the normal mammary secretion of milking animals obtained from one or more milkings without either addition to it or extraction from it, intended for consumption as liquid milk or for further processing.'

4.2 Revised Standard for Butter

At the 23rd Session of the CAC, the Indian delegation endorsed the standard of butter, except the proposed maximum level of lead, as 0.05 mg/kg. The Indian delegation reserved its position on this proposed level, as it does not appear to be based on any sound scientific rationale.

It may be pointed out that the CCFAC, in its 31st Session held in The Hague, Netherlands, during March 22-26, 1999, decided that the 'Draft Maximum Level for Lead' be returned to Step 6 for re-drafting. The CCFAC took this decision in view of the:
a. Need for an appropriate test method for a certain level of lead. Even the IDF so far has no standard for the determination of lead in butter.
b. Need for using data of good quality on the food produced, according to the GAP and the GMP.
c. Pending JECFA evaluation of lead in June 1999.

In developing countries the use of leaded petrol is very common and the use of unleaded petrol is slowly gaining momentum. It would, therefore, take some time to lower down the level of lead in the environment. In view of this, it is unrealistic at present for developing countries to achieve the proposed level of lead in butter.

In the light of the position explained above, the Indian delegation suggested that the proposed level of lead be put in square brackets. However, the CAC adopted the standard of butter as the level of lead had been endorsed by the CCFAC.

4.3 Revised Standard for Milk Fat Products

In the earlier Codex standard, ghee was not included in the standard of milk fat products. The Indian delegation to the second session was successful in getting the name 'Ghee' incorporated into the standard.

4.4 Revised Standard for Milk Powders and Cream Powder

The Revised Standard for Milk Powders and Cream Powder is, in general, acceptable to the dairy industry in India. The Indian delegation was successful in getting the anti-oxidant BHA incorporated into the Codex standard. However, these standards are slightly different from our own standards as they prescribe minimum protein content.

In addition to the above, the following standards were approved by the 23rd Session of the CAC:
- Revised Standards for Evaporated Milk
- Revised Standards for Cheese

k Revised Standards for Whey Cheese
k Revised Standards for Cheese in Brine

4.5 Series Standards for Individual Cheese

At the time of the re-drafting of the individual standards of cheese, the only raw material permitted was 'Cow's Milk'. However, due to continued efforts by India and also the submission of scientific evidence, which showed that buffalo milk is equivalent to cow's milk for cheese-making, this paper identified five reasons for the similarities of cow's milk to buffalo milk. This paper was finally submitted by the IDF to the CCMMP so that the restriction on the use of buffalo milk in individual cheese standards could be eliminated.

The IDF submission to the CCMMP is given below.

PROPOSAL TO REMOVE THE RESTRICTIONS ON THE USE OF BUFFALO MILK AND THE MIXTURE OF BUFFALO AND COW'S MILK FROM CHEESE STANDARDS

It is technologically possible to make cheese from the milk of either cow or buffalo or a mixture of both.

This document briefly discusses the similarity between cow and buffalo milk used for cheese-making and identifies five areas of similarity. Similarity in all five areas is considered important.

Therefore, the IDF recommends that the milk from cows and buffaloes be treated as equivalent in all cheese standards for the following reasons:

a. Zoological Classification

As per the FAO Publication, cows and buffaloes belong to the same zoological order, sub-order, family and tribe (bovine).

b. Gross Composition

Table 1 shows the composition of milk from a number of breeds of cows and the composition of milk from buffaloes.

The figures relating to the composition of cow's milk show a variation in fat, protein and whey protein contents between the various breeds shown. As with cow's milk, buffalo milk fat, protein and whey protein levels can vary. In terms of cheese-making, the effects of such variations are commonly overcome by standardization to produce a particular protein/fat ratio, depending on the type of cheese being made. Lactose and ash values are similar for both types of milk.

c. Casein Composition

The amounts of alpha S1-casein, beta-casein and kappa-casein, the major caseins, are similar in both types of milk. Moreover, the amino acid composition of these proteins is also similar in both types of milk. Alpha S1-casein is important in the structure of cheese.

d. Fat Composition

The short chain fatty acid composition (C4 to C12) of both cow and buffalo milk fats is very similar. These fatty acids are important in cheese flavor development.

e. Cheese-making

Technological developments in cheese-making from buffaloes milk and mixtures of cow and buffalo milk have resulted in cheese that is similar to that produced from cow's milk alone.

Table 1: Cow and Buffalo Milk Composition

Breed	Fat	Casein	Whey	Lactose Protein	Ash	Total Solids
Cows						
Ayrshire	3.97	2.68	0.60	4.63	0.72	12.69
Brown Swiss	3.8	2.63	0.55	4.80	0.72	12.69
Guernsey	4.58	2.88	0.61	4.78	0.75	13.69
Holstein	3.56	2.49	0.53	4.61	0.73	11.91
Jersey	4.97	3.02	0.63	4.70	0.77	14.14
Zebu (Indian Cow)	4.64	2.64	0.66	4.44	0.73	13.8
Buffaloes						
Buffalo	6.71	3.62	0.90	4.45	0.80	16.32

5. MAJOR ACHIEVEMENTS OF THE CCMMP

During the revision process in the CCMMP, the following major improvements, compared to the old set of standards, have been achieved:

- Acceptance of 11 standards, including the General Standard for Use of Dairy Terms.
- Favoritism towards cow's milk has been abandoned.
- Product definitions, additives provisions and compositional requirements have been brought up-to-date.
- Many necessary details have been removed or transferred to appendices.
- Contaminants and hygiene issues have been included.
- Labeling provisions have been more aligned with horizontal Codex provisions.
- Certain standards have been merged and rationalized.
- The number of standards for individual cheese varieties has been reduced.
- Standardization of composite milk products (flavored milk products) has virtually been abandoned.
- Standards for mozzarella and dairy spreads have been included in the work program.
- Protein adjustment of preserved milk and liquid milk for direct consumption has been introduced.

6. CONCLUSION

The Codex Committee on Milk and Milk Products has been doing pioneering work in the field of the dairy industry. This module also vindicates the point that, by effective intervention based on scientific grounds, it is possible to modify the Codex standards, as has been done by India in the case of the definition of milk.

Cereals and Cereal Products Industry, Including Cereals, Pulses, Legumes and Tree and Ground Nuts

SCOPE OF MODULE

This module introduces some of the Codex standards directly relevant to the cereals and cereal products industries. The trainees will be exposed to the broad range of Codex norms covering dietary staples such as wheat, rice, pulses and legumes. This module also introduces the Codex norms for ground and tree nuts as these are not covered elsewhere in this manual and provide a major source of protein and other nutrients in certain diets.

This module is relevant to primary producers, food processors, and food handlers (storage/transport providers). These operations may be carried out in a single establishment/premise, or they may be separated with food processors sourcing products from independent primary producers.

INTRODUCTION

Cereals, pulses, legumes and tree and ground nuts provide dietary staples in many communities throughout the world. In some countries, such as India, the government has managed the distribution of raw products. The consumption of these products predominates in societies dependent on vegetarian diets, although they are consumed widely in non-vegetarian diets. In more recent years, there has been an increase in international knowledge about the health risks associated with many of these raw products. The Codex Alimentarius Commission has responded to such issues as they have been identified and, utilizing the principle of found-science, has developed guidance for governments. Codex places importance on all aspects of the food chain in relation to all food products. Good Agricultural Practice (GAP) is pivotal to ensuring the quality and safety of the final product, irrespective of whether it is consumed raw or cooked or further processed before eating. The GAP starts with farm inputs (soil nutrients, fertilizers, herbicides – pre- and post- emergent), crops management, harvesting techniques to minimize the growth of molds that may result in risks to human health, such as aflatoxins in corn and/or ground nuts, storage (including the use of post-harvest chemicals, moisture control and aeration techniques) and the transport of the harvested product.

An increasing demand for processed (ready-to-eat, etc) food has been stimulated by dual family incomes and a general increase in the level of wealth, less time for food preparation, and generally busier lifestyles. Many food items today contain processed cereals, pulses, legumes and tree and/or ground nuts. Safe handling, Good Hygienic Practice (GHP), supported by the application of the HACCP, and proper storage and handling are fundamental to ensuring the safety and quality of the final product. An increase in world trade, and greater consumer demand in developed nations for certain food products,

such as 'organically produced' or from low chemical input farming is stimulating the export potential for these products. Developing countries are taking advantage of these trade opportunities to build national wealth.

Exported produce that conform to Codex norms minimize trade risks and vulnerabilities. World Trade Organization agreements (see Section 2, Module 5 of this manual) are intended to provide a level of protection to Member Countries of the WTO from demands by trading partners for measures more stringent to Codex, unless scientifically justified.

Conversely, imports provide the potential to meet the national shortfall due to seasonal fluctuations. The use of Codex norms as the basis for imported products will provide assurance to the national population of the safety of the product.

It is important to note that the Codex mandate is solely to protect the health and safety of consumers and to facilitate trade. The production of the commodities addressed in this module may call upon plant and plant health issues. These may be found under the International Phytosanitary Portal at: www.ippc.int.

The Codex standards discussed below have been selected for their importance to India. However, there may be other standards that are important to a particular industry sector in an economic sense and these, therefore, should be studied by those interest groups. These may be found in the Codex Alimentarius Volume 7: Cereals, Pulses and Legumes, including Derived Products and Vegetable Proteins. The respective adopted Codex texts are listed at the conclusion of this module.

1. CODEX COMMITTEES

The Codex Committee on Cereals, Pulses and Legumes, hosted by the Government of the United States of America, commenced work in 1980. This Committee was adjourned following its 9th Session in 1994 after updating the standards, codes and recommendations to take account of the contemporary food standard-setting methodology. With a stronger focus within Codex on science-based requirements for achieving food safety, any issues related to commodities in the area of cereals, pulses and legumes are now taken up by the general, or horizontal, committees (see Section 6 of this manual). The Codex Alimentarius Commission prior to 1980 adopted the Codes of Hygienic Practice for tree and ground nuts. However, as these have not been rescinded, they remain relevant in the context of the World Trade Organization framework. Other Codex Committees, because of their specific relevance to another subordinate Codex body, developed some of the Codex norms relevant to this industry sector. For example, the Regional Coordinating Committee for Africa developed the Codex Standard on Couscous, and the Regional Coordinating Committee for Asia developed the Codex Standard on Coconut.

There are a number of adopted norms in the Codex Alimentarius of which Codex stakeholders should be aware, and that may be called up by a World Trade Organization dispute panel if such a situation arises in the future. A list of relevant Codex texts is given at the conclusion of this module.

2. CODEX TEXTS

The Codex standards referred to in this section are known as 'commodity' standards. They contain specific information about certain commodities that will assist in assuring Good Agricultural Practice (GAP), facilitate trade and protect the consumer in terms of human health and against deceptive and fraudulent practices. These commodity standards must meet the requirements of the relevant general standards and, if applied in international trade, they should protect countries from unjustified trade barriers.

All the commodity standards follow the standard Codex format, providing important information in a logical manner:

- The scope of the text.
- A description of the commodity covered by the text.
- The essential composition and quality factors.

- Contaminants.
- Packaging.
- Labeling.
- Methods of analysis and sampling.

Non-essential or commercial-type factors are clearly excluded from the essential safety and quality factors within standards and appear in annexes to the commodity standards. These have been provided by Codex for guidance only and are not intended to be applied within the meaning of the Codex acceptance provisions in Section 4 of the General Principles of the Codex Alimentarius. While these provisions would be more relevant to governments, the industry and consumers should be aware that such provisions may not be used as barriers to trade, although they may be taken up in official trade agreements between countries (bilateral agreements) or between traders, provided all official requirements are satisfied.

There have been special safety concerns about contaminants in some products. In response to these concerns, either regional or worldwide, Codex has developed specific requirements within the commodity standards. In some instances, standards have been especially elaborated to address the health and safety issue, such as aflatoxins in peanuts, intended for further processing.

Such standards and provisions have been taken up in the discussion on the selection of Codex texts addressed below. Note, however, that there are other Codex texts not specifically included in the selection below that address other relevant commodities.

2.1 Wheat and Durum Wheat

The Codex Standard for Wheat and Durum Wheat[39] applies to wheat grain obtained from the species Triticum aestivium L. and durum grain, obtained from Triticum durium Desf., and intended for processing for human consumption. It does not apply to club wheat, red durum wheat, durum wheat semolina or products derived from wheat.

The standard sets out general quality and safety factors, the moisture content, maximum levels for ergot, parameters for extraneous matter, toxic or noxious seeds and filth. It provides special precautions with regard to heavy metals and the Maximum Permitted Concentrations (MPCs) for contaminants and the Maximum Residue Limits (MRLs) for pesticide residues, as adopted by the Codex Alimentarius Commission from time-to-time. These should be adhered to.

The standard calls up the recommendations of the General Principles for Food Hygiene[40] and includes some additional parameters for achieving a hygienic product, such as limits for micro-organisms, parasites, and any substance originating from micro-organisms.

Packaging of wheat and durum wheat is important for safeguarding the hygienic, nutritional, technological and organoleptic qualities of the product. The standard describes, in general terms, the types of sanitary status of packaging materials that should be used. The section of the standard that sets out requirements for the labeling of the product provides additional requirements to those included in the Codex General Standard for the Labeling of Pre-packaged Food.[41] These relate to the name of the product, and the labeling of non-retail containers. Similiarly, the section relating to Methods of Analysis and Sampling to assist users where more than one factor limit and/or method of analysis is given in the Codex Alimentarius Volume 13: Methods of Analysis and Sampling.

2.2 Rice

The Codex Standard for Rice[42] applies to husked rice, milled rice and parboiled rice intended for use as human food and presented in either a packaged form or sold loose directly to the consumer. The standard specifically excludes glutinous rice. Each of these terms is defined in the standard.

[39]CODEX STAN 199-1995. [40]CAC/RCP 1-1969, Rev. 1999. [41]CODEX STAN 1-1985 Rev. 2001. [42]CODEX STAN 198-1995.

The standard sets out general quality and safety factors, the moisture content, parameters for extraneous matter, filth, other (foreign seeds, husks, bran, fragments of straw, etc) and inorganic extraneous matter (stones, sand, dust, etc). It provides special precautions with regard to heavy metals and the Maximum Permitted Concentrations (MPCs) for contaminants and the Maximum Residue Limits (MRLs) for pesticide residues, as adopted by the Codex Alimentarius Commission, from time-to-time. These should be adhered to.

The standard calls up the recommendations of the General Principles for Food Hygiene[43] as the basis for achieving safe, quality products from the farm-to-the-fork. It includes some additional parameters for achieving a hygienic product, such as limits for micro-organisms, parasites, and any substance originating from micro-organisms.

The packaging of rice wheat and durum wheat is an important element in safeguarding the hygienic, nutritional, technological and organoleptic qualities of the product. The standard describes the types of sanitary status of packaging materials that should be used. The section of the standard that sets out requirements for the labeling of the product provides additional requirements to those included in the Codex General Standard for the Labeling of Pre-packaged Food.[44] These relate to the name of the product, and the labeling of non-retail containers. Similiarly, the section relating to Methods of Analysis and Sampling refers to the Codex Alimentarius Volume 13.

Annexes appended to the standard provide classification options for long, medium and short grain rice where traders utilize such classifications. Additional information is also provided on quality factors to assist in meeting buyer preferences. The relevant methods of analysis are listed for the determining of each of these factors.

2.3 Pulses

The Codex Standard for Certain Pulses[45] applies to the following whole, shelled or split pulses:

- Beans of Phaseolus spp. with a number of species exceptions.
- Lentils of Lens culinaris Medic. Syn. Lens esculenta Moench.
- Peas of Pisum sativum L.
- Chick peas of Cicer arientinum L.
- Field beans of Vicia faba L.
- Cow peas of Vigna unguiculata (L.); Walp., syn. Vigna sesquipedalis Fruhw., Vigna sinensis (L.) Savi exd Hassk.

The essential composition and quality factors require pulses to be safe and suitable for human consumption, free from abnormal flavor, odors and living insects. They should also be free from filth such as impurities of animal origin, including dead insects, in amounts that may represent a hazard to human health. Two maximum moisture levels are provided to meet different climatic conditions and marketing practices. These take into account countries with tropical climates or when long-term storage is a normal commercial practice, and for more moderate climates or when short-term storage is the normal commercial practice. Other quality factors include parameters for extraneous mineral or organic matter (dust, twigs, seeds, fragments, etc) as well as topic or noxious seeds, including Crotolaria, Corn cockle, Castor bean, Jimson wee, etc.

The standard requires pulses to comply with the Maximum Permitted Concentrations (MPCs) for contaminants, Maximum Residue Limits (MRLs) for pesticides, and maximum mycotoxin limits established by the Codex Alimentarius Commission for this commodity category.

The standard calls up the recommendations of the General Principles for Food Hygiene[46] and includes some additional parameters for achieving a hygienic product, such as limits for micro-organisms, parasites, and any substance originating from micro-organisms.

[43]CAC/RCP 1-1969, Rev.1999. [44]CODEX STAN 1-1985 Rev. 2001. [45]CODEX STAN 171-1989, Rev. 1-1995. [46]CAC/RCP 1-1969, Rev. 1999.

The packaging of pulses is important for safeguarding the hygienic, nutritional, technological and organoleptic qualities of the product. The standard describes, in general terms, the types of sanitary status of packaging materials that should be used. The section of the standard that sets out the requirements for the labeling of the product provides additional requirements to those included in the Codex General Standard for the Labeling of Pre-packaged Food.[47] These relate to the name of the product, and the labeling of non-retail containers.

The section relating to Methods of Analysis and Sampling refers to the Codex Alimentarius Volume 13. Further, non-mandatory recommendations are included in the annex to the standard where more than one factor limit is given.

2.4 Ground Nuts

The Codex Standard for Peanuts applies to peanuts[48] either in the pod or in the form of kernels obtained from varieties of the species Arachis hypogaea L. intended for processing for direct human consumption. This followed the 1979 adopted Recommended Code of Practice for Ground Nuts (Peanuts).[49]

The standard sets out the essential composition and quality factors, including moisture content, parameters for moldy, rancid or decayed kernels, filth and organic and inorganic extraneous matter. The standard requires that peanut and peanut products shall be free from heavy metals in amounts which may represent a hazard to human health. It also requires that peanuts comply with the provisions of the Codex Alimentarius Commission in respect to pesticide residues, hygiene and labeling, with additional requirements as covered earlier in the discussion on rice and wheat.

The labeling requirements refer to the Codex General Standard for Labeling (see discussion on rice and wheat above), and provide additional requirements for information for non-retail containers. Methods of Analysis refers to Volume 13 of the Codex Alimentarius, and additional non-mandatory requirements are set out in the annex, where more than one factor limit and/or method of analysis is given.

Subsequent to the adoption of the Standard for Peanuts and in response to worldwide concern about the health risks associated with peanuts, the Codex Alimentarius Commission adopted a further Standard for Aflatoxins in Peanuts Intended for Further Processing.[50] Designed for enforcement and controls concerning total aflatoxins in bulk consignments of peanuts traded in the export market, this standard provides a benchmark for national requirements. It sets out a concise sampling plan that calls for a single 20 kg laboratory sample of shelled peanuts, equivalent to 27 kg unshelled peanuts, to be taken from a lot and tested against a maximum level of 15 micrograms per kilogram total aflatoxins. Following a section on definitions, the standard details sampling plans, sample preparation, analytical methods, including performance criteria.

2.5 Tree Nuts

Codex adopted in 1979 a Recommended Code of Practice for Tree Nuts[51] which specifically covers almonds, but which is generally applicable to all tree nuts, including filberts or hazelnuts, pecans, brazils, chestnuts, and macadamia nuts. It addresses all tree nut products, including blanched, diced, ground and similar products. The code is intended to provide the basic hygienic requirements for orchards, farm processing, including shelling and hulling, and/or commercial shelling or in shell operations.

This code provides guidance on environmental sanitation in growing and food production areas, sanitary harvesting and food production, as well as guidance on plant facilities and operating requirements such as plant construction and layout, facilities and control measures for water, waste disposal, lighting, ventilation, facilities for personnel, vermin control, personal hygiene, laboratory procedures, and end-product specifications.

[47]CODEX STAN 1-1985 Rev. 2001. [48]CODEX STAN 200-1995. [49]CAC/RCP 22, 1979. [50]CODEX STAN 209-1999, Rev. 1-2001.
[51]CAC/RCP 6, 1972.

The Codex Standard for Grated Desiccated Coconut[52] refers to the finished product obtained from coconut (Cocos nucifera L.) and, for the purposes of commercialization, describes the three classifications of the product. An earlier (1971) Recommended Code of Practice for Desiccated Coconut remains in the Codex Alimentarius[53] and is available for further reference.

The Codex standard includes composition and quality factors that address the essential quality of the raw product and the organoleptic properties of the product. Analytic characteristics cover factors such as total acidity of extracted oil, moisture, oil content, ash content and extraneous vegetable matter. Food additives covered by the standard are limited to the maximum level of sulphur dioxide in the final product. Contaminant (MPCs) and pesticide residue limits (MRLs) must comply with those set out in the Codex Alimentarius. The hygiene requirements set out in the General Principles of Food Hygiene are referred to, along with Good Manufacturing Practice (GMP) and end-product requirements.

The standard sets out requirements for the packaging, transport and storage of the product to safeguard the hygienic, nutritional, technological and organoleptic qualities of the product. Product labeling must conform with the Codex General Standard for the Labeling of Pre-packaged Food as well as accurate product description. The Methods of Analysis provided by the standard refer to Volume 13 of the Codex Alimentarius.

3. HORIZONTAL ISSUES

Trainees should ensure that they are conversant with the horizontal Codex issues covered in Section 6 of this manual that impact these raw and processed commodities. A number of linkages between Codex texts have been highlighted in the discussion above. These cover topics including the maximum residue limits for agricultural chemicals, maximum permitted concentration of contaminants and heavy metals methods of analysis and sampling, including the sampling of pre-packaged food. The General Principles for Food Hygiene[54] is a key document that sets the requirements for the whole food chain in respect to food safety. Importantly, the General Principles set out the principles for the Application of the Hazard Analysis Critical Control Point System (HACCP).

Another Codex text that has a wide application throughout all industry sectors is the Guidelines for the Production, Processing, Marketing and Labeling of Organically Produced Food.[55] These guidelines are addressed in Section 6, Module 15. Further, imported and exported products should be managed under inspection and certification systems which conform to contemporary approaches that do not present unjustified trade barriers. Codex guidance in this regard is also covered in Section 6, Module 17. The linkage between these horizontal texts (Section 6 of this manual) and the texts covered in this module are complementary. Accordingly, trainees with an interest in this particular module should also refer to Section 6 of this manual.

4. CONCLUSION

While many consumers rely on raw cereal, pulses, legumes, tree and ground nut products, and prepare these food items under traditional methods, there is a growing demand for ready-to-cook products such as pulao rice with spices and flavoring, flavored rice, biryani, idli or dosa mixes, ready-to-cook chapattis and so on. The number and range of such products will increase to meet the growing consumer demands for convenience food that suits changing lifestyles. There is little surprise that food companies around the world are busy developing new recipes. However, in response to these opportunities, there must be a fundamental adherence to the principles of food hygiene. Codex plays a major role in ensuring that there are internationally agreed measures on which to base production, processing, sampling, labeling, handling and storage of product through to the point-of-sale to the consumer. The onus is on the food-producing industries to be aware of the requirements that achieve the quality and safety of products.

[52]CODEX STAN 177-1991. [53]CAC/RCP 4,1971. [54]CAC/RCP 1-1969, Rev. 3-1997. [55]CAC/GL 29-1999, Rev. 1-2001.

Reference Latest Update	Title of Codex Text
CODEX STAN 131 1981	Unshelled Pistachio Nuts
CODEX STAN 145 1985	Canned Chestnuts and Chestnut Puree
CODEX STAN 151 1985 Rev. 1 – 1995	Gari
CODEX STAN 152 1985 Rev. 1 – 1995	Wheat Flour
CODEX STAN 153 1985 Rev. 1 – 1995	Maize (Corn)
CODEX STAN 154 1085 Rev. 1 – 1995	Whole Maize (Corn) Meal
CODEX STAN 155 1985 Rev. 1 – 1995	Degermed Maize (Corn); Meal and Maize (Corn Grits)
CODEX STAN 163 1987 Rev. 1 – 2001	Wheat Protein Products
CODEX STAN 169 1989 Rev. 1 – 1995	Whole and Decorticated Pearl Millet Grains
CODEX STAN 170 1989 Rev. 1 – 1995	Pearl Millet Flour
CODEX STAN 171 1989 Rev. 1 – 1995	Certain Pulses
CODEX STAN 172 1989 Rev. 1 – 1995	Sorghum Grains
CODEX STAN 173 1989 Rev. 1 – 1995	Sorghum Flour
CODEX STAN 174 1989	Vegetable Protein Products
CODEX STAN 175 1989	Soy Protein Products
CODEX STAN 176 1989 Rev. 1 – 1995	Edible Cassava Flour
CODEX STAN 177 1991	Grated Desiccated Coconut
CODEX STAN 178 1991 Rev. 1 – 1995	Durum Wheat Semolina and Durum Wheat Flour
CODEX STAN 198 1995	Rice
CODEX STAN 199 1995	Wheat and Durum Wheat
CODEX STAN 200 1995	Peanuts
CODEX STAN 201 1995	Oats
CODEX STAN 202 1995	Couscous
CODEX STAN 209 1999 Rev. 1 – 2001	Aflatoxins in Peanuts Intended for Further Processing: Maximum Level
CAC/RCP 4 1971	Desiccated Coconut
CAC/RCP 6 1972	Tree Nuts
CAC/RCP 22 1979	Ground Nuts (Peanuts)

Fruits and Vegetables Industries

INTRODUCTION

This module will acquaint trainees with the sound practices to be followed in the fruits and vegetable industries, right from production in the agricultural field to harvesting, procurement, storage, distribution, processing, canning, packaging and handling. It is needless to emphasize that the adoption of good agricultural/processing and hygienic practices at every stage, from farm-to-table, will ensure safe and sound quality products, reasonably free from all types of probable contaminants and conforming to statutory requirements. The practices described here cover fresh as well as processed fruits and vegetable products, including canned products.

The Codex Alimentarius Commission (CAC) has done considerable work on the standardization of fruits and vegetables, including processed and canned products. The CAC has also developed a Code of Practice for Canned Products.

1. DETAILS OF THE COMMITTEE OF THE CAC

The Committees working under the CAC entrusted with the job of the standardization of fruits and vegetable products, Terms of References and the number of sessions held so far are described below.

1.1 Codex Committee on Fresh Fruits and Vegetables (CX-731)

Established by the 17th Session of the Commission (1987) as the Codex Committee on Tropical Fresh Fruits and Vegetables, its name and Terms of Reference were amended by the 21st Session of the Commission (1995). Host government: Mexico.

The sessions:
1. Mexico City, June 6-10, 1988
2. Mexico City, March 5-9, 1990
3. Mexico City, September 23-27, 1991
4. Mexico City, February 1-5, 1993
5. Mexico City, September 5-9, 1994
6. Mexico City, January 29-February 2, 1996
7. Mexico City, September 8-12, 1997
8. Mexico City, March 1-5, 1999

Terms of Reference

a. To elaborate worldwide standards and Codes of Practice as may be appropriate to fresh fruits and vegetables.

b. To consult with the UN/ECE (United Nations/Economic Commission for Europe) Working Party on Standardization of Perishable Produce in the elaboration of worldwide standards and Codes of Practice, with particular regard to ensuring that there is no duplication of standards or Codes of Practice and that they follow the same bound format.*
c. To consult, as necessary, with other international organizations which are active in the area of the standardization of fresh fruits and vegetables.

*Note: The Working Party on Standardization of Perishable Produce of the United Nations Economic Commission for Europe.

1. May recommend that a worldwide Codex standard for fresh fruits and vegetables should be elaborated and submit its recommendations either to the Codex Committee on Fresh Fruits and Vegetables for consideration or to the Commission for approval.
2. May prepare 'proposed draft standards' for fresh fruits or vegetables at the request of the Codex Committee on Fresh Fruits and Vegetables or of the Commission for distribution by the Codex Secretariat at Step 3 of the Codex Procedure, and for further action by the Codex Committee on Fresh Fruits and Vegetables.
3. May wish to consider 'proposed draft standards' and 'draft standards' for fresh fruits and vegetables and transmit comments on them to the Codex Committee on Fresh Fruits and Vegetables at Steps 3 and 6 of the Codex Procedure.
4. May perform specific tasks in relation to the elaboration of standards for fresh fruits and vegetables at the request of the Codex Committee on Fresh Fruits and Vegetables.
5. Codex 'proposed draft standards' and 'draft standards' for fresh fruits and vegetables at Steps 3 and 6 of the Codex Procedure should be submitted to the UN/ECE Secretariat for obtaining comments.

1.2 Codex Committee on Processed Fruits and Vegetables (CX-713)

Host Government: United States of America.

The sessions:
1. Washington, D.C., May 29-30, 1964
2. Rome, June 8-11, 1965
3. Rome, June 6-10 1966
4. Washington, D.C., June 19-23, 1967
5. Washington, D.C., May 13-17, 1968
6. Washington, D.C., May 12-16, 1969
7. Washington, D.C., June 1-5, 1970
8. Washington, D.C., June 7-11, 1971
9. Washington, D.C., June 12-16, 1972
10. Washington, D.C., May 21-25, 1973
11. Washington, D.C., June 3-7, 1974
12. Washington, D.C., May 19-23, 1975
13. Washington, D.C., May 9-13, 1977
14. Washington, D.C., September 25-29, 1978
15. Washington, D.C., March 17-21, 1980
16. Washington, D.C., March 22-26, 1982
17. Washington, D.C., February 13-17, 1984
18. Washington, D.C., March 10-14, 1986
19. Washington, D.C., March 16-20, 1988

Terms of Reference

To elaborate worldwide standards for all types of processed fruits and vegetables, including dried products, canned dried peas and beans, jams and jellies, but not dried prunes, or fruits and vegetable juices. The Commission has also allocated to this Committee the work of the revision of standards for quick frozen fruits and vegetables.**

**Note: A Joint ECE/Codex Alimentarius Groups of Experts on Standardization for Quick Frozen Food (CX-705) was earlier functioning since 1965. The groups held a total of 13 meetings in Geneva/Rome up to 1980. It was subsequently abolished by the 23rd Session of the Commission in 1999 and its work was transferred to the Codex Committee on Processed Fruits and Vegetables.

1.3 Ad Hoc Codex Intergovernmental Task Force on Fruits and Vegetable Juices (CX-801)

Host Government: Brazil.
Sessions: Established by the 23rd Session of the Commission (1999).***

Terms of Reference

The ad hoc task force shall:
a. Revise and consolidate the existing Codex standards and guidelines for fruit and vegetable juices and related products, giving preference to general standards.
b. Revise and update the methods of analysis and sampling for these products.
c. Complete its work prior to the 26th Session of the Commission (2005).

***Note: A Joint ECE/Codex Alimentarius Group of Experts on Standardization for Fruit Juices (CX-704) was earlier functioning since 1964 to 1990. The group held a total of 19 meetings in Geneva/Rome up to 1990. It was subsequently abolished by the 23rd Session of the Commission in 1999 and its work has been entrusted to the Codex Ad Hoc Intergovernmental Task Force on Fruit and Vegetable Juices.

2. LIST OF STANDARDS OF FRUITS AND VEGETABLES, INCLUDING PROCESSED PRODUCTS

The list of current official standards on this sector is available at: www.codexalimentarius.net/standard_list.asp.

3. A FEW SALIENT DELIBERATIONS ON THE SUBJECT BY CODEX

a. To establish a Priority List for the Standardization of Processed Fruits and Vegetables: The criteria for the establishment of work priorities, as outlined in the Codex Alimentarius Procedural Manual, as well as the Commission's Medium-term Plan, should be taken into account when establishing and maintaining the priority list.
b. To revise and/or standardize the following commodities at a future session of the CCPFV:
- Canned berry fruits.
- Canned fruit cocktail.
- Canned mango.
- Canned mushrooms.
- Canned pineapple.
- Canned tropical fruit salad.
- Chutneys (including mango chutney).
- Dried figs.
- Grated desiccated coconut.
- Quick frozen broccoli florets.
- Table olives.
- Whole dates.

The United Nations Economic Commission for Europe (UN/ECE) Standards for Dried Figs (DF-14) and Whole Dates (DF-08) can be taken as a starting basis for the elaboration of proposed draft Codex standards for these commodities. The organizations should cooperate in order to avoid duplication of effort. The International Olive Oil Council should collaborate with the Codex Secretariat in the elaboration of the proposed draft Codex Standard for Table Olives.

c. Guidelines for packing media for canned vegetables be elaborated.
d. Guidelines for packing media for canned fruits be established.

4. FORMAT FOR CODEX STANDARDS FOR THESE PRODUCTS

The draft revised Codex standard for canned pears is reproduced below so as to give an idea about the specimen format used by Codex in the publication of standards of such products.

DRAFT REVISED CODEX STANDARD FOR CANNED PEARS

1. SCOPE

This standard applies to canned pears offered for direct consumption, including for catering purposes or for repacking, if required. It does not apply to the product when indicated as being intended for further processing.

2. DESCRIPTION

2.1 Product Definition

Canned pears is a product:
a. Prepared from pears of proper maturity of commercial canning varieties, conforming to the characteristics of the fruit of Pyrus communis or Pyrus sinensis. Pears are peeled, cored, and stemmed, except that the whole may not need to be peeled, cored, or stemmed and half pears may not need to be peeled.
b. Packed with water or any other suitable liquid packing medium or may be packed with seasonings or other flavoring ingredients.
c. Heat processed in an appropriate manner before or after being hermetically sealed in containers so as to prevent spoilage.

2.2 Styles

2.2.1 Whole: Peeled or Unpeeled, with Cores Removed or Left in

Halves: Peeled or unpeeled, with stems and cores removed, and cut into two approximately equal parts.
Quarters: Peeled and cut into four approximately equal parts.
Sliced: Peeled and cut into wedge-shaped sectors.
Diced: Peeled and cut into cube-like parts.
Pieces or irregular pieces: Peeled and comprising irregular shapes and sizes.

2.2.2 Other Styles

Any other presentation of the product should be permitted, provided that the product:
a. Is sufficiently distinctive from other forms of presentation laid down in the standard.
b. Meets all relevant requirements of the standard, including requirements relating to limitations on defects, drained weight, and any other requirements in the standard, which are applicable to that style in the standard and most closely resembles the style or styles intended to be provided for under this provision.
c. Is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Composition

3.1.1 Basic Ingredients

3.2 Packing Media

In accordance with the Codex Guidelines on Packing Media for Canned Fruit (under development).

3.3 Other Permitted Ingredients

a. Spices, spice oils and mint.
b. Lemon juice (single strength or concentrated) added as an acidulant or flavor enhancer.

3.4 Quality Criteria

3.4.1 Color, Texture and Flavor

Canned pears shall have normal flavor, odor and color (except for colored pears) and shall possess the texture characteristics of the product. A slight pink discoloration should not be regarded as a defective.

3.4.2 Uniformity of Size

Whole, halves, quarters: In 95 per cent by count of units that are most uniform in size. The weight of the largest unit should be no more than twice the weight of the smallest unit, but if there are less than 20 units, one unit may be disregarded. Where a unit has broken in the container, the broken pieces are reassembled to approximate a single unit of the appropriate style.

3.4.3 Defects and Allowances

The product should be substantially free from defects such as harmless plant material, peel (in peeled styles), core material, blemished units, and broken units.

Certain common defects should not be present in amounts greater than the following limitations.

Defects: Maximum Limits

a. Blemished and trimmed pear units: Blemished units with surface discoloration and spots that definitely contrast with the overall color and which may penetrate into the flesh, such as bruises, scab, and dark discoloration. Trimmed units that have deep gouges, whether due to physical trimming or other means, and which definitely detract from the appearance. Trimmed units are considered defective only in whole, halved, and quartered styles. (i) Total, 30 per cent by count; or three units per container when the count is less than 10; provided the sample average is no more than 30 per cent – but limited to – (ii) 20 per cent by count blemished; or two units per container when the count is less than 10; provided the sample average is no more than 20 per cent for the blemished.
b. Broken (in whole, halves, and quartered styles only): A unit severed in two or more parts should be considered as one unit when reassembled to the approximate size and shape of an average unit in the container; 20 per cent by count; or two units per container when the count is less than 10; provided the sample average is no more than 10 per cent.
c. Core material (average, except in 'whole-not cored' styles): Consisting of the seed cell, whether loose or attached, with or without seeds. For the purpose of calculating the defect allowance, all pieces of a core in the sample should be aggregated and pieces totaling approximately one-half of a core should be counted as one unit, three units per kg of total contents.
d. Peel (average, except in 'unpeeled' styles): Peel that adheres to pear flesh or is found loose in the container, 10 cm^2 (10 sq cm) aggregate area per kg of total contents.
e. Harmless plant material.
f. Stems or stalks: 1 piece per 3 kg of total contents (in styles in which the stem is customarily removed).
(ii) Leaf (or similar vegetable material), 2 cm^2 per kg of total contents.

g. Seeds (average, except in 'whole-not-cored' styles): Any one pear seed or the equivalent in pieces of one seed that are not included in core material; 8 per kg of total contents.

3.5 Classification of 'Defectives'

A container that fails to meet one or more of the applicable quality requirements, except those based on sample average, should be considered 'defective'.

3.6 Lot Acceptance

A lot will be considered as meeting the applicable quality requirements referred to when:
a. For those requirements which are not based on averages, the number of 'defectives' does not exceed the acceptance number (c) of the appropriate sampling plan in the Codex Alimentarius Sampling Plans for Pre-packaged Food (AQL-6.5).
b. The requirements of Section 3.4, which are based on sample average, are complied with.

4. FOOD ADDITIVES

No name of food additive: maximum level.

4.1 Acidifying Agents

330 Citric Acid Limited by GMP
296 Malic Acid Limited by GMP
334 L Tartaric Acid 1300 mg/kg
270 Lactic Acid Limited by GMP

4.2 Colors (permitted only in special holiday packs)

123 Amaranth
129 Allura Red AC (200 mg/kg of the final product singly or 143 Fast Green FCF in combination)
124 Ponceau 4R
102 Tartrazine

4.3 Flavorings

Natural and artificial flavors, except those which reproduce the flavor of pears. Limited by GMP.

5. CONTAMINANTS

5.1 Heavy Metals

The products covered by the provisions of this standard shall comply with those maximum levels for heavy metals established by the Codex Alimentarius Commission for these products.

5.2 Pesticide Residues

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission for these products.

6. HYGIENE

a. It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3-1997), and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

b. The products should comply with any microbiological criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Food (CAC/GL 21-1997).

7. LABELING

7.1 Canned Pears

Shall be labeled in accordance with the General Standard for the Labeling of Pre-packaged Food (CODEX STAN 1-1985, Rev. 2-1999).

7.2 Name of the Product

7.2.1 The name of the product shall be 'Pears'.

7.2.2 When pears are artificially colored, the declaration should be made as part of the name or in close proximity to the name, including the characterizing color, for example, 'Pears – Artificially Colored Green'.

7.2.3 As part of the name or in close proximity to the name, any flavoring which characterizes the product should be declared, for example, 'With…X…', where appropriate.

7.2.4 The style, as appropriate, shall be declared as a part of the name or in close proximity to the name:
'Whole' (when peeled and not cored); and additionally 'stemmed' or 'unstemmed', as the case may be.
'Whole unpeeled' (when not peeled and not cored); and additionally 'stemmed' or 'unstemmed', as the case may be.
'Whole – cored' (when peeled and cored).
'Whole unpeeled – cored' (when not peeled but cored).
'Halves' (when peeled).
'Halves Unpeeled' (when not peeled).
'Quarters' or 'Quartered'.
'Slices' or 'Sliced'.
'Dice' or 'Diced' or 'Cubes'.
'Pieces' or 'Irregular Pieces'.

7.2.5 Other styles: If the product is produced in accordance with the other styles provision (Section 2.2.2), the label should contain in close proximity to the name of the product such additional words or phrases that will avoid misleading or confusing the consumer.

7.2.6 The name of the product may include the varietal type.

7.3 Labeling of Non-retail Containers

Information for non-retail containers shall either be given on the container or in the accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer, packer or distributor, as well as storage instructions, shall appear on the container. However, lot identification, and the name and address of the manufacturer, packer or distributor may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

8. WEIGHTS AND MEASURES

8.1 Fill of Container

8.1.1 Minimum Fill

The container should be well filled with fruit and the product (including packing medium) should occupy not less than 90 per cent of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20° C, which the sealed container will hold when completely filled.

8.1.2 Classification of 'Defectives'

A container that fails to meet the requirement for minimum fill (90 per cent container capacity) of Section 8.1.1 should be considered as 'defective'.

8.1.3 Lot Acceptance

A lot will be considered as meeting the requirement of Section 8.1.1 when the number of 'defectives' does not exceed the acceptance number (c) of the appropriate sampling plan in the Codex Alimentarius Sampling Plans for Pre-packaged Food (AQL-6.5).

8.2 Minimum Drained Weight

8.2.1 The drained weight of the product should be not less than the following percentages, calculated on the basis of the weight of distilled water at 20° C, which the sealed container will hold when completely filled.

Whole style: 50 per cent.
Halves, quarters, slices, pieces: 53 per cent.
Diced: 56 per cent.

8.2.2 The requirements for minimum drained weight should be deemed to be complied with when the average drained weight of all containers examined is not less than the minimum required, provided that there is no unreasonable shortage in individual containers.

For non-metallic rigid containers such as glass jars, the basis for the determination should be calculated on the weight of distilled water at 20° C, which the sealed container will hold when completely filled less than 20 ml.

9. METHODS OF ANALYSIS AND SAMPLING

See Codex Alimentarius Volume 13.

REFERENCES

1. *Codex Alimentarius Commission Procedural Manual*, as amended from time-to-time. www.codexalimentarius.net/standard_list.asp

Meat and Meat Products Industry, Including Animal Feedstuff

INTRODUCTION

Rapid urbanization and changing dietary habits in recent years have brought about an unprecedented expansion of the livestock industry throughout the developed and developing world. Rapidly expanding livestock production to meet consumption demands is exerting increased pressures on governments, industry and consumers to assure the quality and safety of meat and meat products. The Codex Alimentarius Commission is responding to the world situation by updating the framework principles and guidance texts in order to assist stakeholders in safeguarding meat and meat products.

In a risk-based, farm-to-plate meat hygiene system, all parties from the government, primary producers, handlers and transporters of livestock, processors, traders, retailers and consumers, have a role to play in ensuring the safety and suitability of the product.

Meat hygiene programs should have as their primary goal the protection of public health and should be based on a scientific evaluation of meat-borne risks to human health. Such programs should also take into account all relevant food safety hazards, as identified by research, monitoring and other relevant activities.

Food safety measures can be implemented at many points in the food chain and an optimal meat hygiene system will apply available measures at those points where they are the most efficient and effective in terms of reducing food-borne risks to human health. Owing to the particular nature of meat production systems, the optimization of meat hygiene activities at the processing level requires appropriate information, to be supplied from the primary production level, such as the prevalence of hazards in the animal population from which the meat is sourced.

Food hygiene requirements relating to meat and meat products cannot be considered in isolation. As with all food production, each stage is merely a part of the holistic system of food production. For example, the primary producer must be aware of the health status of the farm animals, stock-feeding practices and the nutritional and residue status of source materials, the handling and administering of veterinary drugs, as well as the national requirements for animal health and the role of trace-back measures (traceability) in the regulatory meat hygiene system. Similiarly, the meat processor or slaughter house must be conversant with, and have the ability to implement fully, the rigorous meat hygiene requirements. They must fully appreciate the role such practices play in achieving food safety as well as potential hazards from source material, such as residues from agricultural and veterinary chemicals, environmental contamination and microbiological hazards present in the animal population. The processor of meat products should also appreciate the general principles for food hygiene, have the ability to detect residues from agricultural and veterinary chemicals, environmental contaminants, or from food additives used in animal feed that may exceed the maximum permitted levels. The processor should also be aware of the need for the appropriate labeling of the product, irrespective of whether it is intended for direct sale to the consumer (retail) or is presented in bulk packaging for on-processing, or for use by the catering industry. Labeling plays a major role in providing consumers with accurate

information of the product and on which they are able to make informed choices, and acquire important information on the handling, storage, and preparation of meat products.

Integrated with the production, slaughter, and processing of meat and meat products is the HACCP system. This topic is covered by the horizontal committee work of the Codex Alimentarius Commission and is covered in Section 6 of this training manual.

1. CODEX FORUMS

There are a number of Committees handling the international standardization work related to meat and meat products. The primary Committee is the Codex Committee on Meat and Poultry Hygiene (CCMPH). This Committee was established by the 8th Session of the Codex Alimentarius Commission (CAC) in 1971 and its Terms of Reference were amended by the 24th Session of the CAC in 2001 to include all matters referring to poultry. The Committee is hosted by the Government of New Zealand and had met only seven times up to 1993. It was reinstated following the 23rd Session of the CAC in 1999 to review the General Code for Hygienic Practice for Meat and Poultry Products.

The Ad Hoc Intergovernmental Task Force on Animal Feeding was established by the CAC in 1999 in response to worldwide concern about the safety of feedstuff for animals used for human consumption. This task force, hosted by Denmark, first met in 2000. It is required to complete its work within a four-year period and provide a full report to the CAC by 2003. Its objectives are, 'with the aim of ensuring the safety and quality of food of animal origin, to develop guidelines or standards as appropriate on Good Animal Feeding Practices (GAFP)'.

The Codex Committee on Processed Meat and Poultry Products formerly handled the elaboration of worldwide standards for processed meat products, including consumer-packaged meat, and for processed poultry meat products. Established by the CAC in 1966, this Committee was abolished by the 23rd Session of the Commission in 1999. The work of the CCMPH to revise and develop complementary texts will provide the necessary guidance to governments and industry on raw product requirements, such as the microbiological performance parameters for monitoring fresh meat. Such measures are in line with the Codex policy for risk-based approaches to achieving food safety.

The Terms of Reference of the CCMPH are very broad insofar as they require the Committee 'to elaborate worldwide standards and/or Codes of Practice as may seem appropriate for meat and poultry hygiene'. At the time of the preparation of this manual, there was an ongoing discussion about removing the specific reference to 'poultry' within the Terms of Reference as the term 'meat' was considered to be inclusive of all products derived from animals, including poultry, lagomorphs, and wild and farmed game, including birds.

The Terms of Reference of the Ad Hoc Task Force for Animal Feeding require this intergovernmental body to:

a. Complete and extend the work previously done by relevant Codex Committees on the Draft Code of Practice for Food Animal Feeding.

b. Address other aspects which are important for food safety, such as problems related to toxic substances, pathogens, microbial resistance, new technologies, storage, control measures, traceability, etc.

c. Take full account of and collaborate with, as appropriate, work carried out by relevant Codex Committees, and other relevant international bodies, including the FAO, WHO, OIE, IPPC.

As noted above, the Codex Committee on Processed Meat and Poultry Products was abolished in 1999. Its Terms of Reference were to: 'elaborate worldwide standards for processed meat products, including consumer packaged meat, and for processed poultry meat products'. The CCMPH noted at its 7th Session in 1993 that the Code of Hygienic Practice for Fresh Meat should take into account meat hygiene throughout the entire food chain, including hygiene provisions related to processed meat products. This issue was under discussion at the time of preparation of this training manual (2003).

2. CODEX TEXTS

The subject range of Codex texts relevant to the meat and meat products industries is extensive. At the time of the preparation of this training module, Codex was in the process of reviewing, updating and elaborating new guidance for governments against contemporary practices that assure the safety of products for human consumption. A complete list of adopted texts and those under preparation in 2003 are listed at the conclusion of this module. The following outlines the major texts.

2.1 Good Animal Feeding

The Proposed Draft Code of Practice on Good Animal Feeding[56] is intended to establish a feed safety system for food-producing animals which covers the whole food chain, taking into account the relevant aspects of animal health and the environment. It is intended to minimize risks to the health of consumers. The code takes into account the special aspects of animal feeding and, when adopted by the CAC, will apply in addition to the Codex Principles of Food Hygiene.[57]

The objective of the code will be to help ensure the safety of food for human consumption through adherence to good animal feeding practice at the farm level and good manufacturing practices (GMPs) during the procurement, handling, storage, processing and distribution of animal feed and feed ingredients for food-producing animals. Therefore, the code will apply to the production and use of all materials destined for animal feed and feed ingredients at all levels, whether produced industrially or on the farm. The draft code includes aspects relevant to the grazing or free-range feeding, forage crop production and aquaculture.

The code follows the usual format of Codex documents, setting out the purpose, scope and definitions used through the text. It also sets out general principles and specific requirements for:

- Feed ingredients, including sources, advice on correct and safe use, and the monitoring of feed ingredients.
- Labeling of feed ingredients.
- Traceability and record-keeping of feed and feed ingredients, to enable proper labeling and facilitate prompt trace-back or trace-forward of materials and products, and specific conditions applicable to emergency situations where high-risk ingredients are concerned.
- Inspection and control procedures to verify that feed and feed ingredients meet the requirements and this encourages the employment of the risk assessment methodology consistent with internationally accepted practices.
- Health hazards associated with animal feed, including feed additives and veterinary drugs used in medicated feed, the safe production, marketing and storage and the importance of control measures to reduce unacceptable levels of undesirable substances in feed and feed ingredients.
- Production, storage and distribution of food and feed ingredients, including the role of GAPs, GMPs, and HACCP principles, to control hazards that may occur in food.
- On-farm production and the use of feed, providing guidance in respect to the manufacture and use of feed on farm.
- Agricultural production of feed that encourages the adherence to good agricultural practices and provides guidance on manure fertilization of crops or pastures, the use of chemical fertilizers, pesticides and site selection and water use.
- Manufacturing of feed on-farm covering feed ingredients, mixing, and monitoring records.
- Good animal feeding practice, including pasture grazing, distribution, feeding, stable feeding and lot/intensive feeding.
- Water for drinking or for aquaculture.
- Methods of analysis and sampling based on Codex sampling plans and methods elaborated by international organizations (ISO and/or AOAC International, and conducted in official or officially accredited laboratories that employ Good Laboratory Practices).

[56]Proposed Draft Code of Practice on Good Animal Feeding, at Step 3 of the Codex Procedure, ALINORM 03/38, Appendix II.
[57]Codex Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3 (1997).

The Codex Ad Hoc Intergovernmental Task Force is required to report to the Codex Alimentarius Commission by 2003. This work can be accessed through the Codex India web site, or through the Codex web site.

2.2 Proposed Draft General Principles for Meat Hygiene

At the time of the preparation of this module (early 2003), this text was at Step 5 of the Codex elaboration procedure. These principles address the primary goals of meat hygiene, that is, meat must be both, safe, and suitable for human consumption. It also addresses the role of the government, industry and consumers in meeting this goal. In line with the obligations of signatories to the World Trade Organization Agreement on Sanitary and Phytosanitary Measures (SPS), the principles will require meat hygiene programs to be based on scientific principles and on an assessment of the risks to human health, using the risk assessment techniques developed by Codex.

The principles will expect operators to apply HACCP principles and identify the role of competent authorities in the verification of regulatory requirements where voluntary quality assurance systems have been put in place. It also sets out the role of competent authorities in defining personnel involved in meat hygiene activities, and its role in verifying that adequacy of systems are put in place by the establishment operator. Monitoring programs at two levels will also be required: first, surveillance of the consumer population should be undertaken to determine that hygiene measures are achieving the required level of consumer protection. Second, the animal population must be monitored for specified hazards. Such hazards will be those identified by the government and/or industry through risk-based monitoring programs.

This succinct text for application by the meat and meat products industry complements the outputs of a number of general, or horizontal, Codex Committees, some of which is ongoing work while other work has been adopted by the CAC. Trainees should monitor the following Committees to maintain awareness about related issues, including:

- The Codex Committee on Food Hygiene work on the conduct of microbiological risk management, as well as the adopted General Principles for Food Hygiene and on the Hazard Analysis Critical Control Point (HACCP) System.
- The Codex Committee on General Principles in regard to the working principles for risk analysis, and in defining food safety objectives (FSOs) and the acceptable level of protection (ALOP).
- The Codex Committee on Import and Export Inspection and Certification Systems in relation to the determination of equivalence.[58]

2.3 Proposed Draft Code of Hygienic Practice for Fresh Meat

Probably the most comprehensive text within the work of the CCMPH, this proposed draft code had been advanced to Step 3 of the Codex elaboration procedure at the time of preparing this training manual. Hence, it is important that interested trainees monitor the progress of this work through either the Codex India web site or the web site of the Codex Alimentarius Commission. The draft code develops and applies further the Recommended International Code of Practice: General Principles of Food Hygiene in the context of fresh meat up to and including transportation. It also develops further guidance on the HACCP System and Guidelines for its Application, and the Principles for the Establishment and Application of Microbiological Criteria for Food in the specific context of meat hygiene. This code will in all likelihood be extended in the course of its elaboration to apply beyond fresh meat, that is, further processing, including ready-to-eat meals, etc.

The code recognizes that meat hygiene is, by nature, a complex activity and also recognizes the important role of texts throughout the Codex system with appropriate linkages, such as: Principles for Food Import and Export Inspection and Certification;[59] Proposed Draft Principles and Guidelines for the Conduct of Microbiological Risk Management;[60] General Guidelines for Use of the Term 'Halal';[61] Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Food;[62] the

[58]Report of the 11th Session of the Codex Committee on Import and Export Inspection and Certification Systems, ALINORM 03/30.
[59]CAC/GL 20-1995. [60]On-going work by the Codex Committee on Food Hygiene. [61]CAC/GL 24-1997. [62]CAC/GL 32-1999, Rev. 1-2001.

recommendations of the Ad Hoc Intergovernmental Task Force on Animal Feeding. The code also accommodates the practices of Codex Member Countries by recognizing the potential departure from some of the meat hygiene recommendations that will permit traditional practices.

The draft code includes the following topics:
- Scope and use of the code.
- Definitions.
- General principles of meat hygiene, covered above.
- Primary production, including principles, the hygiene of slaughter animals, hygiene of wild game, hygiene of feeding stuff, hygiene of the environment, transport of slaughter animals and transport of wild game animals.
- Presentation of animals for slaughter, including principles, conditions of lairage, ante-mortem inspection, design and the implementation of an ante-mortem inspection system, judgment categories and information on pre-slaughter animals.
- Presentation of wild game for dressing, including principles and evaluation of wild game.
- Design of establishments, facilities and equipment, including principles, design and construction of lairages, design and construction of slaughter areas, design and construction of areas where meat may be present, design and construction of equipment where meat may be present, water supply, temperature control, facilities and equipment for personal hygiene, facilities for control of processing operations, and transport vehicles.
- Systems for the control of processing operations, including principles, system for control of processing operations (sanitation standard operating procedures, microbiological criteria, the HACCP, performance parameters for the outcome of process control – regulatory systems, QA systems, equivalence, general requirements for all processing operations, hygiene requirements for slaughter and dressing, post-mortem inspection – design and implementation of system, post-mortem judgment, hygiene requirements for edible parts of animals and meat that are condemned or otherwise deemed unacceptable for human consumption, and recall systems.
- Maintenance and sanitation of establishments.
- Personal hygiene including personal cleanliness and personal health status.
- Transportation.
- Product information and consumer awareness.
- Training, including principles and training programs.

2.4 Principles and Guidelines for Establishing Risk-based Ante- and Post-mortem Inspection Systems for Particular Slaughter Populations, Including Examples[63]

At the time of preparing this training module, a first discussion paper had been circulated for comments to Codex Member Governments and interested international non-governmental organizations. The elaboration of guidance to governments on risk-based systems aligns with the obligations of WTO Members as set out in the SPS Agreement, and as noted above.

The Proposed Draft Working Principles for Risk Analysis and for Application in the Framework of the Codex Alimentarius states that the 'development and implementation of risk-based post-mortem inspection procedures should utilize a risk management framework'.[64] Proposed as an Annex II to the Proposed Draft Code of Hygienic Practice for Fresh Meat, it is noted that post-mortem meat inspection procedures are regarded as a component of overall process control or, simply, all conditions and measures applied during the production process that are necessary to achieve the safety and suitability of meat.

Trainees should be aware of this discussion and follow the developments of this important issue as this discussion could lead to the preparation of an annex to the Code of Hygienic Practice for Fresh Meat, currently being elaborated by the CCMPH.

[63]CX/MPH 03/05, November 2002. [64]Report of the 17th Session of the Codex Committee on General Principles, ALINORM 03/33 Appendix II.

2.5 Processed Meat Products

The Codex Alimentarius Commission has adopted a number of standards for certain processed meat products. These include corned beef, luncheon meat, cooked cured ham, cooked cured pork shoulder and cooked cured chopped meat. Related to these standards is a guide for the microbiological quality of spices and herbs used in processed meat and poultry products, and a guideline on the use of non-meat protein products in processed meat and poultry products. References to each of these Codex texts are included in the list of texts at the end of this module. The standards for specific processed meat products are set out in the standard Codex method. They each detail the scope of the standard and any exclusion, and a description of the product. For example, corned beef must be chopped, cured, boneless carcass meat from animals of bovine species and must be pre-cooked or include no more than 5 per cent of raw beef product. The meat is cured before or after filling the container, sealed and sufficiently heat-treated to ensure that the product is both, shelf-stable and presents no public health hazard.

The standards set out the essential compositional and quality factors, permitted food additives, and maximum permitted levels of contaminants. The section on hygiene refers to the Recommended International Code of Hygienic Practice for Processed Meat and Poultry Products, the Recommended International Code of Hygienic Practice for Low-acid and Acidified Low-acid Canned Food,[65] the General Principles of Food Hygiene, and the Recommended International Code of Hygienic Practice for Fresh Meat. These issues are in Section 6, Module 15 of this manual. The standards for commodities that utilize meat and meat products refer to the generic meat and meat product codes discussed above. They also include information on the thermal processes to be used, the labeling of the product, and methods of analysis.

3. HORIZONTAL AND RELATED ISSUES

It is important that government officials and the personnel working in the meat and meat products industries are conversant with the broad range of Codex issues that impact this industry sector, in addition to the linkages addressed in the Proposed Draft Code of Hygienic Practice for Fresh Meat. These cover topics including the Maximum Residue Limits (MRLs) for agricultural chemicals; the Maximum Permitted Concentration (MPCs) of contaminants and heavy metals; the MRLs for residues of veterinary drugs; methods of analysis and sampling, including the sampling of pre-packaged food; refrigerated packaged food with extended shelf-life; source direct measures to reduce contamination of food with chemicals (for example, chemical usage in previous crops or grazing/pasture land used for animal feed, such as tobacco/cotton) and so on.

Trainees should note the synergies between the Codex texts. Take, for example, the Code of Hygienic Practice for Refrigerated Packaged Food with Extended Shelf-life.[66] This code sets out recommendations for the processing, packaging, storage and distribution of refrigerated packaged food with an extended shelf-life with the aim of providing guidance to stakeholders on the prevention of an outgrowth of pathogenic micro-organisms. The code specifically discusses the application of HACCP principles to refrigerated packaged food with extended shelf-life and calls up the General Principles for Food Hygiene.[67] Thus, the linkage between these particular texts is completely complementary and hence, trainees with interest in this particular module should also refer to Section 6, Module 15 of this manual. Other texts that have linkages to the meat and meat products industry are included in the list of Codex texts below.

4. CONCLUSION

Meat and meat products are a potential source of major food-borne illnesses. Sound measures must be put in place from pre-farm, through primary production and slaughter, to processing, handling, transport and storage to the final consumer to assure the safety of the product for human consumption. Such measures should be based on the principles of risk and surveillance of meat-borne illness in the community. They should be conducted to establish data on which to implement further safety assurance measures throughout the relevant sectors within the food chain. Stakeholders throughout the food chain are encouraged to fully appreciate the internationally agreed Codex norms that assist in achieving acceptable levels of protection for the consumers and in the facilitation of the trade of meat and meat products within the domestic and export markets. Further information on the production and safety of meat and meat product industries may be found at: www.fao.org; follow the links to 'Animal Agriculture', 'Food Safety', etc.

[65]CAC/RCP 23-1979, Rev. 1-1989. [66]CAC/RCP 45 (1999). [67]CAC/RCP 1-1969, Rev. 3-1997.

LIST OF CODEX TEXTS

Codex texts under elaboration as on January 2003 – these will change as they are developed further	
ALINORM 03/38 Appendix II	Proposed Draft Code of Practice on Good Animal Feeding, at Step 3
CX/AF 03/05	Proposed Draft Code of Practice on Good Animal Feeding Report of the Drafting Group on Revision of Sections 6 and 7 and Reorganization of Section 5
ALINORM 03/16 Appendix II	Proposed Draft Principles for Meat Hygiene at Step 5
ALINORM 03/16 Appendix III	Proposed Draft Code of Hygienic Practice for Fresh Meat
CX/MPH 03/5	Discussion paper on the principles and guidelines for establishing risk-based ante- and post-mortem inspection systems for particular slaughter populations, including examples
CX/MPH 03/6	Discussion paper on the principles and guidelines on systems for the microbiological process for meat, including the establishment of performance parameters for the outcome of process control and implementation of national microbiological data bases
CX/MPH 03/07	Discussion paper on hygiene provisions for processed meat
Adopted Codex texts	
CODEX STAN 88 – 1981 Rev. 1 – 1991	Codex Standard for Corned Beef
CODEX STAN 89 – 1981 Rev. 1 – 1991	Codex Standard for Luncheon Meat
CODEX STAN 96 – 1981 Rev. 1 – 1991	Codex Standard for Cooked Cured Ham
CODEX STAN 97 – 1981 Rev. 1 – 1991	Codex Standard for Cooked Cured Pork Shoulder
CODEX STAN 98 – 1981 Rev. 1 – 1991	Codex Standard for Cooked Cured Chopped Meat
CAC/RCP 7 – 1974	System for the Description of Carcasses of Bovine and Porcine Species
CAC/RCP 11 – 1976 Rev. 1 – 1993	Recommended International Code of Hygienic Practice for Fresh Meat, presently being reviewed by the CCMPH
CAC/RCP 13 – 1976 Rev. 1 – 1985	Recommended International Code of Practice for Processed Meat and Poultry Products
CAC/RCP 14 – 1976	Recommended Code of Practice for Poultry Processing
CAC/RCP 23 – 1979 Rev. 1–1989	Recommended International Code of Practice for Low-acid and Acidified Low-acid Canned Food
CAC/RCP 29 – 1983, Rev. 1 – 1993	Recommended International Code of Practice for Game
CAC/RCP 32 – 1983	Recommended International Code of Practice for the Production, Storage and Composition of Mechanically Separated Meat and Poultry Meat intended for Further Processing

Adopted Codex texts	
CAC/RCP 41 – 1993	Recommended International Code for Ante-mortem and Post-mortem Inspection of Slaughter Animals and for Ante-mortem and Post-mortem Judgment of Slaughter Animals and Meat
CAC/RCP 45 – 1997	Supplemental Feeding Stuff for Milk-producing Animals
CAC/RCP 46 – 1999	Code of Hygienic Practice for Refrigerated Packaged Food with Extended Shelf-life
CAC/RCP 47 – 2001	Code of Hygienic Practice for the Transport of Food in Bulk and Semi-packaged Food
CAC/RCP 49 – 2001	Code of Practice for Source Directed Measures to Reduce the Contamination of Food with Chemicals
CAC/RCP 14 – 1991	Guideline for the Microbiological Quality of Spices and Herbs Used in Processed Meat and Poultry Products
CAC/GL 15 – 1991	Guidelines for the Use of Non-meat Protein Products in Processed Meat and Poultry Products
CAC/GL 26 – 1997	Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems
CAC/GL 32 – 1999 Rev. 1-2001	Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Food
CODEX-STAN 211– 1999	Codex Standard for Named Animal Fats

Sugar and Sweetening Agents Industries, Including Honey and Artificial Sweetening Agents

INTRODUCTION

Preamble: This module is split into two parts. The first part deals with sugar and sugar products, including honey, within the purview of the Codex Committee on Sugar. The second part outlines the artificial sweetening agents dealt with by the Codex Committee on Food Additives and Contaminants.

PART I

SUGAR, INCLUDING HONEY

1. SCOPE: CODEX COMMITTEE ON SUGAR (CX-710)

2. HOST GOVERNMENT: UNITED KINGDOM

3. SESSIONS

1. London, March 3-5, 1964
2. London, March 2-4, 1965
3. London, March 1-3, 1966
4. London, April 18-21, 1967
5. London, September 10-12, 1968
6. London, March 19-22, 1974
7. London, February 9-11, 2000

4. TERMS OF REFERENCE

To elaborate worldwide standards for all types of sugar and sugar products.

5. ADOPTED CODEX TEXTS

5.1 Sugar (CODEX STAN-212) See Codex Alimentarius Volume 11

5.1.1. Scope: The standard covers white sugar, plantation or mill white sugar, soft white sugar and soft brown sugar, powdered sugar, dextrose anhydrous, dextrose monohydrate, powdered dextrose, fructose and raw cane sugar.

5.1.2. Description: Definitions for each type of sugar.

5.1.3 Essential composition and quality factors.

5.1.3.1 Optional Ingredients

k Addition of starch to a maximum extent of 5 per cent in icing or powdered material.

5.1.3.2 Quality Criteria

In general it shall include:
k Polarization or sucrose content.
k Sulphated ash or conductivity ash.
k Loss on drying.
k Color.

5.1.4 Food Additives: See Codex Alimentarius Volume 1A, dealing with General Requirements, Chapter 5 on Food Additives including General Standards for Food Additives.

k Sulphur dioxide with a maximum limit.
k Anti-caking agent in powdered material (containing no starch) with a maximum limit.

5.1.5 Contaminants: See Codex Alimentarius Volume 1A, dealing with General Requirements, Chapter 6 on Contaminants in Food, including General Standard for Contaminants and Toxins in Food.

5.1.6 Hygiene: See Codex Alimentarius Volume 1B – General Requirements (Food Hygiene).

5.1.7 Labeling: In addition to the provisions of the General Standards of Pre-packaged Food (see Codex Alimentarius Volume 1A, dealing with General Requirements, Chapter 4 on Food Labeling), the following specific provisions apply:
k Name of the material.
k List of ingredients, for example, the declaration of addition of starch.
k Declaration with regard to an addition of an anti-caking agent.

5.1.8 Methods of Sampling and Analysis: See Codex Alimentarius Volume 13.

5.2 Honey (CODEX STAN 12) See Codex Alimentarius Volume 11

5.2.1 Scope: The standard consists of three parts:
k Part One applies to all honey produced by Apis mellifera bees for direct consumption.
k Part Two covers honey for industrial uses or as an ingredient in other food.
k Part Three covers honey produced by other species of honey-producing bees.

5.2.2 Description

5.2.2.1 Definitions

5.2.2.1.1 Honey

5.2.2.1.2 Blossom Honey or Nectar Honey

5.2.2.1.3 Honeydew Honey

5.2.2.2 Description

k Essentially of different sugar, predominantly fructose and glucose and other substances derived from honey collection.
k Color – from nearly colorless to dark brown.

k Consistency – fluid/viscous/partly to entirely crystallized.
k Flavor and aroma – vary but are derived from plant origin.

5.2.3 Essential Composition and Quality Factors:
k No extraneous addition of any ingredient/food additive.
k Shall not have any objectionable matter, flavor, aroma or taint.
k No sign of fermentation.
k No removal of pollen or constituent particular to honey.
k No heating or processing that would affect the essential composition or quality.
k Moisture content.
k Sugar content (sum of fructose and glucose content) and sucrose content.
k Water-insoluble solids content.
k Electrical conductivity.

5.2.4 Contaminants

5.2.4.1 Heavy Metals: See Codex Alimentarius Volume 1A, dealing with General Requirements, Chapter 6 on Contaminants in Food, including General Standards for Contaminants and Toxins in Food.

5.2.4.2 Residues of Pesticides and Veterinary Drugs: See Codex Alimentarius Volume 2A and 2B, dealing with Pesticide Residues in Food (general text and maximum residue limits, respectively) and Volume 3, dealing with Residues of Veterinary Drugs in Food.

5.2.4.3 Hygiene: See Codex Alimentarius Volume 1B, dealing with General Requirements (Food Hygiene).

5.2.4.4 Labeling: In addition to the provisions of the General Standards of Pre-packaged Food (See Codex Alimentarius Volume 1A, dealing with General Requirements, Chapter 4 on Food Labeling), the following specific provisions will apply:
k Name of the food outlining the true definition of the products outlined in Paragraph 5.2.2.1.
k Honey may also be designated based on:
  k Production in a particular geographical or topographical region.
  k Floral or plant source.
  k Method of removal from the comb – extracted or pressed or drained.
  k Styles – honey or comb honey or cut comb in honey or chunk honey.
  k Filtration process used – filtered honey.

5.2.5 Methods of Sampling and Analysis: See Codex Alimentarius Volume 13

6. HORIZONTAL ISSUES

As may be deduced from the above text, a number of provisions fall within the purview of horizontal committees. These are:
k Codex Committee for General Principles for the format.
k Codex Committee on Food Additives and Contaminants for regulating the use of additives and the occurrence of contaminants, as the case may be.
k Codex Committee on Pesticide Residues for the limit of pesticides.
k Codex Committee on Food Hygiene for the hygiene provisions relating to the preparation, handling and establishment of the microbiological criteria of the products covered in both the standards. The documents referred are:
k Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3 -1997).
k Other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.
k Principles for the Establishment and Application of Microbiological Criteria for Food (CAC/GL 21-1997).
k Codex Committee on Labeling for the General Labeling Provisions in both the standards.
k Codex Committee on Methods of Analysis and Sampling.

7. ONGOING AND FUTURE WORK ON THE SUBJECTS AS WELL AS RELATED TEXTS

The Commission in its 24th Session, held in 2001, requested the Committee to continue to work on the standard to allow the identification of honey according to the species of the bee as well as floral, topographical origins and the country of origin, including reference to the moisture content of the honey. The following proposals were also listed for consideration, subject to the approval of the Executive Committee:

- The proposal for the elaboration of the Code of Hygienic Practice for Honey be referred to the Codex Committee on Food Hygiene.
- The developments of standards for unifloral honey.
- The completion of Part Two of the standard for honey, covering industrial uses.

8. ADOPTED TEXTS

I. Sugar (CODEX STAN 212). Last amended in 2001.
II. Honey (CODEX STAN 12). Last amended in 2001.

9. CONCLUSION

The Codex standards for sugar and honey are comprehensive documents and take into consideration the products of different Member Countries of the Commission. The Member Countries are required to be pro-active and bring to the notice of the Commission/concerned Committee modification, if any, required in the standards, with sound scientific justification.

Mineral and Packaged Drinking Water Industries

INTRODUCTION

Day-to-day consumers worldwide are becoming more conscious of health. They do not want to fall prey to contaminated water. The mineral and packaged drinking water industries have, therefore, been flourishing globally to provide safe drinking water. The Codex Alimentarius Commission has thus brought out standards of these two commodities.

1. SCOPE

The formulation of standards of Natural Mineral Water and Packaged Drinking Water come within the purview of the Codex Committee on Natural Mineral Water (CX-719). Switzerland is the host government for this Committee.

2. CODEX COMMITTEE ON NATURAL MINERAL WATER

The Committee was established by the Commission as a Regional (European) Codex Committee, but has been allocated the task of elaborating worldwide standards for natural mineral water.

3. SESSIONS

1. Badan/Arzan, February 24-25, 1966
2. Montreux, July 6-7, 1967
3. Bad Ragaz, May 9, 1968
4. Vienna, June 12-13, 1972
5. Thun, October 3-5, 1996
6. Burne, November 19-21, 1998
7. Fribourg, October 30-November I, 2000

4. TERMS OF REFERENCE

To elaborate worldwide standards for natural mineral water and bottled (packaged) water other than natural mineral water.

5. ADOPTED CODEX TEXTS

A. Natural Mineral Water – Codex Stan 108-1981, Rev. 1-1997 (amended In 2001)
See Codex Alimentarius Volume 11

I. Name of the standard
II. Scope

III. Description

- Definition.
- Supplementary definitions for:
  - Naturally Carbonated Natural Mineral Water
  - Non-carbonated Natural Mineral Water
  - Decarbonated Natural Mineral Water
  - Natural Mineral Water Fortified with Carbon Dioxide from the Source
  - Carbonated Natural Mineral Water
  - Authorization
- Composition and quality factors:
  - Treatment and handling.
  - Health-related limits for certain substances.
  - Surface active agents (temporarily endorsed, pending the elaboration of appropriate methods of analysis).
  - Pesticides and PCBs (temporarily endorsed, pending the elaboration of appropriate methods of analysis).
  - Mineral oil.
  - Poly-nuclear aromatic hydrocarbons (temporarily endorsed, pending the elaboration of appropriate methods of analysis)
- Hygiene:
  - Recommended International Code of Practice, General Principles of Food Hygiene (CAC/RCP1-1969, Rev. 3-1997).
  - Recommended International Code of Practice for the Collecting, Processing and Marketing of Natural Mineral Waters (CAC/RCP 33-1985).
- Microbiological requirements.
- Packaging.
- Labeling (in addition to the provisions of the Codex General Standard for the Labeling of Pre-packaged Food, CODEX STAN 1-1985, Rev. 1-1991).
  - The name of the product (Natural Mineral Water).
  - Designations as outlined in the supplementary definitions accompanied by suitable descriptive terms, for example, still and sparkling.
  - Name and address.
  - Additional labeling requirements.
  - Chemical composition.
  - Declaration with regard to fluoride content, if any. The product containing more than 2mg/l fluorides be labeled as not suitable for infants under the age of seven years.
  - Result of treatment, if any.
  - Labeling prohibitions:
    - No misleading medicinal claim.
    - No false declaration about the locality, hamlet or specified place.
    - No misleading statement or picture.
- Methods of Analysis and Sampling (See Codex Alimentarius Volume 11).

B. Codex General Standard for Bottled/Packaged Drinking Waters (Other than Natural Mineral Waters), CODEX STAN 227-2001 (See Codex Alimentarius Volume 11)

- Scope.
- Description:
  - Packaged water
  - Water defined by origin
  - Prepared water
- Essential composition and quality factors:
  - Modifications and handling of packaged water.
  - Permitted physico-chemical modifications and anti-microbial treatment for the water defined by origin.

- Physical and chemical modifications and anti-microbial treatments for prepared water.
- Chemical and radiological quality of packaged water.
- Health-related limits for chemical and radiological substances (shall comply with the health-related requirements of the most recent 'Guidelines for Drinking Water Quality', published by the World Health Organization).
- Addition of minerals. In addition to the provisions outlined in the present standard, the provisions in the Codex General Standard for Food Additives (STAN 192-1995, Rev. 1-1997) and/or the Codex General Principles for the Addition of Essential Nutrients to Food (CAC/GL 9-1987).

- Hygiene:
  - Codes of Practice:
    - International Code of Practice, General Principles of Food Hygiene (CAC/RCP 1-1991, Rev. 3-1997).
    - Code of Hygienic Practice for Bottled/Packaged Drinking Water (other than Natural Mineral Water) (CAC/RCP 48-2001).
    - Approval and inspection of the source for water defined by origin (microbiological criteria must comply with the requirements of the most recent Guidelines for Drinking Water Quality, published by the World Health Organization and available at: www.who.org).
- Labeling Requirements. In addition to the provisions of the Codex General Standard for the Labeling of Pre-packaged Food, CODEX STAN 1-1985, Rev. 1-1991):
  - Name of the product, depending on its classification under description:
  - The declarations 'naturally carbonated' or 'naturally sparkling' or 'fortified with carbon dioxide' or 'carbonated' or 'sparkling' should appear depending on the status of carbonation.
  - Words such as 'non-carbonated' or 'non-sparkling' or 'still' may apply if there is no visible and spontaneous release of carbon dioxide when the package is opened.
- Additional Labeling Requirements:
  - Chemical composition.
  - Geographic location.
  - Prepared water from a water distribution system.
  - Treatments.
- Labeling Prohibitions:
  - No misleading medicinal claim.
  - No false declaration about the locality, hamlet or specified place.
  - No misleading statement or picture.
- Methods of Analysis and Sampling (See Codex Alimentarius Volume 13).

6. HORIZONTAL ISSUES

As may be deduced from the above text, a number of provisions fall within the purview of horizontal committees. These are:

- Codex Committee for General Principles for the format.
- Codex Committee on Food Additives and Contaminants for the addition of minerals in packaged drinking water.
- Codex Committee on Pesticide Residues for the limit of pesticides in natural mineral water. Below the limit of quantification (as stated in the relevant ISO methods) as per the Codex Method of Analysis.
- Codex Committee on Food Hygiene for the hygiene provisions in both the standards.
- Codex Committee on Labeling for the general labeling provisions in both the standards.
- Codex Committee on Methods of Analysis and Sampling.

7. ONGOING AND FUTURE WORK ON THE SUBJECTS AS WELL AS RELATED TEXTS

There has been no other business and the Committee did not foresee any future work. The Committee, considering that it had completed the work assigned to it by the 22nd Session of the Commission, agreed to adjourn sine die in its meeting held in 2000, which has also been endorsed by the Commission in its 24th Session held in 2001.

8. ADOPTED TEXTS

i. Natural Mineral Water, CODEX STAN 108-1981, Rev. 1-1997 (amended in 2001).
ii. Codex General Standard for Bottled/Packaged Drinking Water (other than natural mineral water), CODEX STAN 227-2001.

9. CONCLUSION

The Codex Standards for Natural Mineral Water and Bottled/Packaged Drinking Water are good guides for Member Countries for framing similar standards under the national legislation. In fact, India has already done it.

Spices and Condiments Industry, Including the Codex Standard for Food Grade Salt

INTRODUCTION

This module outlines the work of Codex in the areas of spices and condiments, including food grade salt.

A. SPICES AND CONDIMENTS

India is a major producer and exporter of spices and condiments. The issues pertaining to spices and condiments in Codex are not covered by any specific Commodity Committee, but are covered by horizontal committees. However, the Code of Hygienic Practice for Spices and Dried Aromatic Plants (CAC/RCP 42-1995) is of importance as it deals with horizontal issues which are applicable to all the products in this category. Apart from the code, the Recommended International Code of Practice for the Operation of Irradiation Facilities Used for The Treatment of Food, CAC/RCP 19-1979, under Appendix II, 'Examples of Technological Conditions for the Irradiation of Some Individual Food Items Specifically Examined by the Joint FAO/IAEA/WHO Expert Committee', refers to spices, condiments, dehydrated onions and onion powder for the purpose of:

a. Controlling insect infestation.
b. Reducing the microbial load.
c. Reducing the number of pathogenic microorganisms.

These guidelines also refer to the average dose.

B. CODE OF HYGIENIC PRACTICE FOR SPICES AND DRIED AROMATIC PLANTS (CAC/RCP 42-1995)

1. SCOPE

This Code of Hygienic Practice applies to spices and dried aromatic plants – whole, broken, ground or blended. It covers the minimum requirements of hygiene for harvesting, post-harvest technology (curing, bleaching, drying, cleaning, grading, packing, transportation and storage, including microbial and insect disinfestations) processing establishment, processing technology (grinding, blending, freezing and freeze drying, etc) and the packaging and storage of processed products. The requirements of the code are in addition to what has been prescribed in Recommended International Codes of Practice, General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3-1997). Therefore, only those requirements which are in addition to general requirements have been highlighted here.

2. DEFINITIONS

2.1 Spices and Dried Aromatic Plants

The term spices, which includes dried aromatic plants, relates to natural dried components or mixtures thereof, used in food for flavoring, seasoning and imparting aroma. The term applies equally to spices in the whole, broken or ground form.

2.2 Spice Blends and Products

2.2.1 Spice Blends

Spice blends are obtained by mixing and grinding, cleaned, dried and sound selected spices.

3 HYGIENIC REQUIREMENTS IN THE PRODUCTION/HARVESTING AREA

3.1 Environmental Hygiene in Areas Where Raw Materials are Produced

3.1.1 Unsuitable Growing or Harvesting Areas
3.1.2 Protection from Contamination by Wastes
3.1.3 Irrigation Control
3.1.4 Pest and Disease Control

3.2 Drying (Curing)

3.3 Cleaning

3.4 Packaging

3.5 Transportation

4. ESTABLISHMENT DESIGN AND FACILITIES

4.1 Location

4.2 Roadways and Areas Used by Wheeled Traffic

4.3 Building and Facilities

4.3.1 Spices Handling Areas
4.3.2 Water Supply
4.3.3 Effluent and Waste Disposal
4.3.4 Changing Facilities and Toilets
4.3.5 Hand-washing Facilities in Processing Areas
4.3.6 Disinfection Facilities
4.3.7 Lighting
4.3.8 Ventilation
4.3.9 Facilities for Storage of Waste and Inedible Material

4.4 Equipment and Utensils

4.4.1 Materials
4.4.2 Sanitary Design, Construction and Installation
4.4.3 Equipment Identification

5. ESTABLISHMENT: HYGIENE REQUIREMENTS

5.1 Maintenance

5.2 Cleaning and Disinfection

5.3 Hygiene Control Program

5.4 By-products

5.5 Storage and Disposal of Waste

5.6 Exclusion of Domestic Animals

5.7 Pest Control

5.8 Storage of Hazardous Substances

5.9 Personal Effects and Clothing

6 . PERSONNEL HYGIENE AND HEALTH REQUIREMENTS

6.1 Hygiene Training

6.2 Medical Examination

6.3 Communicable Diseases

6.4 Injuries

6.5 Washing of Hands

6.6 Personal Cleanliness

6.7 Personal Behavior

6.8 Gloves and Other Protection Equipment

6.9 Visitors

6.10 Supervision

7. ESTABLISHMENT: HYGIENIC PROCESSING REQUIREMENTS

7.1 Raw Material Requirements

7.1.1 Acceptance Criteria

Spices should not be accepted by the plant if they are known to contain parasites, micro-organisms, decomposed, toxic, or extraneous substances, which will not be reduced to acceptable levels by normal plant procedures, sorting or preparation. Particular care should be taken to avoid contamination.

Plants, parts of plants or spices suspected of being contaminated with animal or human fecal material, should be rejected for human consumption. Special precautions must be taken to reject spices showing signs of insect damage or mold growth because of the danger of their containing mycotoxins such as aflatoxins.

7.1.2 Inspection and Sorting

Raw materials should be inspected and sorted prior to processing and, where necessary, laboratory tests should be conducted. This inspection may include:

- Visual inspection for foreign matter.
- Organoleptic evaluation: odor, appearance, possibly taste.
- Testing for microbiological or mycotoxin contamination: systematic monitoring for sensitive materials, periodic monitoring for less sensitive materials.

These tests should refer either to national regulations, international standards or recommendations, or established methods used in the industry.

7.1.3 Treatment

In order to control microbiological contamination or pest infestation, appropriate methods of treatment may be used in accordance with the regulations set by the official agency that has the jurisdiction. Whenever spices have been treated, the type of treatment must be stated explicitly in an accompanying certificate. For use of irradiation, consult the Code of Good Irradiation Practice for the Control of Pathogens and Other Microflora in Spices, Herbs and Other Vegetable Seasonings.

7.1.4 Storage

Raw materials stored in the plant premises should be maintained under conditions that will protect them against contamination and infestation and minimize deterioration. Spices not scheduled for immediate use should be stored under conditions that prevent infestation and mold growth.

The warehouse should be of sound construction and well-equipped so that it will provide suitable storage and adequate protection for spices. Any breaks or openings in the walls, floors, and roof should be repaired. Any breaks or openings around doors, windows and ventilators should be repaired or screened. Screens should be used only in those areas of the building where moisture entry from precipitation cannot occur. The building should have sufficient ventilation to prevent the accumulation of moisture. Provision should be made in existing storage or at the design stage in new storage for gas tightness to permit in situ fumigation of spices.

Areas with new concrete floors or walls should not be used for storage until it is absolutely certain that the new concrete is well-cured and free of excess water. It is safer to use an approved plastic cover spread over the entire new concrete floor as a moisture barrier prior to use for spices. However, other means of protecting the spices against moisture from 'sweating' concrete can be used, such as stacking of containers on pallets. The plastic can be removed when the warehouse is emptied. This system will protect against the molding of the spices due to the sweating of new concrete.

Products which affect the storage life, quality or flavor of spices, should not be stored in the same room or compartment as spices. For example, such items as fruits, vegetables, fish, fertilizer, gasoline or lubricating oils, etc, should not be stored along with spices.

7.2 Prevention of Cross-contamination

Effective measures should be taken to prevent contamination of uncontaminated spices by direct or indirect contact with material at the earlier stages of the processing.

Persons handling raw materials or semi-processed products capable of contaminating the end-product should not come into contact with any end-product unless they discard all protective clothing worn by them during the handling of the products and have changed into clean protective clothing.

If there is a likelihood of contamination, hands should be washed and disinfected thoroughly before handling products at different stages of processing.

Raw products that may present a hazard should be processed in separate rooms, or in areas physically separate from those where end-products are being prepared. All equipment, which has been in contact with raw or contaminated materials, should be thoroughly cleaned and disinfected prior to being used for contact with the end-product.

7.3 Use of Water

As a general principle, only potable water, as defined in the latest edition of Volume 1 of the WHO Guidelines for Drinking Water Quality, should be used in food handling.

Non-potable water may be used with the acceptance of the official agency with the jurisdiction for steam production, refrigeration, fire control and other similar purposes not connected with food. However, non-potable water may, with specific acceptance by the official agency with jurisdiction, be used in certain food handling areas, provided this does not constitute a hazard to health.

Water re-circulated for re-use within an establishment should be treated and maintained in a condition so that no health hazard can result from its use. The treatment process should be kept under constant surveillance. Alternatively, re-circulated water, which has received no further treatment, may be used in conditions where its use would not constitute a health hazard and will not contaminate either the raw material or the end-product. Re-circulated water should have a separate distribution system, which can be readily identified. The acceptance of the official agency with jurisdiction should be required for any treatment process and for the use of re-circulated water in any food process.

7.4 Processing

Technically competent personnel should supervise processing. All steps in the production process, including packaging, should be performed without unnecessary delay and under conditions which will prevent the possibility of contamination, deterioration or the development of pathogenic and spoilage micro-organisms.

Rough treatment of containers should be avoided to prevent the possibility of contamination of the processed product. Methods of preservation and necessary controls should be such as to protect against contamination or development of a public health hazard and against deterioration within the limits of good commercial practice.

7.5 Packaging

All packaging material should be stored in a clean and sanitary manner. The material should be appropriate for the product to be packed and for the expected conditions of storage and should not transmit to the product objectionable substances beyond the limits acceptable to the official agency with jurisdiction. The packaging material should be sound and should provide appropriate protection from contamination.

Containers should not have been used for any purpose which may lead to contamination of the product. Containers should be inspected immediately before use to ensure that they are in a satisfactory condition and, where necessary, cleaned and/or disinfected; when washed they should be well-drained and dried before filling. Only packaging material required for immediate use should be kept in the packaging or filling area.

Packing should be done under hygienic conditions that preclude the introduction of contamination into the product.

7.6 Storage of the End-product

Spices and their products should be stored at moisture low enough so that the product can be held under normal storage conditions without the development of mold or significant deterioration by oxidative or enzymatic changes. An environment with a relative humidity between 55 and 60 per cent should be

maintained to protect quality and prevent mold growth. Where this is not practicable, spices should be packed in waterproof and gas-proof containers and stored in a proper warehouse.

Finished products may be packed in gas-tight containers preferably under inert gases such as nitrogen, etc, or under vacuum in order to protect quality and retard possible mold growth.

All products should be stored in clean, dry buildings, protected from insects, mites and other arthropods, rodents, birds, or other pests, chemical or microbiological contaminants, debris and dust.

7.6.1 Control of Infestation by Insects, Mites and Other Arthropods

Spices should be stored in such a manner that infestation can be controlled by such methods as anaerobic or refrigerated storage or fumigation prior to storage. Stored spices should be inspected regularly and, if infested, fumigated by appropriate methods. If necessary, affected spices may be removed for fumigation. In this case, the storage areas should be cleaned and disinfected separately.

7.7 Transport of the End-product

Spice products should be stored and transported under conditions that maintain the integrity of the container and the product within it. Carriers should be clean, dry, weatherproof, and free from infestation and sealed to prevent water, rodents or insects from reaching the products. Spice products should be loaded, transported and unloaded in a manner that protects them from any damage or water. Well-insulated carriers or refrigerated vehicles are recommended for transport when climatic conditions indicate such a need.

Extreme care should be taken to prevent condensation when unloading spice products from a refrigerated vehicle or while taking out of a cold storage. In warm, humid weather, the spices should be allowed to reach ambient temperature before exposure to external conditions; this may require one to three days. Spices that have been spilled are vulnerable to contamination and should not be used as food.

7.8 Sampling and Laboratory Control Procedures

Laboratory procedures used should preferably follow recognized or standard methods in order that the results may be readily reproduced. In addition to any control by the official agency with jurisdiction, it is desirable that each production plant should have its own or contracted laboratory control of the hygienic quality of the spice products processed and of the pest control procedures. The amount and type of such control will vary with the different spice products as well as the needs of the management. Such control should provide for the monitoring of the quality of the finished products and the rejection of all spices that are unfit for human consumption.

8. END-PRODUCT SPECIFICATIONS

When tested by appropriate methods of sampling and examination, the products should:
a. Be free from pathogenic micro-organisms in levels that may represent a hazard to health.
b. Not contain any substances originating from micro-organisms, particularly aflatoxins, in amounts that exceed the tolerances or criteria established by the Codex Alimentarius Commission or, where these do not exist, by the official agency with jurisdiction.
c. Not contain levels of insect, bird or rodent contamination that indicate that spices have been prepared, packed or held under unsanitary conditions.
d. Not contain residues resulting from the treatment of spices in excess of levels established by the Codex Alimentarius Commission or, where these do not exist, by the official agency with jurisdiction.
e. Comply with the provisions for food additives, contaminants, and with the maximum levels for pesticide residues established by the Codex Alimentarius Commission or, where these do not exist, by the official agency with jurisdiction.

8.1 Microbiological Criteria

Treated, ready-to-eat spices shall be free from salmonella when 10 samples of 25 g are analyzed by appropriate methods of examination (n=10, c=0).

9. MRLs FOR PESTICIDE RESIDUES IN SPICES

India, being a major producer and exporter of spices, has still not established the tolerance limits for various pesticides used both in field and storage. Rule 65 of PFA Rules 1955 covers only carbaryl in chilies (5 ppm), inorganic bromide in spices (400 ppm) and formothion in pepper (1.0). Although a good number of insecticides, for example, organochlorines (lindane, endosulphan, etc), organophosphorus (malathion, m-parathion, monocrotophos, etc) carbametes (carbofuran, cabaryl, permethion, baygon, etc) and pyrethrins (cypermethrin, permethrin, deltamethrin, etc) and fungicides are used to control insect pests and diseases, MRLs have not been fixed in India. In Codex limits for pesticide in spices, only limits for pepper and chilies are observed for a few chemicals. In the event of no international MRLs, some of the developed countries have fixed MRLs at Limit of Detection (analytical zero) in spite of the fact that the spices constitute 0.2 per cent of the diet. These unrealistic MRLs are used as a means of trade discrimination to keep the produce from developing out of the international market. Many spice-producing countries, including India, have raised concerns in the CCPR. Consequently, at the 34th Meeting of the CCPR (ALINORM 03/24), it has been accepted, in principle, the elaboration of MRLs of spices based on monitoring data provided by spice-producing countries and agreed that the criteria for the development and use of such data need to be elaborated. Therefore, it is important that the systematic data are collected in India and submitted to the CCPR to facilitate the establishment of MRLs for major spices.

10. CONCLUSION

The Codex documents on spices are vital for trading in spices for import and export. The Member Countries of Codex, especially the spice-producing countries, should be taking active part in fixing MRLs of pesticides in spices by providing data on the monitoring of pesticides in spices.

CODEX STANDARD FOR FOOD GRADE SALT
CX STAN 150-1985 (Rev. 1-1997)

1. SCOPE

This standard applies to salt used as an ingredient of food, both for direct sale to the consumer and for food manufacture. It applies also to salt used as a carrier of food additives and/or nutrients. Subject to the provisions of this standard, more specific requirements for special needs may be applied. It does not apply to salt from origins other than those mentioned in Section 2, notably the salt that is a by-product of chemical industries.

2. DESCRIPTION

Food grade salt is a crystalline product consisting predominantly of sodium chloride. It is obtained from the sea, from underground rock salt deposits or from natural brine.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Minimum NaCl Content

The content of NaCl shall not be less than 97 per cent on a dry matter basis, exclusive of additives.

3.2 Naturally Present Secondary Products and Contaminants

The remainder comprises natural secondary products, which are present in varying amounts depending on the origin and the method of the production of the salt, and which are composed mainly of calcium, potassium, magnesium and sodium sulphates, carbonates, bromides, and of calcium, potassium, magnesium chlorides as well. Natural contaminants may also be present in amounts varying with the origin and the method of production of the salt.

3.3 Use as a Carrier

Food grade salt shall be used when salt is used as a carrier for food additives or nutrients for technological or public health reasons. Examples of such preparations are mixtures of salt with nitrate and/or nitrite (curing salt) and salt mixed with small amounts of fluoride, iodide or iodate, iron, vitamins, etc, and additives used to carry or stabilize such additions.

3.4 Iodisation of Food Grade Salt

In iodine-deficient areas, food grade salt shall be iodised to prevent iodine-deficiency disorders (IDD) for public health reasons.

3.4.1 Iodine Compounds

For the fortification of food grade salt with iodine, use can be made of sodium and potassium iodides or iodates.

3.4.2 Maximum and Minimum Levels

The maximum and minimum levels used for the iodisation of food grade salt are to be calculated as iodine (expressed as mg/kg) and shall be established by the national health authorities in the light of the local iodine deficiency situation.

3.4.3 Quality Assurance

The production of iodized food grade salt shall only be performed by reliable manufacturers with the requisite knowledge and the equipment for the adequate production of iodized food grade salt, and, specifically, for the correct dosage and even intermixing.

4. FOOD ADDITIVES

All additives used shall be of food grade quality. In particular, the following class of additives is permitted:

- Anti-caking Agents
- Emulsifiers
- Processing Aid

5. CONTAMINANTS

Food grade salt may not contain contaminants in amounts and in such form that may be harmful to the health of the consumer. In particular, the following maximum limits shall not be exceeded:

5.1 Arsenic: Not more than 0.5 mg/kg, expressed as As.

5.2 Copper: Not more than 2 mg/kg, expressed as Cu.

5.3 Lead: Not more than 2 mg/kg, expressed as Pb.

5.4 Cadmium: Not more than 0.5 mg/kg, expressed as Cd.

5.5 Mercury: Not more than 0.1 mg/kg, expressed as Hg.

6. HYGIENE

In order to ensure that proper standards of food hygiene are maintained until the product reaches the consumer, the method of production, packaging, storage and transportation of food grade salt shall be such as to avoid any risk of contamination.

7. LABELING

In addition to the requirements of the Codex General Standard for the Labeling of Pre-packaged Food (CODEX STAN 1-1985), the following specific provisions apply.

7.1 Name of the Product

7.1.1 The name of the product, as declared on the label shall be 'salt'.

7.1.2 The name 'salt' shall have in its close proximity a declaration of either 'food grade' or 'cooking salt' or 'table salt'.

7.1.3 Only when salt contains one or more ferrocyanide salts, added to the brine during the crystallization step, the term 'dendritic' could be included, accompanying the name.

7.1.4 Where salt is used as a carrier for one or more nutrients, and sold as such for public health reasons, the name of the product shall be declared properly on the label, for example, 'salt fluoridated', 'salt iodated', 'salt iodized', 'salt fortified with iron', 'salt fortified with vitamins' and so on, as appropriate.

7.1.5 An indication of either the origin, according to the description in Section 2, or the method of production, may be declared on the label, provided such indication does not mislead or deceive the consumer.

7.2 Labeling of Non-retail Containers

Information for non-retail containers shall either be given on the container or in accompanying documents, except that the name of the product, lot identification and name and address of the manufacturer or packer shall appear on the container. However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

8. METHODS OF ANALYSIS AND SAMPLING (See Codex Alimentarius, Volume 13)

9. CONCLUSION

The Codex standards for salt are quite elaborate and these could be considered for adoption by the Member Countries of Codex under their national legislation.

Street Food

INTRODUCTION

Rapid progress in urbanization, coupled with more and more women joining hands in earning their livelihood along with their male counterparts, has resulted in the aggressive marketing of street food. This industry is mostly in the unorganized sector. Hence there is a need to keep more vigil on the quality and safety of such food in the interest of the protection of the health of the population consuming it. The Codex Alimentarius Commission (CAC) has done commendable work for ensuring the safety of street food and has brought out a Code of Hygienic Practice for the preparation and sale of street food.

The objective of this module is to give an overview of the code formulated by the CAC on this subject. The trainees will appreciate and understand the requirements to be followed in ensuring the safety of street food.

The code, titled 'Revised Code of Hygienic Practice for the Preparation and Sale of Street Food, CAC/RCP 43 1997, Rev.1 2001', is outlined here.

SCOPE

This code contains a series of requirements and practices to be observed in the preparation and sale, in the street, of food and beverages for direct consumption.

The code applies to the places where these are prepared, to the points of sale and to the means of transport used.

OBJECTIVES

The purpose of the code is to ensure that food is safe and fit for consumption, thereby protecting the health of persons who use this form of food facility.

The code is based on the Recommended International Code of Practice – General Principles of Food Hygiene – CAC/RCP 1-1969 (Rev. 3-1997).

DEFINITIONS

For the purposes of this code, the definitions specified in the documents of the Codex Alimentarius shall apply.

Other relevant definitions are:

- Wastewater: Water from domestic and industrial drains.
- Street food: Ready-to-eat food and beverages prepared and/or sold in streets and other similar public places.

k Environment: The surrounding area/place where food is prepared, maintained, exposed, served and/or consumed.
k Authorized: Which has been permitted by the competent authority.
k Foods and beverages for direct consumption: Any type of hot or cold food or beverage ready for consumption.
k Ingredient: Any substance, including a food additive, used in the manufacture or preparation of food and present in the final product, although possibly in a modified form.
k Input: All materials and items, including containers and packaging used in the preparation and consumption of food.
k Organoleptic Testing: Assessment using the sense organs (sight, smell, touch, taste).
k Food Handler: Any person who directly handles packaged or unpackaged food, food equipment and utensils, or food contact surfaces and is, therefore, expected to comply with food hygiene requirements.
k Perishable: Rapidly spoiling or decomposing.
k Sales Stall: Any fixed or mobile structure intended for the sale of food or drink for direct consumption in the street.
k Crockery: All glasses, plates, dishes, cutlery and utensils used in the consumption and preparation of food.

REQUIREMENTS FOR INPUTS AND INGREDIENTS

1. PURCHASE OF INPUTS AND INGREDIENTS

k Purchase inputs and ingredients from authorized retailers or approved sources, under adequate storage conditions, with refrigeration/freezing when necessary (perishable items), stored on shelves, in boxes or baskets and protected from contamination.
k Purchase packaged inputs and ingredients that bear a manufacturer's name or guarantee. Do not purchase food products that are unlabeled and/or without a clearly stated shelf-life, where appropriate.
k Only purchase inputs and ingredients whose organoleptic properties are proper or correspond to the specific characteristics or nature of fresh food or raw material and do not show signs of any kind of alteration and/or adulteration.
k Only purchase perishable inputs and ingredients maintained at adequate temperature.
k Only purchase food products in quantities that correspond to adequate storage/preservation capacity.

2. TRANSPORT, RECEPTION AND STORAGE OF INPUTS AND INGREDIENTS

k Transport all purchased inputs and/or ingredients in adequate conditions, avoiding the hazards of chemical, physical or biological contamination and spoilage of the goods, maintaining an adequate temperature, and isolating each item to prevent cross-contamination. They should not be transported together with toxic and/or chemical substances (disinfectants, detergents, pesticides, etc). For packaged products, follow the manufacturer's instructions on the label; and/or storage conditions complying with the general principles of food hygiene and legal provisions in force.

k The vehicle, containers and packaging used for transportation should be adequately cleaned and disinfected and should have sufficient internal space and the necessary equipment to ensure food safety and quality.
k Inputs and ingredients must be received and kept in clean, protected places. Meat, offal, fish and other perishable products should be placed on trays, under refrigeration and/or freezing, and bulk commodities in clean containers.
k Shelves, boxes and storage space should be of non-contaminating material, clean and protected from dust and other contaminating agents.
k Keep recipients containing food clearly labeled and/or identified and in separate areas from non-edible products such as soap, disinfectants, pesticides and other toxic or poisonous substances.
k Rotate the stock of products on a first in, first out basis.
k Keep the food protected from contamination by pests (insects, rodents) and other biological agents.

Note

Hazard analysis: Food products can be contaminated by pathogenic micro-organisms. Bacteria can grow in inadequate time/temperature conditions. Proximity between different products can cause cross-contamination.

Inadequate exposure to the environment can contaminate food. Physical and chemical contamination can occur when edible and non-edible products are transported together. Chemical, physical and biological contaminants should be controlled from the source/origin of food products.

Critical Control Points (CCPs): The control of time/temperature is an effective measure to prevent bacterial multiplication and food spoilage.

Separation of food items can prevent cross-contamination. Protect food from air, dust and other environmental vectors in order to preserve its safety and quality. The cleanliness and disinfection of the transport area is basic to preventing physical, chemical and biological contamination. Selection of the place of purchase/origin of products ensures hazard control until the stages of transportation and storage.

REQUIREMENTS FOR THE AREA OR PLACE OF PREPARATION AREA WHERE FOOD IS PREPARED

Indoor Areas

These should be designed and constructed in accordance with Section IV of the Recommended International Code of Practice, General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3-1997).

- They should be sufficiently lit, kept as clean as possible at all times and situated far from any source of contaminants (rubbish, wastewater, animals). CAC/RCP 43-1997, Rev. 1-2001.
- Equipment should be made from appropriate materials for easy cleaning and disinfecting, as often as necessary.
- Water for general purposes (washing inputs and recipients) should be potable.
- Containers for water storage should be cleaned as often as necessary.
- Wastewater must be adequately disposed of. It must not present a hazard to potable water, food, surrounding area or food handlers.
- The working area, including surfaces in contact with food (utensils, table surface, cutters, water outlets, etc) should be in good condition and properly maintained. It should be washed with potable water and disinfected as appropriate.
- Do not use, for food, containers previously used for substances that are toxic or harmful to human health, such as insecticides, paints or motor oil.
- Do not keep fuel, toxic substances or inflammable products in direct contact with food. Respect rules of safety regarding electricity and toxic, explosive and inflammable substances in order to protect persons.

Outdoor Areas

- These should be sufficiently clean and protected from direct sun, dust and wind, and should not be in direct contact with the public and consumers.
- Equipment, such as stoves or similar appliances, must be constructed and maintained safely and adequately.
- The potable water supply should be sufficient for all needs. When not from a public source of potable water, the water must be of similar quality.
- The area where the food is prepared should be at least 60 to 70 cm off the ground and suitable for the quantity of food prepared, handled and kept.
- Equipment, utensils, water outlets, working surfaces and other components should meet the same requirements specified.

Note

Hazard analysis: The surrounding and surface areas can be a source of chemical, physical and biological contamination. Inadequate or contaminated water is a source of contamination of food, food handlers, food consumers and environment.

Control Contact Points (CCPs): The surrounding and surface areas should always be clean, disinfected and well maintained. Water should be potable since it is a food ingredient (as water and ice) and a commodity used to clean food, surfaces in contact with food, hands, utensils, etc.

Hygiene Facilities

- Transported potable water should be kept in an appropriate container (easy-to-clean, non-toxic material, hermetically sealed, fitted with a cover and tap or stopcock) built in such a manner as to preserve the product and prevent contamination.
- Containers, utensils and working surfaces for food handling should be of a non-toxic material, easy-to-clean and resistant to high temperatures when used for cooking.
- Detergents and disinfectants used to clean and disinfect working surfaces, utensils, water outlets and other components should, as far as possible, be non-toxic and non-corrosive (Ad. I CAC/RCP 1-1969, Rev. 3-1997). CAC/RCP 43-1997.

Hygiene Practice

- Persons in contact with and/or directly or indirectly handling food, inputs or ingredients should be in a state of health complying with the Recommended International Code of Practice, General Principles of Food Hygiene, CAC/RCP 1-1969 (Rev. 3-1997) (1).
- Hair must be completely covered during food handling. Nails should be short and clean.
- Persons preparing or handling food, inputs and ingredients should refrain from spitting, sneezing, smoking or behavior/habits that can compromise food safety.
- Food handlers should wear appropriate clean clothing and protect themselves with an apron or other suitable garment, which should be changed every day or as often as necessary.
- Food handlers should not wear rings or bracelets while handling food.
- People should not handle food and money at the same time.
- Hands and forearms should be carefully washed with potable water and disinfecting soap after the use of the toilet or direct handling of fresh food, such as meat, fruits and vegetables, and before the handling of prepared or semi-prepared food.
- Food handlers should be trained in the hygienic handling of food and should demonstrate the necessary capacity to protect food at all times.
- Utensils, dishes, glasses, water outlets, working surfaces, etc, should be cleaned and disinfected after each instance of food preparation, before final food preparation or the handling of ready-to-eat food, and immediately after their use.

Note

Hazard analysis: There are many sources of food contamination and/or cross-contamination between different food products, surfaces and hands by direct or indirect contact, as well as conditions that can promote the growth of pathogenic bacteria or contamination in food.

Critical Control Points (CCPs): All ingredients and stages in food handling should be considered and analyzed for the possibility of pathogenic bacterial growth and/or the direct or indirect introduction of contaminants.

Avoid excessive time spans/temperatures and possibilities of contamination in each and every stage of the chain (purchasing, transport, storage, display, handling, etc).

REQUIREMENTS FOR FOOD PREPARATION
REQUIREMENTS FOR PRELIMINARY PREPARATION

Fruits and Vegetables

k Only use fruits and vegetables that have been protected from cross-contamination and properly conserved.
k Select fruits and vegetables, removing parts or items in poor condition, and check that they are intact and fit for human consumption.
k Wash and disinfect, as appropriate, fruits and vegetables before using them directly or as a food ingredient.
k Prepare each kind of fruit and vegetable in the appropriate manner and according to its intended use.
k Peel, squeeze and/or cut, as appropriate, fruits and vegetables with appropriate and hygienized equipment and utensils.
k Keep previously prepared fruits and vegetables in hygienized and properly covered recipients at a maximum temperature suitable for the product in question.

(1) Persons in contact with and/or directly or indirectly handling food, inputs or ingredients should be in a state of health complying with the Recommended International Code of Practice, General Principles of Food Hygiene, CAC/RCP 1-1969 (Rev. 3-1997). (Personnel should not be suffering from jaundice, diarrhea, vomiting, fever, sore throat with fever, visibly infected skin lesions such as boils, cuts, etc). Discharges from the ear, eye or nose (Section 7.2 – Illness and Injuries, Recommended International Code of Practice, General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997). CAC/RCP 43-1997.

Note

Hazard analysis: Fruits and vegetables can be contaminated at source and/or by cross-contamination in the market (chilling water, contact with surfaces and other products), with pathogenic bacteria, viruses and parasites. Take care not to contaminate the surface of the product and/or the final product.

Other contaminants of a chemical nature should be controlled at source and during transport and storage, since there is no other effective preventive measure that can be applied during the final preparation. Physical hazards can be controlled by manual separation.

Critical Control Points (CCPs): The selection, rinsing, washing and disinfecting are important and indispensable measures that can be carried out before storage (to prevent contamination in refrigerators and other storage areas) or immediately before use. Avoid leaving excessive water on the product to prevent bacterial multiplication and for better storage of the product. Select the place of purchase and origin to ensure hazards are under control.

Fresh Meat and Fish

k When necessary, thaw meat and fish in a refrigerator for the required time; a microwave oven can be used to accelerate thawing. Avoid thawing at room temperature.
k Avoid excessive exposure of fresh meat and fish to room temperature.
k Handle fresh meat and fish in such a way as to prevent immediate or subsequent, direct or indirect cross-contamination of the meat and fish and the working surfaces, utensils and other food products.
k Clean the fresh meat and fish, removing undesirable parts, when necessary.

Note

Hazard Analysis: Fresh meat or fish can be contaminated from origin and by handling/marketing conditions and can present pathogenic bacteria, viruses and parasites, thereby acting as a potential source of contamination (surfaces, food handlers, utensils, etc). Inadequate thawing can lead to pathogenic bacterial multiplication on the product surface, since this will be at room temperature for a prolonged period of time.

Critical Control Points (CCPs): Clean and disinfect all surfaces that have been in contact with fresh meat or fish to prevent contamination of ready-to-eat food. Avoid excessive exposure at room temperature of fresh meat or fish to prevent the excessive multiplication of pathogenic bacteria. Select the place of purchase and origin of products to ensure that hazards in the previous stages are under control.

Other Food

- Cheese, salami, sausages and similar food should be handled under hygienic conditions.
- Avoid contact with hands; conduct all operations such as slicing, cutting, grinding, etc, with appropriate instruments and/or utensils.
- Avoid excessive exposure at room temperature.
- Prepare the amount necessary for a maximum of four hours of work.
- Food containers and packaged food should not present any alteration (corrosion, visual alteration, etc).
- Grains, flour, sugar, salt and similar products should not contain humidity and should be kept in appropriate covered containers to prevent alteration/contamination.
- Do not use raw eggs in the preparation of food and beverages intended for direct consumption that are not to be cooked afterwards.
- Mayonnaise, sauces with egg, mousse and similar dishes prepared with raw eggs should come from industrial establishments.
- For other products, the manufacturer should provide instructions on storage and use, which should comply with the rules of hygiene.

Note

Hazard analysis: Food can be contaminated at source and by inadequately washed and disinfected appliances and utensils. Eggs can be internally contaminated with pathogenic bacteria.

Critical Control Points (CCPs): Avoid all sources of contamination and/or pathogenic bacteria growth. Select the place of purchase and origin to ensure hazard control.

REQUIREMENTS FOR FINAL PREPARATION

- Cook the food sufficiently, noting corresponding changes in color, aspect and/or consistency.
- Protect the food, after cooking, from all possible sources of contamination. If the prepared food is to be seasoned with uncooked ingredients, do not expose the food to excessive contact with these ingredients, in time or temperature, before consumption.

The time between the preparation and consumption of food should be:
- Up to six hours when food is kept at a temperature above 60°C.
- Up to one day when food is kept at a maximum temperature of 5°C.
- Chilling time for hot food should not be more than three hours to reach a temperature of 5°C.
- Reheat only once refrigerated food completely to a temperature of 70°C, immediately before consumption.
- Sandwiches prepared at a street sales point should be prepared at the moment of consumption.
- Fresh salads and fresh fruit dishes should preferably be seasoned at the time of consumption.
- Other kind of salad (vegetables, with added mayonnaise or other salad creams, cheese, ham, etc) should be kept below 5°C from preparation to final consumption.
- Food to be cooked/heated immediately before consumption (pizza, kibe, etc) should be kept below 5°C.
- Avoid all use of leftovers and only prepare what can be sold in a day.

Note

Hazard analysis: Micro-organisms are sensitive to heat to a degree depending on biological type and on form and duration of exposure at detrimental temperatures. However, cooking in kitchens is not sufficient to sterilize foods. The remaining bacteria can multiply exponentially at room temperature and their final number will depend on the time of exposure at inadequate temperature. Multiplication is

reduced below 5°C in such a way as to avoid high numbers of pathogenic bacteria with the same intensity and high level of risk. Other factors can control/intensify the effect of heat: Low ph, high acidity, high concentration of salt, presence of additives, etc (low humidity is used to control but not strengthen heat effect). Others pathogens, such as fish parasites, can be controlled by freezing during adequate periods of time prior to use. Some bacteria can produce heat-stable toxins in the product.

Critical Control Points (CCPs): Considering that heat sensitivity and other factors can be used to control pathogenic micro-organisms, cook the food completely to reach its internal parts and keep it at low temperatures to control the risk of bacterial growth.

REQUIREMENTS FOR THE TRANSPORT OF PREPARED FOOD (CAC/RCP 43-1997)

- Vehicles for the transport of prepared food should have a separate compartment protected from direct sun, wind, dust, rain and other contaminants.
- This compartment of the vehicle should be made of appropriate material for the transportation of food and should be waterproof and easy-to-clean.
- The transportation of waste materials should be in special closed containers, to protect the food.
- Food should be transported in appropriate containers (made of non-toxic material and thoroughly cleaned and disinfected), properly sealed and protected from outside contamination
- The temperature should be controlled, avoiding room-temperature exposure of food that must be kept hot or refrigerated, when the time of transportation exceeds one hour and/or in conformity with procedures needed to control bacterial multiplication.
- When the transportation time exceeds two hours, the food containers should be placed in thermal boxes.
- Place prepared hot food in thermal boxes separate from prepared cold or chilled food. Use different thermal boxes for these two types of prepared food.
- When the transportation of prepared food at a constant temperature of over 60°C is not possible, pre-chill the food as indicated in the above paragraph.

Note

Hazard analysis: Transportation can be a source of contamination and/or a phase of bacterial multiplication.

Critical Control Points (CCPs): Avoid any situation that can contaminate food and/or allow bacterial multiplication.

REQUIREMENTS FOR STREET FOOD MARKETING

Outdoor Sales Area

- The sales stall (kiosk, barrow, mobile stall, etc) should be built of solid, resistant material and should be sufficiently high to be easily sanitized.
- The sales stall and its surroundings should be kept clean, free of litter and in good condition.
- When not in use, the sales stall should be kept under cover and, in the case of a mobile structure, should be kept in a clean place.
- The outdoor sales area should not be used for any other purpose.
- The outdoor sales area should be located in a zone determined by the authorities so that it is protected from contaminants originating from traffic, pedestrians, domestic animals and/or vectors.
- The sales area should be free from personal belongings, such as clothes, footwear, blankets, tobacco etc. Avoid any contact between personal belongings and the area of food preparation, storage and/or consumption.
- Adornments, such as vases with or without flowers or plants, and other items may be placed in such a way that they do not represent a source for food contamination.

Note

Hazard analysis: The surroundings of a sales point can represent a source of food hazard.

Critical Control Points (CCPs): The outdoor area for the sale of food should be carefully selected and, to the extent possible, the surroundings should not present inappropriate conditions.

Protection and Sale of Food

- Food and beverages should be served using disposable plates, utensils, glasses, napkins, etc. When this is not possible, the non-disposable serving items in good condition should be washed, cleaned and disinfected after each use.
- Leftovers in dishes, glasses, etc, should be deposited in covered, secure and appropriate containers to avoid attracting domestic animals and/or vectors. Used disposable items should be deposited into separate containers from those used for leftovers, and should also be appropriate and secure.
- Takeaway food should be wrapped in unused non-contaminating paper and/or plastic. The use of printed plastic/paper is forbidden because the print can wear off, especially if in direct contact with food.
- Final food preparation and reheating can be done at the point of sale, so long as food safety is maintained and assured.
- To maintain safety, avoid excessive handling of food at the outdoor sales area.
- The food and beverages displayed for sale should be well-protected and kept at an appropriate temperature.
- When hot food has been chilled, reheating must be at above 70°C.
- Salt, sugar, mustard, ketchup, mayonnaise and similar products to be used by the consumer should be supplied in single-portion units or in dispensers that will avoid their contamination.
- Utensils used to serve food portions for consumption should be cleaned and disinfected, when necessary.
- Avoid direct hand contact with ready-to-eat food of any kind, including peeled fruits.
- Do not handle money, tickets, etc, and food at the same time. When this is not possible, wash and disinfect hands before preparing food.
- If the outdoor point of sale is a vehicle, the driver's compartment should be separate from the compartment used for final food preparation, storage, sale and/or consumption or the food handling sections should be separate from the rest of the vehicle.

Note

Hazard analysis: Dishes, glasses, serving utensils and similar items can also be important sources of food contamination. Leftovers can attract domestic animals and/or vectors, which can also represent a source of food contamination.

Critical Control Points (CCPs): Dispose of dishes, glasses and similar items in separate containers from food leftovers. Avoid attracting domestic animals and/or vectors.

Keep serving utensils clean and in a good condition.

When selling food, vendors should comply with hygienic practices.

RESPONSIBILITY OF VENDORS

In addition to the stated requirements, food handlers or vendors should be responsible for the hygiene and protection of the food they prepare or sell, and for all aspects related to its safety.

Note

Hazard analysis: The food handler can be an important source of contamination.

Critical Control Points (CCPs): Appropriate training and observance of hygienic practices for the food handler are important to assure food safety.

Handling and Disposal of Waste and Pest Control

- Waste bins (containers) should be kept far from the food handling area and have a lid and, where possible, should be fitted with an automatic closing device.
- Waste containers should be of resistant material, waterproof and easy-to-clean.
- Waste containers should be placed in such a way that they are not in contact with the floor or against a wall.
- Wastewater should be collected and disposed of separately from solid wastes, if possible through direct linkage to the sewage system. It should be disposed of in the public drainage system, and not thrown onto the ground and/or into surface waters such as rivers and lakes.
- When collecting solid wastes, recyclable and non-recyclable materials should be kept separate. Their final destination should be according to municipal regulations.
- Food waste should be disposed of in such a way as not to attract insects and animals, such as flies, dogs and cats.
- Pest control should be carried out in accordance with municipal, provincial and/or national regulations.

Authorized technical personnel should only handle the application of chemical substances for pest control. The procedure should avoid the contamination of food, food vendors/handlers, the public and the environment.

Benefits from this Work

India, where the sale of street food is prevalent throughout the length and breadth of the country, covering urban as well as rural areas catering to the different socio-economic, cultural and ethnic populations, may harvest rich dividends by incorporating the basic requirements of this code under the local licensing conditions for the sale of street food.

SECTION 8

OTHER SECTORS

Other Sectors

INTRODUCTION

The Strategic Vision Statement of the Codex Alimentarius Commission reads as follows:
'The Codex Alimentarius Commission (CAC) envisages a world afforded the highest attainable levels of consumer protection, including Food Quality and Safety. To this end, the Commission will develop internationally agreed standards and related texts for use in domestic regulation and international trade in food that are based on scientific principles and fullfil the objectives of consumer health protection and fair practices in food trade.'

The fundamental objective of the CAC is to establish sound internationally agreed guidelines for national food control systems based on the criteria of consumer health protection and fair practices in trade, taking into account the needs and special concerns of all countries. One of the strategic objectives considered important to the overall achievement of the strategic vision is 'promoting maximum membership and participation'.

Achieving this objective will require specific and ongoing action to address:
- Resource Constraints: Early action is required to facilitate the effective participation of developing countries in Codex standards development activities, including financial assistance from extra budgetary resources, where possible.
- Capacity-building: There is a continuing need to invest in capacity-building programs, especially in developing countries aimed at strengthening the National Codex Administrative and Consultative Structures (for example, the Codex Contact Point and National Codex Committee) and provide for enhancing national capacity for technical analysis and participation in international standards development activities by all interest groups. This requires bilateral or multilateral technical assistance and should include training.
- Greater Involvement of Consumers and NGOs: The CAC also needs to continue its efforts to promote and facilitate the participation in the international level and encourage governments to take action at the national level. Given the strong public interest in food safety and regulatory issues, the involvement and input of consumers and non-governmental groups at the national level is essential to build public confidence in international standards and assure the strong public input, acceptance and support for Codex standards, guidelines and recommendations as a basis for domestic regulation and trade.

Keeping this objective in mind, the Food and Agriculture Organization of the United Nations has sponsored a Technical Cooperation Project (TCP) in India for Strengthening the National Codex Committee. The project will have a catalytic effect on strengthening the control of food quality and safety in India by providing acceptable food standards and, through these, the basis for appropriate regulations and a food control program in India.

The aim of the project is to build within the Government of India, at both the central and state level, as well as within trade, industry, consumer groups and research organizations, the capacity to deal with national, international and national Codex matters in an effective and organized way. Through the heavy training component of the project, a pool of informed, knowledgeable and experienced people is created who can carry on future Codex activities in a sustainable way.

The present section, therefore, makes an attempt to draw up training modules for officials in government agencies, including trade promotion bodies and consumers, to enhance their capabilities and contributions towards consolidating India's position in matters of Codex.

The Public Sector, Including Trade Promotion Bodies

INTRODUCTION

1. THE STAKEHOLDERS IN PUBLIC SECTORS IN INDIA

A perusal of the composition of the National Codex Committee and its Shadow Committees, as outlined in Module 8, gives an idea of the stakeholders in public sectors who have been contributing/are expected to contribute towards India's work in Codex and should come forward to take active participation as leaders/members of the Indian delegation, whenever the situation so demands. These stakeholders could be classified as:

- Central Ministries
- Trade Promotion Bodies
- State Government

1.1 Central Ministries

A number of departments in the central ministries are involved in India's program of food quality and safety and hence each one of them has a role to play in the activities of Codex in India. These are:

1.1.1 Department of Health in the Ministry of Health and Family Welfare

As the main purpose of the Codex Alimentarius Commission is to protect the health of the consumers and ensure fair practices in the food trade, the Health Ministry in the Central Government dealing with the program of food quality and safety at the national level is the most appropriate ministry to be the nodal agency for Codex work in India. The Program Officer dealing with food quality and safety at the national level has, therefore, been designated the National Codex Contact Point (NCCP) and Secretary of the National Codex Committee (NCC). The Joint Secretary in the Department of Health dealing with policy matters of the program is the Chairperson of the NCC. This ensures linkages between the national standards and international standards formulated by Codex, which is of utmost importance in working towards the harmonization of standards, which is the ultimate goal of the SPS Agreement of the WTO.

The expectations from this department are:

- Efficient and smooth functioning of the NCCP and the NCC, as already outlined in Modules 7 and 8, to coordinate and focus efforts related to Codex and food control in general.
- To serve as a focal point for the coordination, development and promotion of programs and information on the national strategy to emphasize the production of food, which complies with the national standards and subsequently aims at meeting Codex standards, so as to meet the international trading requirements and consequently ensure that India meets the obligations under the World Trade Agreement.
- To ensure effective participation in and monitor the elaboration of Codex standards through the platform of the NCC so that national economic interests are taken into account, or at least considered when international standards are elaborated.

k To provide a national forum on food safety and consumer protection matters through the NCC where all concerned parties can discuss the implications of the Codex text on the food industry and concerned government authorities.
k To design food inspection and certification systems for imported food, based on the Codex guideline document for the design, operation, assessment and accreditation of food import and inspection certification systems.
k To recognize the principles of equivalence of inspection and certification and avoid the unnecessary repetition of controls where the exporting country has already carried these out with validity.
k To keep records of the rejection of imported food in relation to domestic, vis-à-vis Codex standards, so as to examine the need for making changes either in the national standards or in the Codex documents, based on sound science and a rational approach.
k To apply the Codex principles of risk analysis and building up the HACCP approaches under the licensing conditions which could be used as a fundamental tool for the identification and control of hazards so as to ensure the safety of food.
k To draw up a well-planned and farsighted activity schedule for seeking technical assistance for strengthening the overall food control system in India and posing it to international agencies such as the FAO/WHO/World Bank/WTO.
k Being the nodal ministry for the WHO, it should ensure the expeditious examination and clearance of projects related to food safety submitted by other departments on merits and pose them to the WHO.
k Keep abreast of the development of the projects/programs/activities of the WHO in Geneva on matters relating to food safety such as global environmental monitoring of contaminants/expert consultation and keep the NCCP/NCC informed for action, if any.
k Take initiative to generate/collate a data base on the risk analysis of contaminants/pesticides/food additives through the research institutions under the Indian Council of Medical Research/National Institute of Nutrition under Indian conditions for presenting them to the international forums.
k Get the Codex documents on Methods of Analysis and Sampling scrutinized by the Central Food Laboratories with a view to harmonize the methods followed in India. Comments, if any, for modification or feasibility of the methods based on collaborative laboratory trials may be brought to the notice of the CAC through the NCC or its relevant Shadow Committee.
k Keep the Ministry of External Affairs informed on all Codex matters so as to seek the cooperation/ support of Indian Embassies/High Commissions in participation in Codex meetings and mobilize the support of other countries in consolidating India's position in Codex.

1.1.2 Ministry of Agriculture

1.1.2.1 The Department of Agriculture and Cooperation dealing with the subject of international cooperation.

This Department is the nodal agency in India for dealing with all technical matters, including assistance provided by the FAO to India. This department is also the liaison office in India for handing the SPS Agreements of the WTO. Expectations from these departments are:
k All FAO projects for boosting the Codex activities in India and strengthening the system of food quality and safety in India are cleared as expeditiously as possible.
k Keeping liaison with the activities and programs of the FAO in Rome and keeping the NCCP informed of the development, if any, in matters related to food security and quality at the global level, for example, FAO expert consultation on topics concerning food.
k Keeping the NCCP informed about the developments in the SPS Committee of the WTO from time-to-time.

1.1.2.2 Department of Animal Husbandry and Dairying

This department is responsible for matters relating to livestock production, preservation, protection and improvement of stocks and dairy development. It also looks after all matters pertaining to fishing and fisheries, inland and marine. Expectations from this department are:
a. To critically examine all existing Codex texts as well as texts/standards under process of formulation/ revision on milk and milk products/meat and poultry products/fish and fishery products and

ensure that they protect the interest of Indian producers. In case any modification is needed, a background note with technical justification backed by data is prepared for presentation to Codex through the NCCP. The expertise available with the National Dairy Development Board (NDDB) working under this department and the National Dairy Research Institute (NDRI) may be gainfully utilized for this purpose.
b. Introduce the concept of the Codex HACCP among the producers of these commodities, so as to enable them to come up to international standards and make a dent in the export market.
c. Make contributions on the documents/agenda for the consideration of the Codex Committee on Residues of Veterinary Drugs in Food, taking into consideration Indian practices.
d. Active involvement with the work of ad hoc intergovernmental task forces on animal feeding.

1.1.2.3 Directorate of Plant Protection, Quarantine and Storage

This directorate is responsible for the registration of the use of pesticides in India as well as export. It has also to ensure the safe use of pesticides so as to determine that the leftover residue of the chemical does not pose any health hazard.

Expectations from this directorate are:
a. Residue limits recommended by Codex are invariably taken into consideration while registering any new pesticide or reviewing the use of existing pesticides.
b. Instilling the concept of Good Agricultural Practice (GAP) in the use of pesticides, as defined by Codex among the farmers, so as to minimize the residues of pesticides.
c. Advocating the practice of Integrated Pest Management among the farmers so as to phase out the use of chemical pesticides.
d. Preparation of background document for submission to the Codex Committee on Pesticide Residues or the Joint FAO/WHO Meeting on Pesticide Residues for the evaluation/inclusion of those pesticides, which have been listed for use in India in certain commodities, such as spices, tea, etc, but have yet to find a place in Codex. Data generated under supervised trials in agricultural research institutes, universities and commodity promotion boards, toxicity data, acceptable daily intake, maximum permissible intake and analytical methods may form a part of the background document.

1.1.2.4 Directorate of Marketing and Inspection

The National Agriculture Policy (NAP) envisages the promotion of demand-driven agriculture growth, catering to the domestic as well as export markets. This directorate is responsible for the efficient marketing system, which lies at the core of agricultural growth. It also operates the Agricultural Produce (Grading and Marketing) Act, 1937 as amended in 1986 (AGMARK), providing for the promotion of standardization and grading for agricultural commodities such as wheat flour, edible oils, ghee, butter, honey, etc.

Expectations from this directorate are:
a. To create facilities for cleaning, grading and packaging not only in the spot markets but also in the villages from where produce is brought to the market for sale. The concept of the HACCP based on Codex documents be instilled among the farmers, producers and marketing agencies so as to ensure safety of food from farm-to-table.
b. To take into consideration Codex documents while framing/reviewing grade standards of agricultural produce.
c. To explore the possibilities of imparting training to the producers as well as different market functionaries in the areas of agro-business management; post-harvest management, grading, standardization and quality assurance; highlighting national/Codex standards, the relationship between Codex and the WTO and information technology.
d. Preparation of a base paper outlining the difficulties/problems, if any, faced by the farmers, producers and marketing functionaries in adhering to the Codex norms/standards for consideration of the NCC/CAC.

1.1.3 Ministry of Atomic Energy

Bhabha Atomic Research Center, Mumbai (BARC), working under this ministry, deals with the approval and licensing of facilities for the treatment of food by irradiation. It also undertakes research work on food additives and contaminants.

Expectations from this Center are:
a. To examine the Codex standards on the irradiation of food under the Indian context and assist in the formulation of Indian views.
b. To collate Indian data on food additives and contaminants and submit it to the NCC/CAC.

1.1.4 Ministry of Commerce and Industry

This ministry is responsible for the formulation of the Export and Import (EXIM) Policy in the country. It implements a legislation prescribing a system of quality control and inspection for export so as to ensure the sound development of the export trade of India. It has recently launched the National Program for Organic Production (NPOP). It is also the nodal ministry for liaison with the WTO.

Expectations from this ministry are:
a. Design of food inspection and certification systems for export are based on the Codex guideline document for design, operation, assessment and accreditation of food import and export inspection certification systems.
b. Equivalence agreements based on Codex documents are drawn up with the countries importing a substantial quantum of food from India.
c. Keeping records of grounds for the rejection of exports, analyze these and, if necessary, suggest modifications in the national standards/Codex standards with sound scientific justification.
d. National standards for organic products and processes as well as the accreditation of programs operated by inspection and certification agencies should be in tune with Codex documents.
e. Keeping the NCCP/NCC informed of the developments in the WTO on matters relating to food standardization, quality and safety.

1.1.5 Ministry of Defense

The Defense Food Research Laboratory, Mysore (DFRL), working under this ministry, is capable of contributing towards the preparation of a base paper/generation of a data base on food additives/ contaminants/food standardization for presentation to Codex.

1.1.6 Ministry of Environment and Forest

This ministry holds the Secretariat of the Genetic Engineering Approval Committee entrusted with the job of prior approval of all foodstuff, ingredients in foodstuff and additives using genetically modified (GM) organisms or cells that are imported into the country. It is expected to provide inputs to the Codex standards, labeling and identification of GM food through the respective Shadow Committee of the NCC/NCCP.

1.1.7 Ministry of External Affairs

This ministry is responsible for building the image of India in the international field.

Expectations from this ministry on Codex issues are:
a. Advising the offices of the Embassies/High Commissions of the host countries of the Codex meetings to keep track of all issues under consideration and invariably deputing an official to participate in the meetings.
b. Securing support from like-minded countries on issues on which India has a stake by building a personal rapport with the officials concerned with the matters.
c. Exploring the possibilities of India taking a lead in the Asian Region and SAARC countries on the Codex issues.

1.1.8 Ministry of Food, Public Distribution and Consumer Affairs

1.1.8.1 Department of Food and Public Distribution

This Department is primarily concerned with the food security in the country by formulating and implementing national policies relating to the procurement, movement, storage and distribution of food grains; export and import, buffer stocking, quality control and specifications and promotion of scientific storage. Expectations from this department are:

a. Policies on marketing/import/export of food grains do take into account national standards with the ultimate aim to harmonize national standards with Codex standards.

b. Scientific storage practices are based on Codex documents.

c. Active involvement in the consolidation of India's position in Codex on matters relating to standards of food grains and its products with inputs from experts from the Food Corporation of India, Central Warehousing Corporation and the Indian Grain Storage Management and Research Institute, Hapur.

1.1.8.2 Directorate of Sugar and Directorate of Vanaspati, Vegetable Oils and Fats

These two directorates regulate the manufacture, commerce and distribution of sugar and edible oils respectively through the states/UTs. It also plans need-based imports of these commodities from time-to-time. Expectations from these two directorates are:

a. Sugar and edible oil industries need to be impressed upon to adopt the HACCP principle based on Codex documents.

b. The Codex documents on these commodities should be examined critically in respect of national standards with a view to suggest harmonization. Problems, if any, adhering to Codex standards be brought to the notice of the NCC/CAC with a comprehensive base paper with inputs from the Hindustan Vegetable Oil Corporation, industry and National Sugar Institute, Kanpur and research institutions working on these subjects.

1.1.8.3 Legal Metrology Division in the Department of Consumer Affairs

This division governs the sale and mandatory registration of all importers of packaged commodities including food items in the country and has to ensure:

a. The labeling provisions provided under their legislation are harmonized with national regulations and Codex requirements.

b. The labeling provisions do not put any unreasonable restrictions on the importers so as to create dispute under the provisions of the TBT Agreement of the WTO.

c. Any suggestion for the modification of Codex labeling provisions with reasonable justification is brought to the notice of the NCC/CAC.

1.1.8.4 Bureau of Indian Standards (BIS) in the Department of Consumer Affairs

It formulates quality standards of processed food articles and operates a voluntary certification scheme (ISI Mark) based on process quality control. This certification has been made compulsory under the national legislation in case of some commodities of food such as baby food, milk powder, mineral water, bottled water, food additives, etc. It also grants product certification for importers of 131 food items. It has initiated the harmonization of BIS standards with Codex. It is the nodal agency in India for liaison with the International Standard Organization (ISO) and TBT Agreements. Expectations from this Bureau are:

a. Taking Codex standards into consideration while formulating/reviewing BIS standards.

b. Adopting the Codex document on the HACCP while granting certification to the industries based on process quality control.

c. Keeping the NCCP/NCC informed about the developments in the ISO and TBT.

d. Highlighting problems encountered by the industries, if any, in complying with Codex requirements with a rationale for consideration of the NCC/CAC.

1.1.9 Ministry of Food Processing Industries

This ministry is responsible for the formulation of a policy for the healthy growth of the food processing industries and provides developmental support to these industries. It encourages research and developmental activities and assists the industries in active participation in the laying down of food standards as well as their harmonization with international standards. This ministry is also the licensing authority for processed fruits and vegetable industries. Expectations from this ministry are:

a. Incorporate Codex HACCP guidelines in the licensing conditions of the industries.
b. Encourage the industries to voluntarily adopt Codex standards, wherever feasible.
c. Bring out the points for non-conformity to Codex standards with sound scientific reasoning for submission to the CAC through the respective Shadow Committee/NCC.
d. Hold seminars/workshops in conjunction with the NCCP for boosting Codex (India) activities among industries.

1.1.10 Ministry of Human Resource Development

The Department of Women and Child Development is the nodal ministry for running the National Nutrition Program. It also deals with legislation for promoting and protecting breast-feeding practices in the country. It is expected to contribute to the Codex standards of infant formula, infant food and food for special dietary uses through the forum of the respective Shadow Committee of the NCC/NCCP.

1.1.11 Ministry of Science and Technology

1.1.11.1 Council of Scientific and Industrial Research

Two premier institutes working under this council, namely the Central Food Technological Research Institute, Mysore (CFTRI) and the Industrial Toxicology Research Center, Lucknow (ITRC), are capable of providing substantial inputs in India's contributions to the work of Codex by:

a. Preparation of a base paper taking into consideration the scientific literature/study already available in the country.
b. Generation of a data base on additives and contaminants.

1.1.11.2 Department of Biotechnology

This department deals with genetic engineering. It is expected to consolidate Indian views on issues relating to the safety, labeling and identification of GM food with inputs from the Indian Council of Medical Research.

1.2 Trade Promotion Bodies/Councils

A number of organizations under the aegis of the Ministry of Agriculture, Ministry of Food and Consumer Affairs and Ministry of Commerce and Industry have been functioning in the form of Commodity Promotion Boards, Cooperative Federations and Export Inspection/Promotion Councils for monitoring and boosting the production, consumption, marketing and export of various agricultural commodities. Prominent among them in the food sector are the National Cooperative Development Corporation Ltd (NCDC), the National Agricultural Cooperative Marketing Federation Ltd (NAFED) for the procurement and distribution of commodities; the Tea Board, Coffee Board, Spices Board, Coconut Board, National Dairy Development Board (NDDB), National Horticulture Board (NHB), State Trading Corporation (STC), Agricultural Processed Food Export Development Authority (APEDA), Marine Products Export Development Authority (MPEDA), Cashewnuts Export Promotion Council of India (CEPC), etc, for the promotion of the production and export of specific commodities. Another agency providing yeoman service in the field of export is the Export Inspection Council. It assists the industries in the certification of the quality of food items for export through the installation of the Food Quality and Safety Management system based on the principles of the HACCP.

Expectations from these agencies are:

a. Encouraging the farmers, producers and exporters to adopt GAP, GMP, Food Hygiene and principles of the HACCP so as to ensure the safety of food from farm-to-table. Problems faced by them in adhering to Codex norms and standards backed by scientific rationale are to be brought to the notice of respective Shadow Committee/NCC so that the matter could be taken up with the CAC.
b. Boosting organic production of the commodities as per Codex guidelines and propagating the IPM technique.
c. Extending cooperation and support to the NCCP by being pro-active in their field on Codex matters and providing rational feedback to the respective Shadow Committee of the NCC/NCCP for timely intervention in the international forum.
d. Creating a data base on the reasons for the rejection of commodities exported out of the country and suggesting appropriate changes, either in the national standards or Codex standards, as appropriate, based on sound scientific reasoning.

1.3 State Government

In the state sector, three ministries/departments have to play a major role in India's work in Codex. These are the Ministry of Agriculture, Ministry of Health (or any other ministry dealing with the program of food quality and safety at the state level) and the Ministry of Food Processing Industries.

Expectations from these departments are:
a. Highlighting the problems of the farmers/producers/industries/exporters located in the state in adhering to national as well as Codex norms/standards and bringing these to the notice of the NCCP.
b. Incorporating the principles of GAP/GMP/Food Hygiene and Codex principles of the HACCP under the licensing conditions.
c. Encouraging the farmers/producers/industries/exporters/consumers to play an active role in India's work in Codex.

1.4 General Expectations from All These Sectors

a. A Codex cell should be created in each of the offices to maintain liaison with the NCCP.
b. Provision be made in the budget for participation in Codex meetings as and when needed.
c. Continuity of the same official as a member of the delegation to Codex meetings should be maintained so as to establish linkages from the past meetings as well as to build up expertise on the subject.

2. CONCLUSION

As a result of the collective and concerted efforts on the part of each of the stakeholders enumerated above, India could be recognized as a vibrant member of Codex, protecting the interest of the country in the standard formulation process. It could thus make a dent in the international market.

Consumer Issues

Consumer means persons and families purchasing and receiving food in order to meet their personal needs.[68]

INTRODUCTION

The nature of food demand and trade has changed over the years to meet the requirements of countries. As countries have become richer and better educated, their consumers demand increased standards of quality and safety. Developed countries demand a variety of food products and a year-round supply of fresh fruit and vegetables, fish and fish products, dairy products, and fresh meat. Associated with this change has been a move to control food quality and safety through the supply chain, frequently using the recommended process standards rather than the more traditional end-product standards.

As well as protecting the health of consumers, food standards reduce the costs of doing business by reducing the risk of fraud and costs of finding reliable trading partners from which to source food products. But, to be useful, food standards must be meaningful to consumers. They reduce consumer risks of inadvertently buying unsafe or inferior quality food. However, governments frequently have other priorities, such as inadequate supplies of safe water, food security, or specific health-related concerns, such as tuberculosis, that demand scarce resources.

With the establishment of the World Trade Organization in 1995 and the implementation of the Agreement on Sanitary and Phytosanitary Measures[69], Codex standards took on a legal recognition that obligates all signatories to the Marrakech Agreement (April 1994) to justify any variation within national requirements to Codex norms, to harmonize where appropriate with international norms, and to be transparent in doing so. Thus Codex standards are increasingly based on risk assessment and implemented using the risk analysis paradigm. As required by the WTO SPS Agreement, decisions are more transparent and engage all interested stakeholders, including consumers.

As an international standard-setting body, the Codex Alimentarius Commission must address the difficult issue of balancing the different needs of consumers in developed and developing countries and between the different interests and priorities when cultural differences between countries exist.

1. PARTICIPATION IN THE WORK OF CODEX

The work of the Codex Alimentarius Commission (CAC) is coordinated through the Codex Contact Point for India – see Section 3, Module 7 of this manual. The Contact Point has a pivotal role in ensuring full country participation and transparency of input to the work of Codex. Thus, consumers have the ability to participate fully, or to the level desired, in this work. As consumer views must represent

[68]Codex General Standard for the Labeling of Pre-packaged Food, CODEX STAN 1-1985, Rev. 1-1991.
[69]The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts, World Trade Organization, Geneva, 1994.

the collective community, consumer organizations are encouraged to coordinate the interests of its constituents. The linkages between individuals and organizations/associations with the Codex Contact Point are addressed in Section 3, Module 10.

Peak national consumer representative bodies (or organizations) are generally affiliated with an international agency. Known as international non-government organizations or the INGOs, these bodies may be invited to attend as observers in the sessions of the CAC and of its subsidiary bodies. In addition to meeting the requirement for transparency, the purpose of collaboration with the INGOs is to secure for the CAC expert information, advice and assistance. It also enables organizations that represent important sections of public opinion and which are authorities in their fields of professional and technical competence to express the views of their members and to play an appropriate role in ensuring the harmonizing of intersectoral interests among the various sectoral bodies concerned in a country, regional or global setting.

The principles concerning the participation of the INGOs in the work of the CAC are included in the procedural manual of the Codex Alimentarius Commission.[70] These principles provide information on:

- Organizations eligible for observer status.
- Procedures for obtaining observer status.
- Privileges and obligations.
- A list of the information required by the INGOs requesting 'observer status'.

At the more local level, consumers should be aware that Codex norms are available worldwide for use by governments, industry, and other interested parties, including consumers. Codex norms are dynamic texts, continually being updated against the contemporary food standard-setting methodology and as risks to human health and/or international trade emerge. Consumer organizations should encourage the use of Codex texts at the grassroot level, as reference material for the curricula in schools and tertiary institutions, within community and women's groups, such as school canteens, self-catering groups, informal women's educational and discussion groups, etc. Conversely, consumer groups and associations should utilize the expertise within their membership, of those who are prepared to review and disseminate draft Codex texts and to assist the organization in preparing responses, or collating feedback from members on issues being considered by Codex. Participation in the Codex consultative mechanism is covered in Section 4 of this training manual.

2. SOME CONSUMER CONCERNS IN THE WORK OF CODEX

The responsibilities of the Codex Alimentarius Commission, comprehensively covered in Section 2, Module I of this manual, is to make proposals on all matters pertaining to the implementation of the Joint FAO/WHO Food Standards Program, with the purpose of first, protecting the health of the consumers and ensuring fair practices in the food trade. Accordingly, it is right that consumers should be encouraged to participate in the Commission's work to coordinate the relevant work of international agencies, to determine priorities and guide the preparation of draft standards.

By way of background, consumers have been active in the work of Codex since the mid-1970s when Australia invited a consumer representative to participate as part of its official delegation to a Codex Committee meeting. Since that time, consumer presence has steadily increased, although consumer representatives today frequently refer to the lack of funding for adequate levels of representation within national delegations, or as the INGOs. The strategic conference on International Food Trade Beyond 2000: Science-based Decisions, Harmonization, Equivalence and Mutual Recognition, held from October 11 to 15, 1999, in Melbourne, Australia (otherwise know as 'the Melbourne Conference'), heard that in the past, consumers and consumer organizations that represented the voice of consumers in policy forums had not been so prominently involved in most international food policy debates. Many consumer organizations perceive that decisions affecting what consumers will eat are made behind closed doors by business and government experts.

[70]Procedural manual of the Codex Alimentarius Commission, 12th edition, pp 54-59.

The primary solutions to the resolution of this problem, proposed at the Melbourne Conference, were to be found in proper communication, openness, and transparency. Risk communication should be recognized as a two-way process, and a dialogue that respects and addresses the concerns of all parties. Consumer representatives at the Conference heralded the opinion that openness and transparency in the manner in which decisions were made are as important as the soundness of the decisions themselves, and should be addressed at all levels of the Codex Alimentarius Commission and the World Trade Organization's decision-making processes, as well as at the national level.

Key specific issues at that Conference included the view that science could only provide one basis for the decision-making process, even if the scientific basis was well-founded, subjective decisions in the implementation of risk management were also required. Legitimate factors, other than science, were relevant to this process and, therefore, needed to be identified and the principles for their application determined.

The adequacy of food labeling continues to be a major concern for consumers. At the Melbourne Conference, it was noted that consumer preferences were a legitimate market force that could be addressed through labeling. Importantly, it was noted that adequate and informative labeling tended to make risk voluntary, and thereby reduces the impact of risk on the food selection habits of the consumer.

In response to the recommendations from consumers, the Melbourne Conference asked governments to clearly acknowledge the role of consumers and consumer bodies in the development of national and international food policies to improve transparency and engender commitment. The Conference also urged appropriate national government bodies to prepare educational and informational material to describe and explain important food safety and nutrition issues to producers, processors, and consumers.

Since the Melbourne Conference, consumer participation at sessions of the CAC and meetings of its subsidiary bodies has been consistent, and participative. Transparency in the Codex process has improved with the Codex Alimentarius becoming available on the Codex web site: www.codexalimentarius.net, along with all advice, agendas and working papers for all Codex meetings.

In a more recent evaluation conducted on the Codex Alimentarius Commission,[71] transparency was rated as adequate or slightly better, although communication of risk assessment to the general public was noted to be a difficult area at the national level. Perhaps consumer organizations should play a key role in communicating the outcome of risk assessment within their respective communities in a form and language that is readily appreciated by the recipients.

In the evaluation of the Codex Alimentarius referred to above, consumer organizations felt that representation and participation at Codex meetings was over-balanced by industry INGOs, whereas industry organizations believed that consumer INGOs overshadowed their presence. Governments participating in the evaluation considered that the balance of industry and consumer INGOs was right. However, it was considered that the INGOs were capable of constraining decisions by Codex, and that the criteria for participation should be reviewed regularly and strengthened.

3. CODEX RESPONSE TO CONSUMERS

Turning to the products of the CAC, we find that consumer needs are specifically, or obliquely, referenced throughout Codex norms. With a mandate to protect the health of consumers, it is not surprising to find examples such as:

k The Codex Code of Ethics for the conduct of international trade embodies the principles of sound consumer protection. This code supplements and complements the establishment and strengthening of national food legislation and food control infrastructure. The code specifically recognizes, inter alia, that:

[71]Report of the Evaluation of the Codex Alimentarius and Other FAO and WHO Food Standards Work, FAO/WHO, January 2003. Available at: www.fao.org.

k Adequate, safe, sound and wholesome food is a vital element for the achievement of acceptable standards of living and that the right to a standard of living adequate for the health and well-being of the individual and his family is proclaimed in the Universal Declaration of Human Rights of the United Nations.
k There is increasing concern worldwide about the food safety, food contamination through environmental pollution, adulteration, unfair trade practices in quality, quantity and presentation of food, food loss and wastage and, generally, about the improvement of food quality and nutritional status everywhere.
k Food legislation and food control infrastructures are not sufficiently developed in many countries to enable adequate protection of their food imports and prevent the dumping of sub-standard and unsafe food.
k Each country should establish or strengthen its food legislation and food control infrastructures and, where necessary, take advantage of the work of international organizations competent to advise and provide assistance, particularly of the recommendations of the Codex Alimentarius Commission.
k A code of ethical conduct for the international trade in food embodying the principles of sound consumer protection can supplement and complement the establishment and strengthening of national food legislation and food control infrastructures.
k Specific responsibilities of consumers set out in the General Principles for Food Hygiene.[72] Section IX of the General Principles sets out provisions on product information and consumer awareness. It is required that:
k Products bear appropriate information adequate and accessible, to ensure that consumers have enough knowledge of food hygiene to enable them to understand the importance of product information, make informed choices, and to prevent contamination and growth or survival of food-borne pathogens by storing, preparing and using it correctly.
k Health education programs cover general food hygiene to enable consumers to understand the importance of any product information and to follow any instructions accompanying products, and make informed choices, with particular reference to consumer information on the relationship between time/temperature control and food-borne illness.
k Consumer consciousness throughout the labeling norms, including the General Standard for the Labeling of Pre-packaged Food;[73] General Guidelines on Claims;[74] Guidelines on Nutrition Labeling;[75] Guidelines for Use of Nutrition Claims;[76] and General Guidelines for Use of the Term 'Halal'.[77] For example, the purpose of the Guidelines on Nutrition Labeling is to:
k 'Ensure that nutrition labeling is effective (inter alia) in providing a means of conveying information of the nutrient content of a food on the label.'
k 'Ensure that nutrition labeling does not describe a product or present information about it which is in any way false, misleading, deceptive or insignificant in any manner.'
k The Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Food[78] recognize that consumer perception on the organic production method may differ from region-to-region in the world. This was taken into account in the development of these guidelines.
k Requirements in respect to the use of food additives in the General Principles for the Use of Food Additives to limit use of food additives[79] to situations that are justified, such as to:

- k Preserve the nutritional quality of the food.
- k Provide necessary ingredients or constituents for food manufactured for groups of consumers with special dietary needs.
- k Enhance the keeping quality or stability of a food or to improve its organoleptic properties, provided that this does not change the nature, substance or quality of the food as to deceive the consumer.
- k Provide aids in the manufacture, processing, preparation, treatment, packing, transport or storage of food, provided the additive is not used to disguise the effects of the use of faulty raw material or of undesirable (unhygienic) practices or techniques.

Further, consumers should become aware of the risk assessment processes applied by Codex and the

[72]Recommended International Code of Practice: General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3, 1997. See also Section 6, Module 15 of this training manual. [73]CODEX STAN 1-1985, Rev. 1-1991. [74]CAC/GL 1-1979, Rev. 1-1991. [75]CAC/GL 2-1985, Rev. 1-1993. [76]CAC/GL 23-1997. [77]CAC/GL 24-1997. [78]CAC/GL 32-1999, Rev. 1-2001. [79]Advisory text adopted by the 9th Session of the CAC, 1972.

independent Expert Committees that provide Codex with scientific advice in the areas of food contaminants, agricultural and veterinary chemicals, and methods of analysis and sampling, and in the specific quality factors set out in the commodity standards to ensure that consumers are not subjected to deceptive or fraudulent practices.

The references above to Codex work are only representational of an extensive catalogue of Codex norms that are set out in the 14 volumes of the Codex Alimentarius. Accordingly, consumers are encouraged to review the foregoing sections of this training manual in order to become familiar with the overall work of Codex.

4. CONCLUSION

A key recommendation from the Melbourne Conference was that 'consumer organizations need to commit resources and to invest more of their time and expertise in mastering the expanding array of food quality, safety and trade issues. Consumer organizations also need to increase the coordination of their work in national and international food policy and trade discussions'.[80]

Consumers can, where there is an interest, take an active and direct role in the work of Codex at the national level through the work of their respective consumer organizations, which may have direct, or indirect representation on the National Codex Committee and/or participate in national delegations to Codex meetings. Consumer organizations should also work with the government to encourage the harmonization of the national food standard-setting methodology with that of Codex in order to improve overall food quality and safety at the national level. Adopting the Codex food standard-setting methodology is expedient, efficient and cost-effective as well as being universally accepted. With free access to the Codex norms, reports, working papers, and recommendations, all consumers can expand their knowledge about, and participate in, both, the food standard-setting process and utilize the Codex work to improve food quality and safety in the community.

[80]Report of the Conference on International Food Trade Beyond 2000: Science-based Decisions, Harmonization, Equivalence and Mutual Recognition, October 11-15 1999, Melbourne, Australia. ALICOM 99/25: FAO Rome, 1999 p. 14.

Evaluation

INTRODUCTION

In the following evaluation you are asked to respond to three different kinds of questions:

1. In the first type you are requested to indicate the strength of your response to a question by circling the appropriate number.

Example: Are lectures the best menus of teaching?

Definitely No 1 2 3 4 5 Definitely Yes

Note: A circled 3 designates a neutral position.

2. The second type of question is a multiple-choice. Select your choice out of several answers.

3. You are requested to supply an answer in your own words.

Evaluation of the Workshop

A. Hall and Other Facilities

1. Were you comfortable?
2. Were the seating arrangements satisfactory?
3. Could you see and hear well?
4. Were the forenoon and afternoon sessions well-balanced?
5. What improvements would you suggest for future workshops and seminars?

B. Accommodation, Meals, Coffee/Tea Services

6. Was the overnight accommodation (if provided) satisfactory?
7. Were the meals/coffee/tea services satisfactory?
8. What improvements do you suggest for future workshops/seminars?

C. Organizational Arrangements

	Definitely No	1	2	3	4	5	Definitely Yes
9. Programs of the Workshop							
10. Handouts and Reference Material							
11. Exercises and Breakout Sections							
12. Panel Discussions							
13. Reports and Presentations							
14. How would you rate these overall?							

15. Provide a brief statement of your objectives as to why you attended this program and what do you expect to gain from the workshop.

D. Personal Objective

16. To what degree did the workshop meet your interest?

17. To what extent did the workshop meet your perusal, objectives?

18. How much new knowledge did you gain?

Definitely No	1	2	3	4	5	Definitely Yes

E. Programs

19. How valuable have you found the subjects?

20. How much of the subject prescribed is relevant to you?

100% 75% 50% 25%

21. Were the subjects covered in detail? Name any that was not covered sufficiently.

22. Was the workshop practical, so that you could apply the knowledge gained in your area?

23. What additional subjects do you suggest for future programs?

24. What subject do you consider should be deleted from future programs?

25. The course was designed to include the following:

	Definitely No	1	2	3	4	5	Definitely Yes
A Codex Commission and Subsidiaries							
B Activities of Codex							
C NCCP							
D NCCC							
E WTO							
F SPS							
G TBT							
H Food Safety							
I Regulation							
J Harmonization							
K HACCP, etc							

How would you evaluate the integration of all the above elements in the workshop?

26. Which sessions were the most effective?

a. Lecture
b. Discussions
c. Visual
d. Discussions outside the sessions
e. All of the above
f. Any others

27. Did any session leave you confused?
If yes, explain.

28. Do you think the presenters could have improved their presentations?
If so, provide suggestions.

29. How do you assess the time devoted to presentations?

Sufficient | Too long | Too short

30. Was there enough time for discussions, both formal and informal?

Yes | No

31. Were there subjects which you think should have been included in the program?
If yes, give suggestions.

32. Were there subjects in the program which you think should be deleted?
If yes, which ones?

F. Overall Workshop Evaluation

33. Were there any strong aspects of the workshop?
If yes, what were they?

34. Were there weak aspects?
If yes, what were they?

35. What aspects of the workshop limited your learning (check)?

k Poor presentations
k Poor audio/visuals
k Too many distractions
k Too fast
k Sitting too long
k Too difficult to understand
k Others, if any