



General Requirements (Food Hygiene). Codex Alimentarius (Supplement to Volume 1B)

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INTRODUCTION

STATUTES OF THE CODEX ALIMENTARIUS COMMISSION AND IMPLEMENTATION OF THE FOOD STANDARDS PROGRAMME BY THE COMMISSION

The Codex Alimentarius Commission was established to implement the Joint FAO/WHO Food Standards Programme, the purpose of which is, as set down in the Statutes of the Commission, to protect the health of consumers and to ensure fair practices in the food trade; to promote coordination of all food standards work undertaken by international governmental and non-governmental organizations; to determine priorities and initiate and guide the preparation of draft standards through and with the aid of appropriate organizations; to finalize standards, and, after acceptance by governments, publish them in a Codex Alimentarius either as regional or world-wide standards ¹.

¹ The Codex Alimentarius Commission decided, at its 14th Session in July 1981, that its standards, which are sent to all Member States and Associate Members of FAO and/or WHO for acceptance, together with details of notifications received from governments with respect to the acceptance or otherwise of the standards and other relevant information, constitute the Codex Alimentarius.

The Statutes of the Codex Alimentarius Commission have been approved by the Governing bodies of the FAO and WHO. The Statutes and Rules of the Commission are to be found in the Procedural Manual of the Commission.

PURPOSE

The Codex Alimentarius (Latin, meaning Food Law or Code) is a collection of internationally adopted food standards presented in a uniform manner. The Codex Alimentarius also includes provisions of an advisory nature in the form of codes of practice, guidelines and other recommended measures to assist in achieving the purposes of the Codex Alimentarius. The publication of the Codex Alimentarius is intended to guide and promote the elaboration and establishment of definitions and requirements for foods, to assist in their harmonization and, in doing so, to facilitate international trade.

SCOPE

The Codex Alimentarius includes standards for all the principal foods, whether processed, semi-processed or raw, for distribution to the consumer. Materials for further processing into foods are included to the extent necessary to achieve the purposes of the Codex Alimentarius as defined. The Codex Alimentarius includes

provisions in respect of the hygienic and nutritional quality of food, including microbiological norms, provisions for food additives, pesticide residues, contaminants, labelling and presentation, and methods of analysis and sampling. It also includes provisions of an advisory nature in the form of codes of practice, guidelines and other recommended measures. Codex standards contain requirements for food aimed at ensuring for the consumer a sound, wholesome food product free from adulteration, correctly labelled and presented.

ACCEPTANCE

The standards and maximum residue limits adopted by the Codex Alimentarius Commission are intended for formal acceptance by governments in accordance with its General Principles.

The standards and maximum limits for residues of pesticides and veterinary drugs in foods and feeds, accompanied by an appropriate communication, are sent for action to Ministries of Agriculture or Ministries of Foreign Affairs, as appropriate, of Member Nations of FAO and to Ministries of Health of Member States of WHO. The standards and maximum limits for pesticide residues and veterinary drugs, accompanied by the communication referred to, are also sent to national Codex Contact Points, FAO and WHO Regional Offices, FAO Representatives, Embassies in Rome and Permanent Missions to the UN in Geneva.

The standards and maximum limits for residues of pesticides and veterinary drugs in foods and feeds, which have taken a number of years to develop, are the product of a wide measure of international agreement and cooperation. They are compatible with the norms considered by FAO and WHO as best guaranteeing the protection of the health of consumers and the facilitation of international trade in food

PUBLICATION HISTORY

This is the second publication of the Codex Alimentarius. The first publication was in 1981. Prior to 1981 standards adopted by the Codex Alimentarius were published individually as Recommended Standards (CAC/RS series). The Second Edition of the Codex Alimentarius is now being revised and updated to take into account decisions made by the 22nd Session of the Codex Alimentarius Commission, June 1997.

Volume One, General Requirements, of the Codex Alimentarius contains those standards, codes and other texts which are generally applicable to all food commodities, or at least a wide range of them. It consists of two Parts, the first part (Volume 1A) dealing with all matters except food hygiene, the second part (Volume 1B) containing general food hygiene texts. It is the basic reference document for all other volumes in the Codex Alimentarius. This volume is a Supplement to Volume 1B and contains texts adopted by the Codex Alimentarius Commission at its 22nd Session, June 1997. Previous versions of these texts are superceded.

The Recommended International Code of Practice on General Principles of Food Hygiene was adopted by the Codex Alimentarius Commission at its 6th Session, 1969 and subsequently revised by the 13th Session (1979), 16th Session (1985) and 22nd Session (1997). It has been sent to all Member Nations and Associate

Members of FAO and WHO as an advisory text, and it is for individual governments to decide what use they wish to make of the Code. The Commission has expressed the view that codes of practice might provide useful checklists of requirements for national food control or enforcement authorities.

Document	References
Recommended International Code of Practice - General Principles of Food Hygiene:	CAC/RCP-1 (1969)
• Revision 1	CAC/RCP-1 (1969), Rev. I (1979)
• Revision 2	CAC/RCP-1 (1969), Rev. 2 (1985)
• Revision 3 (Current)	CAC/RCP-1 (1969), Rev. 3 (1997)
• Draft adopted by the 22nd Session of the Commission	ALINORM 97/13, Appendix II
Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application	CAC/GL 18-1993
• Revision 1 (Current)	Annex to CAC/RCP-1 (1969), Rev. 3 (1997)
• Prior draft	ALINORM 93/13A, Appendix II
• Draft adopted by the 22nd Session of the Commission	ALINORM 97/13A, Appendix II
Principles for the Establishment and Application of Microbiological Criteria for Foods	Published in the Procedural Manual of the Codex Alimentarius Commission, Sixth to Ninth Editions (1986-1995)
• Revision 1 (Current)	CAC/RCP-22 (1997)
• Draft adopted by the 22nd Session of the Commission	ALINORM 97/13A, Appendix III
Guidelines For The Design Of Control Measures For Street-Vended Foods In Africa	CAC/RCP XX (1997)
• Draft adopted by the 22nd Session of the Commission	ALINORM 97/28, Appendix I

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INTRODUCTION

People have the right to expect the food they eat to be safe and suitable for consumption. Foodborne illness and foodborne injury are at best unpleasant; at worst, they can be fatal. But there are also other consequences. Outbreaks of foodborne illness can damage trade and tourism, and lead to loss of earnings, unemployment and litigation. Food spoilage is wasteful, costly and can adversely affect trade and consumer confidence.

International food trade, and foreign travel, are increasing, bringing important social and economic benefits. But this also makes the spread of illness around the world easier. Eating habits too, have undergone major change in many countries over the last two decades and new food production, preparation and distribution techniques have developed to reflect this. Effective hygiene control, therefore, is vital to avoid the adverse human health and economic consequences of foodborne illness, foodborne injury, and food spoilage. Everyone, including farmers and growers, manufacturers and processors, food handlers and consumers, has a responsibility to assure that food is safe and suitable for consumption.

These General Principles lay a firm foundation for ensuring food hygiene and should be used in conjunction with each specific code of hygienic practice, where appropriate, and the guidelines on microbiological criteria. The document follows the food chain from primary production through to final consumption, highlighting the key hygiene controls at each stage. It recommends a HACCP-based approach

wherever possible to enhance food safety as described in *Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application* (Annex).

The controls described in this General Principles document are internationally recognized as essential to ensure the safety and suitability of food for consumption. The General Principles are commended to Governments, industry (including individual primary producers, manufacturers, processors, food service operators and retailers) and consumers alike.

SECTION I - OBJECTIVES

[THE CODEX GENERAL PRINCIPLES OF FOOD HYGIENE:](#)

THE 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 a HACCP-based approach as a means to enhance food safety;
- indicate *how* to implement those principles; and
- provide a *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.

SECTION II - SCOPE, USE AND DEFINITION

[2.1 SCOPE](#)

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2.1 SCOPE

2.1.1 THE FOOD CHAIN

This document 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 document provides a base-line structure for

other, more specific, codes applicable to particular sectors. Such specific codes and guidelines should be read in conjunction with this document and *Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application* (Annex).

2.1.2 ROLES OF GOVERNMENTS, INDUSTRY, AND CONSUMERS

Governments can consider the contents of this document and decide how best they should encourage the implementation of these general principles to:

- protect consumers adequately from illness or injury caused by food; policies need to consider the vulnerability of the population, or of different groups within the population;
- provide assurance that food is suitable for human consumption;
- maintain confidence in internationally traded food; and
- provide health education programmes which effectively communicate the principles of food hygiene to industry and consumers.

Industry should apply the hygienic practices set out in this document to:

- provide food which is safe and suitable for consumption;
- ensure that consumers have clear and easily-understood information, by way of labelling and other appropriate means, to enable them to protect their food from contamination and growth/survival of foodborne pathogens by storing, handling and preparing it correctly; and
- maintain confidence in internationally traded food.

Consumers should recognize their role by following relevant instructions and applying appropriate food hygiene measures.

2.2 USE

Each section in this document states both the objectives to be achieved and the rationale behind those objectives in terms of the safety and suitability of food.

Section III covers primary production and associated procedures. Although hygiene practices may differ considerably for the various food commodities and specific codes should be applied where appropriate, some general guidance is given in this section. Sections IV to X set down the general hygiene principles which apply throughout the food chain to the point of sale. Section IX also covers consumer information, recognizing the important role played by consumers in maintaining the safety and suitability of food.

There will inevitably be situations where some of the specific requirements contained in this document are not applicable. The fundamental question in every case is "what is necessary and appropriate on the grounds of the safety and suitability of food for consumption?"

The text indicates where such questions are likely to arise by using the phrases "where necessary" and "where appropriate". In practice, this means that, although the requirement is generally appropriate and reasonable, there will nevertheless be some situations where it is neither necessary nor appropriate on the grounds of food safety and suitability. In deciding whether a requirement is necessary or appropriate, an assessment of the risk should be made, preferably within the framework of the HACCP approach. This approach allows the requirements in this document to be flexibly and sensibly applied with a proper regard for the overall objectives of producing food which is safe and suitable for consumption. In so doing it takes into account the wide diversity of activities and varying degrees of risk involved in producing food. Additional guidance is available in specific food codes.

2.3 DEFINITIONS

For the purpose of this Code, the following expressions have the meaning stated:

Cleaning - the removal of soil, food residue, dirt, grease or other objectionable matter.

Contaminant - any biological or chemical agent, foreign matter, or other substances not intentionally added to food which may compromise food safety or suitability.

Contamination - the introduction or occurrence of a contaminant in food or food environment.

Disinfection - the reduction, by means of chemical agents and/or physical methods, of the number of microorganisms in the environment, to a level that does not compromise food safety or suitability.

Establishment - any building or area in which food is handled and the surroundings under the control of the same management.

Food hygiene - all conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.

Hazard - a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect.

HACCP - a system which identifies, evaluates, and controls hazards which are significant for food safety.

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

Food safety - assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use.

Food suitability - assurance that food is acceptable for human consumption according to its intended use.

Primary production - those steps in the food chain up to and including, for example, harvesting, slaughter, milking, fishing.

SECTION III - PRIMARY PRODUCTION

[3.1 ENVIRONMENTAL HYGIENE](#)

[3.2 HYGIENIC PRODUCTION OF FOOD SOURCES](#)

[3.3 HANDLING, STORAGE AND TRANSPORT](#)

[3.4 CLEANING, MAINTENANCE AND PERSONNEL HYGIENE AT PRIMARY PRODUCTION](#)

OBJECTIVES:

Primary production should be managed in a way that ensures that food is safe and suitable for its intended use. Where necessary, this will include:

- avoiding the use of areas where the environment poses a threat to the safety of food;
- controlling contaminants, pests and diseases of animals and plants in such a way as not to pose a threat to food safety;
- adopting practices and measures to ensure food is produced under appropriately hygienic conditions.

RATIONALE:

To reduce the likelihood of introducing a hazard which may adversely affect the safety of food, or its suitability for consumption, at later stages of the food chain.

3.1 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.

3.2 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 - see *Hazard Analysis and Critical Control (HACCP) Point System and Guidelines for its Application* (Annex, page 19).

Producers should as far as practicable implement measures to:

- control contamination from air, soil, water, feedstuffs, 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; and
- protect food sources from faecal and other contamination.

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

3.3 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; and
- 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, so far as reasonably practicable, deterioration and spoilage through appropriate measures which may include controlling temperature, humidity, and/or other controls.

3.4 CLEANING, MAINTENANCE AND PERSONNEL HYGIENE AT PRIMARY PRODUCTION

Appropriate facilities and procedures should be in place to ensure that:

- any necessary cleaning and maintenance is carried out effectively;
and
- an appropriate degree of personal hygiene is maintained.

SECTION IV - ESTABLISHMENT: DESIGN AND FACILITIES

[4.1 LOCATION](#)

[4.2 PREMISES AND ROOMS](#)

[4.3 EQUIPMENT](#)

[4.4 FACILITIES](#)

OBJECTIVES:

Depending on the nature of the operations, and the risks associated with them, premises, equipment and facilities should be located, designed and constructed to ensure that:

- contamination is minimized;
- design and layout permit appropriate maintenance, cleaning and disinfections and minimize air-borne contamination;
- surfaces and materials, in particular those in contact with food, are non-toxic in intended use and, where necessary, suitably durable, and easy to maintain and clean;
- where appropriate, suitable facilities are available for temperature, humidity and other controls; and
- there is effective protection against pest access and harbourage.

RATIONALE:

Attention to good hygienic design and construction, appropriate location, and the provision of adequate facilities, is necessary to enable hazards to be effectively controlled.

4.1 LOCATION

4.1.1 ESTABLISHMENTS

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 of 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.

4.1.2 EQUIPMENT

Equipment should be located so that it:

- permits adequate maintenance and cleaning;
- functions in accordance with its intended use; and
- facilitates good hygiene practices, including monitoring.

4.2 PREMISES AND ROOMS

4.2.1 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 foodstuffs.

4.2.2 INTERNAL STRUCTURES AND FITTINGS

Structures within food establishments should be soundly built of durable materials 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 materials 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, windows should be fixed;
- doors should have smooth, non-absorbent surfaces, and be easy to clean and, 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 inert to the food, to detergents and disinfectants under normal operating conditions.

4.2.3 TEMPORARY/MOBILE PREMISES AND VENDING MACHINES

Premises and structures covered here include market stalls, mobile sales and street vending vehicles, temporary premises in which food is handled such as tents and marquees.

Such premises and structures should be sited, designed and constructed to avoid, as far as reasonably practicable, contaminating food and harbouring pests.

In applying these specific conditions and requirements, any food hygiene hazards associated with such facilities should be adequately controlled to ensure the safety and suitability of food.

4.3 EQUIPMENT

4.3.1 GENERAL

Equipment and containers (other than once-only 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, monitoring and, for example, to facilitate inspection for pests.

4.3.2 FOOD CONTROL AND MONITORING EQUIPMENT

In addition to the general requirements in paragraph 4.3.1, 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 effective means of controlling and monitoring humidity, air-flow 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 HACCP-based plans can be monitored; and
- temperatures and other conditions necessary to food safety and suitability can be rapidly achieved and maintained.

4.3.3 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.

4.4 FACILITIES

4.4.1 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 WHO Guidelines for Drinking Water Quality, or water of a higher standard. Non-potable water (for use in, for example, 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.

4.4.2 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.

4.4.3 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.

4.4.4 PERSONNEL HYGIENE FACILITIES AND TOILETS

Personnel 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 of hygienically washing and drying hands, including wash basins and a supply of hot and cold (or suitably temperature controlled) water;
- lavatories of appropriate hygienic design; and

- adequate changing facilities for personnel.

Such facilities should be suitably located and designated.

4.4.5 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 foods, monitoring food temperatures, and when necessary, controlling ambient temperatures to ensure the safety and suitability of food.

4.4.6 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 odours which might affect the suitability of food; and
- 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.

4.4.7 LIGHTING

Adequate natural or artificial lighting should be provided to enable the undertaking to operate in a hygienic manner. Where necessary, lighting should not be such that the resulting colour 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.

4.4.8 STORAGE

Where necessary, adequate facilities for the storage of food, ingredients and non-food chemicals (e.g. cleaning materials, lubricants, fuels) should be provided.

Where appropriate, food storage facilities should be designed and constructed to:

- permit adequate maintenance and cleaning;
- avoid pest access and harbourage;
- enable food to be effectively protected from contamination during storage; and

- where necessary, provide an environment which minimizes the deterioration of food (e.g. 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.

SECTION V - CONTROL OF OPERATION

[5.1 CONTROL OF FOOD HAZARDS](#)

[5.2 KEY ASPECTS OF HYGIENE CONTROL SYSTEMS](#)

[5.3 INCOMING MATERIAL REQUIREMENTS](#)

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[5.8 RECALL PROCEDURES](#)

OBJECTIVE:

To produce food which is safe and suitable for human consumption by:

- **formulating design requirements with respect to raw materials, composition, processing, distribution, and consumer use to be met in the manufacture and handling of specific food items; and**
- **designing, implementing, monitoring and reviewing effective control systems.**

RATIONALE:

To reduce the risk of unsafe food by taking preventive measures to assure the safety and suitability of food at an appropriate stage in the operation by controlling food hazards.

5.1 CONTROL OF FOOD HAZARDS

Food business operators should control food hazards through the use of systems such as HACCP. They should:

- **identify** any steps in their operations which are critical to the safety of food;
- **implement** effective control procedures at those steps;
- **monitor** control procedures to ensure their continuing effectiveness; and
- **review** control procedures periodically, and whenever the operations change.

These systems should be applied throughout the food chain to control food hygiene throughout the shelf-life of the product through proper product and process design.

Control procedures may be simple, such as checking stock rotation calibrating equipment, or correctly loading refrigerated display units. In some cases a system based on expert advice, and involving documentation, may be appropriate. A model of such a food safety system is described in *Hazard Analysis and Critical Control (HACCP) System and Guidelines for its Application* (Annex).

5.2 KEY ASPECTS OF HYGIENE CONTROL SYSTEMS

5.2.1 TIME AND TEMPERATURE CONTROL

Inadequate food temperature control is one of the most common causes of foodborne illness or food spoilage. Such controls include time and temperature of cooking, cooling, processing and storage. Systems should be in place to ensure that 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, e.g. 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; and
- how the product is intended to be used, e.g. 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.

5.2.2 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

5.2.3 MICROBIOLOGICAL AND OTHER SPECIFICATIONS

Management systems described in paragraph 5.1 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.

5.2.4 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 disinfection.

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.

5.2.5 PHYSICAL AND CHEMICAL CONTAMINATION

Systems should be in place to prevent contamination of foods 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.

5.4 PACKAGING

Packaging design and materials should provide adequate protection for products to minimize contamination, prevent damage, and accommodate proper labelling. Packaging materials 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.

5.5 WATER

5.5.1 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; and
- in certain food processes, e.g. chilling, and in food handling areas, provided this does not constitute a hazard to the safety and suitability of food (e.g. the use of clean sea water).

Water recirculated 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. Recirculated water which has received no further treatment and water recovered from processing of food by evaporation or drying may be used, provided its use does not constitute a risk to the safety and suitability of food.

5.5.2 AS AN INGREDIENT

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

5.5.3 ICE AND STEAM

Ice should be made from water that complies with section 4.4.1. 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.

5.6 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.

5.7 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.

5.8 RECALL PROCEDURES

Managers should ensure effective procedures are in place to deal with any food safety hazard and to enable the complete, rapid recall of any implicated lot of the finished food from the market. Where a product has been withdrawn because of an immediate health hazard, other products which are produced under similar conditions, and which may present a similar hazard to public health, should be evaluated for safety and may need to 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, determined to be safe for human consumption, or reprocessed in a manner to ensure their safety.

SECTION VI - ESTABLISHMENT: MAINTENANCE AND SANITATION

[6.1 MAINTENANCE AND CLEANING](#)

[6.2 CLEANING PROGRAMMES](#)

[6.3 PEST CONTROL SYSTEMS](#)

[6.4 WASTE MANAGEMENT](#)

[6.5 MONITORING EFFECTIVENESS](#)

OBJECTIVE:

To establish effective systems to:

- ensure adequate and appropriate maintenance and cleaning;
- control pests;
- manage waste; and
- monitor effectiveness of maintenance and sanitation procedures.

RATIONALE:

To facilitate the continuing effective control of food hazards, pests, and other agents likely to contaminate food.

6.1 MAINTENANCE AND CLEANING

6.1.1 GENERAL

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 (see paragraph 5.1);
- prevent contamination of food, e.g. 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 manufacturers' instructions and stored, where necessary, separated from food, in clearly identified containers to avoid the risk of contaminating food.

6.1.2 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 which complies with section 4, to remove loosened soil and residues of detergent;
- dry cleaning or other appropriate methods for removing and collecting residues and debris; and
- where necessary, disinfection.

6.2 CLEANING PROGRAMMES

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

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

Where written cleaning programmes are used, they should specify:

- areas, items of equipment and utensils to be cleaned;
- responsibility for particular tasks;
- method and frequency of cleaning; and
- monitoring arrangements.

Where appropriate, programmes should be drawn up in consultation with relevant specialist expert advisors.

6.3 PEST CONTROL SYSTEMS

6.3.1 GENERAL

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, inspection of incoming materials and good monitoring can minimize the likelihood of infestation and thereby limit the need for pesticides. [Insert reference to FAO document dealing with Integrated Pest Management].

6.3.2 PREVENTING ACCESS

Buildings should be kept in good repair and condition to prevent pest access and to eliminate potential breeding sites. Holes, drains and other places where pests are likely to gain access should be kept sealed. Wire mesh screens, for example on open windows, doors and ventilators, will reduce the problem of pest entry. Animals should, wherever possible, be excluded from the grounds of factories and food processing plants.

6.3.3 HARBOURAGE AND INFESTATION

The availability of food and water encourages pest harbourage and infestation. Potential food sources should be stored in pest-proof containers and/or stacked above the ground and away from walls. Areas both inside and outside food premises should be kept clean. Where appropriate, refuse should be stored in covered, pest-proof containers.

6.3.4 MONITORING AND DETECTION

Establishments and surrounding areas should be regularly examined for evidence of infestation.

6.3.5 ERADICATION

Pest infestations should be dealt with immediately and without adversely affecting food safety or suitability. Treatment with chemical, physical or biological agents should be carried out without posing a threat to the safety or suitability of food.

6.4 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.

6.5 MONITORING EFFECTIVENESS

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

SECTION VII - ESTABLISHMENT: PERSONAL HYGIENE

[7.1 HEALTH STATUS](#)

[7.2 ILLNESS AND INJURIES](#)

[7.3 PERSONAL CLEANLINESS](#)

[7.4 PERSONAL BEHAVIOUR](#)

[7.5 VISITORS](#)

OBJECTIVES;

To ensure that those who come directly or indirectly into contact with food are not likely to contaminate food by:

- maintaining an appropriate degree of personal cleanliness;
- behaving and operating in an appropriate manner.

RATIONALE:

People who do not maintain an appropriate degree of personal cleanliness, who have certain illnesses or conditions or who behave inappropriately, can contaminate food and transmit illness to consumers.

7.1 HEALTH STATUS

People known, or suspected, to be suffering from, or to be a carrier of a disease or illness likely to be transmitted through food, should not be allowed to enter any food handling area if there is a likelihood of their contaminating food. Any person so affected should immediately report illness or symptoms of illness to the management.

Medical examination of a food handler should be carried out if clinically or epidemiologically indicated.

7.2 ILLNESS AND INJURIES

Conditions which should be reported to management so that any need for medical examination and/or possible exclusion from food handling can be considered, include:

- jaundice
- diarrhoea
- vomiting
- fever
- sore throat with fever
- visibly infected skin lesions (boils, cuts, etc.)
- discharges from the ear, eye or nose

7.3 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; and
- after handling raw food or any contaminated material, where this could result in contamination of other food items; they should avoid handling ready-to-eat food, where appropriate.

7.4 PERSONAL BEHAVIOUR

People engaged in food handling activities should refrain from behaviour which could result in contamination of food, for example:

- smoking;
- spitting;
- chewing or eating;
- sneezing or coughing over unprotected food.

Personal effects such as jewellery, 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.

7.5 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.

SECTION VIII - TRANSPORTATION

[8.1 GENERAL](#)

[8.2 REQUIREMENTS](#)

[8.3 USE AND MAINTENANCE](#)

OBJECTIVES:

Measures should be taken where necessary to:

- protect food from potential sources of contamination;
- protect food from damage likely to render the food unsuitable for consumption; and
- provide an environment which effectively controls the growth of pathogenic or spoilage micro-organisms and the production of toxins in food.

RATIONALE:

Food may become contaminated, or may not reach its destination in a suitable condition for consumption, unless effective control measures are taken during transport, even where adequate hygiene control measures have been taken earlier in the food chain.

8.1 GENERAL

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

8.2 REQUIREMENTS

Where necessary, conveyances and bulk containers should be designed and constructed so that they:

- do not contaminate foods or packaging;
- can be effectively cleaned and, where necessary, disinfected;
- permit effective separation of different foods or foods from non-food items where necessary during transport;
- provide effective protection from contamination, including dust and fumes;

- can effectively maintain the 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; and

- allow any necessary temperature, humidity and other conditions to be checked.

8.3 USE AND MAINTENANCE

Conveyances 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 foods, or non-foods, effective cleaning and, where necessary, disinfection should take place between loads.

Where appropriate, particularly in bulk transport, containers and conveyances should be designated and marked for food use only and be used only for that purpose.

SECTION IX - PRODUCT INFORMATION AND CONSUMER AWARENESS

- [9.1 LOT IDENTIFICATION](#)
- [9.2 PRODUCT INFORMATION](#)
- [9.3 LABELLING](#)
- [9.4 CONSUMER EDUCATION](#)

OBJECTIVES:

Products should bear appropriate information to ensure that:

- adequate and accessible information is available to the next person in the food chain to enable them to handle, store, process, prepare and display the product safely and correctly;
- the lot or batch can be easily identified and recalled if necessary.

Consumers should have enough knowledge of food hygiene to enable them to:

- understand the importance of product information;
- make informed choices appropriate to the individual; and
- prevent contamination and growth or survival of foodborne pathogens by storing, preparing and using it correctly.

Information for industry or trade users should be clearly distinguishable from consumer information, particularly on food labels.

RATIONALE:

Insufficient product information, and/or inadequate knowledge of general food hygiene, can lead to products being mishandled at later stages in the food chain. Such mishandling can result in illness, or products becoming unsuitable for consumption, even where adequate hygiene control measures have been taken earlier in the food chain.

9.1 LOT IDENTIFICATION

Lot identification is essential in product recall and also helps effective stock rotation. Each container of food should be permanently marked to identify the producer and the lot. Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985) applies.

9.2 PRODUCT INFORMATION

All food products should be accompanied by or bear adequate information to enable the next person in the food chain to handle, display, store and prepare and use the product safely and correctly.

9.3 LABELLING

Prepackaged foods should be labelled with clear instructions to enable the next person in the food chain to handle, display, store and use the product safely. Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985) applies.

9.4 CONSUMER EDUCATION

Health education programmes should cover general food hygiene. Such programmes should enable consumers to understand the importance of any product information and to follow any instructions accompanying products, and make informed choices. In particular consumers should be informed of the relationship between time/temperature control and foodborne illness.

SECTION X - TRAINING

[10.1 AWARENESS AND RESPONSIBILITIES](#)

[10.2 TRAINING PROGRAMMES](#)

[10.3 INSTRUCTION AND SUPERVISION](#)

[10.4 REFRESHER TRAINING](#)

OBJECTIVE:

Those engaged in food operations who come directly or indirectly into contact with food should be trained, and/or instructed in food hygiene to a level appropriate to the operations they are to perform.

RATIONALE:

Training is fundamentally important to any food hygiene system.

Inadequate hygiene training, and/or instruction and supervision of *all* people involved in food related activities pose a potential threat to the safety of food and its suitability for consumption.

10.1 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 have the necessary knowledge and skills 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.

10.2 TRAINING PROGRAMMES

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 microorganisms;
- 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; and
- the expected length of time before consumption.

10.3 INSTRUCTION AND SUPERVISION

Periodic assessments of the effectiveness of training and instruction programmes 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 have the necessary knowledge of food hygiene principles and practices to be able to judge potential risks and take the necessary action to remedy deficiencies.

10.4 REFRESHER TRAINING

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

ANNEX: HAZARD ANALYSIS AND CRITICAL CONTROL POINT (HACCP) SYSTEM AND GUIDELINES FOR ITS APPLICATION

Annex to CAC/RCP 1-1969, Rev. 3 (1997)

[PREAMBLE](#)

[DEFINITIONS](#)

[PRINCIPLES OF THE HACCP SYSTEM](#)

[GUIDELINES FOR THE APPLICATION OF THE HACCP SYSTEM](#)

PREAMBLE

The first section of this document sets out the principles of the Hazard Analysis and Critical Control Point (HACCP) system adopted by the Codex Alimentarius Commission. The second section provides general guidance for the application of the system while recognizing that the details of application may vary depending on the circumstances of the food operation. ¹

¹ The Principles of the HACCP System set the basis for the requirements for the application of HACCP, while the Guidelines for the Application provide general guidance for practical application.

The HACCP system, which is science based and systematic, identifies specific hazards and measures for their control to ensure the safety of food. HACCP is a tool to assess hazards and establish control systems that focus on prevention rather than relying mainly on end-product testing. Any HACCP system is capable of accommodating change, such as advances in equipment design, processing procedures or technological developments.

HACCP can be applied throughout the food chain from primary production to final consumption and its implementation should be guided by scientific evidence of risks to human health. As well as enhancing food safety, implementation of HACCP can provide other significant benefits. In addition, the application of HACCP systems can aid inspection by regulatory authorities and promote international trade by increasing confidence in food safety.

The successful application of HACCP requires the full commitment and involvement of management and the work force. It also requires a multidisciplinary approach; this multidisciplinary approach should include, when appropriate, expertise in agronomy, veterinary health, production, microbiology, medicine, public health, food technology, environmental health, chemistry and engineering, according to the particular study. The application of HACCP is compatible with the implementation of quality management systems, such as the ISO 9000 series, and is the system of choice in the management of food safety within such systems.

While the application of HACCP to food safety was considered here, the concept can be applied to other aspects of food quality.

DEFINITIONS

Control (verb): To take all necessary actions to ensure and maintain compliance with criteria established in the HACCP plan.

Control (noun): The state wherein correct procedures are being followed and criteria are being met.

Control measure: Any action and activity that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

Corrective action: Any action to be taken when the results of monitoring at the CCP indicate a loss of control.

Critical Control Point (CCP): A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

Critical limit: A criterion which separates acceptability from unacceptability.

Deviation: Failure to meet a critical limit.

Flow diagram: A systematic representation of the sequence of steps or operations used in the production or manufacture of a particular food item.

HACCP: A system which identifies, evaluates, and controls hazards which are significant for food safety.

HACCP plan: A document prepared in accordance with the principles of HACCP to ensure control of hazards which are significant for food safety in the segment of the food chain under consideration.

Hazard: A biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect.

Hazard analysis: The process of collecting and evaluating information on hazards and conditions leading to their presence to decide which are significant for food safety and therefore should be addressed in the HACCP plan.

Monitor: The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a CCP is under control.

Step: A point, procedure, operation or stage in the food chain including raw materials, from primary production to final consumption.

Validation: Obtaining evidence that the elements of the HACCP plan are effective.

Verification: The application of methods, procedures, tests and other evaluations, in addition to monitoring to determine compliance with the HACCP plan.

PRINCIPLES OF THE HACCP SYSTEM

The HACCP system consists of the following seven principles:

PRINCIPLE 1

Conduct a hazard analysis.

PRINCIPLE 2

Determine the Critical Control Points (CCPs).

PRINCIPLE 3

Establish critical limit(s).

PRINCIPLE 4

Establish a system to monitor control of the CCP.

PRINCIPLE 5

Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control.

PRINCIPLE 6

Establish procedures for verification to confirm that the HACCP system is working effectively.

PRINCIPLE 7

Establish documentation concerning all procedures and records appropriate to these principles and their application.

GUIDELINES FOR THE APPLICATION OF THE HACCP SYSTEM

Prior to application of HACCP to any sector of the food chain, that sector should be operating according to the Codex General Principles of Food Hygiene, the appropriate Codex Codes of Practice, and appropriate food safety legislation. Management commitment is necessary for implementation of an effective HACCP system. During hazard identification, evaluation, and subsequent operations in designing and applying HACCP systems, consideration must be given to the impact of raw materials, ingredients, food manufacturing practices, role of manufacturing processes to control hazards, likely end-use of the product, categories of consumers of concern, and epidemiological evidence relative to food safety.

The intent of the HACCP system is to focus control at CCPs. Redesign of the operation should be considered if a hazard which must be controlled is identified but no CCPs are found.

HACCP should be applied to each specific operation separately. CCPs identified in any given example in any Codex Code of Hygienic Practice might not be the only ones identified for a specific application or might be of a different nature.

The HACCP application should be reviewed and necessary changes made when any modification is made in the product, process, or any step.

It is important when applying HACCP to be flexible where appropriate, given the context of the application taking into account the nature and the size of the operation.

APPLICATION

The application of HACCP principles consists of the following tasks as identified in the Logic Sequence for Application of HACCP (Diagram 1).

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 multidisciplinary 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 (e.g. does it cover all classes of hazards or only selected classes).

2. Describe product

A full description of the product should be drawn up, including relevant safety information such as: composition, physical/chemical structure (including A_w , pH, etc.), microcidal/static treatments (heat-treatment, freezing, brining, smoking, etc.), packaging, durability and storage conditions and method of distribution.

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,

e.g. institutional feeding, may have to be considered.

4. Construct flow diagram

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

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. List all potential hazards associated with each step, conduct a hazard analysis, and consider any measures to control identified hazards

(SEE PRINCIPLE 1)

The HACCP team should list all of the hazards that may be reasonably expected to occur at each step from 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 which hazards are of such a nature that their elimination or reduction to acceptable levels is essential to the production of a safe food.

In conducting the hazard analysis, wherever possible the following should be included:

- the likely occurrence of hazards and severity of their adverse health effects;
- the qualitative and/or quantitative evaluation of the presence of hazards;
- survival or multiplication of microorganisms of concern;
- production or persistence in foods of toxins, chemicals or physical agents; and,
- 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.

7. Determine Critical Control Points

(SEE PRINCIPLE 2)¹

¹ Since the publication of the decision tree by Codex, its use has been implemented many times for training purposes. In many instances, while this tree has been useful to explain the logic and depth of understanding needed to determine CCPs, it is not specific to all food operations, e.g. slaughter, and therefore it should be used in conjunction with professional judgement, and modified in some cases.

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 (e.g. Diagram 2), 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 other. 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.

If a hazard has been identified at a step where control is necessary for safety, and no control measure exists at that step, or any other, then the product or process should be modified at that step, or at any earlier or later stage, to include a control measure.

8. Establish critical limits for each CCP

(SEE 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, pH, A_w , available chlorine, and sensory parameters such as visual appearance and texture.

9. Establish a monitoring system for each CCP

(SEE 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 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 knowledge and authority to carry out corrective actions when indicated. If monitoring is not continuous, then the amount or frequency of monitoring must be sufficient to guarantee the CCP is in control. Most monitoring procedures for CCPs will need to be done rapidly because they relate to on-line processes and there will not be time for lengthy analytical testing. Physical and

chemical measurements are often preferred to microbiological testing because they may be done rapidly and can often indicate the microbiological control of the product. All records and documents associated with monitoring CCPs must be signed by the person(s) doing the monitoring and by a responsible reviewing official(s) of the company.

10. Establish corrective actions

(SEE PRINCIPLE 5)

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

The actions must ensure that the CCP has been brought under control. Actions taken must also include proper disposition of the affected product. Deviation and product disposition procedures must be documented in the HACCP record keeping.

11. Establish verification procedures

(SEE 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. Examples of verification activities include:

- Review of the HACCP system and its records;
- Review of deviations and product dispositions;
- Confirmation that CCPs are kept under control.

Where possible, validation activities should include actions to confirm the efficacy of all elements of the HACCP plan.

12. Establish Documentation and Record Keeping

(SEE PRINCIPLE 7)

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

Documentation examples are:

- Hazard analysis;
- CCP determination;
- Critical limit determination.

Record examples are:

- CCP monitoring activities;
- Deviations and associated corrective actions;
- Modifications to the HACCP system.

An example of a HACCP worksheet is attached as Diagram 3.

TRAINING

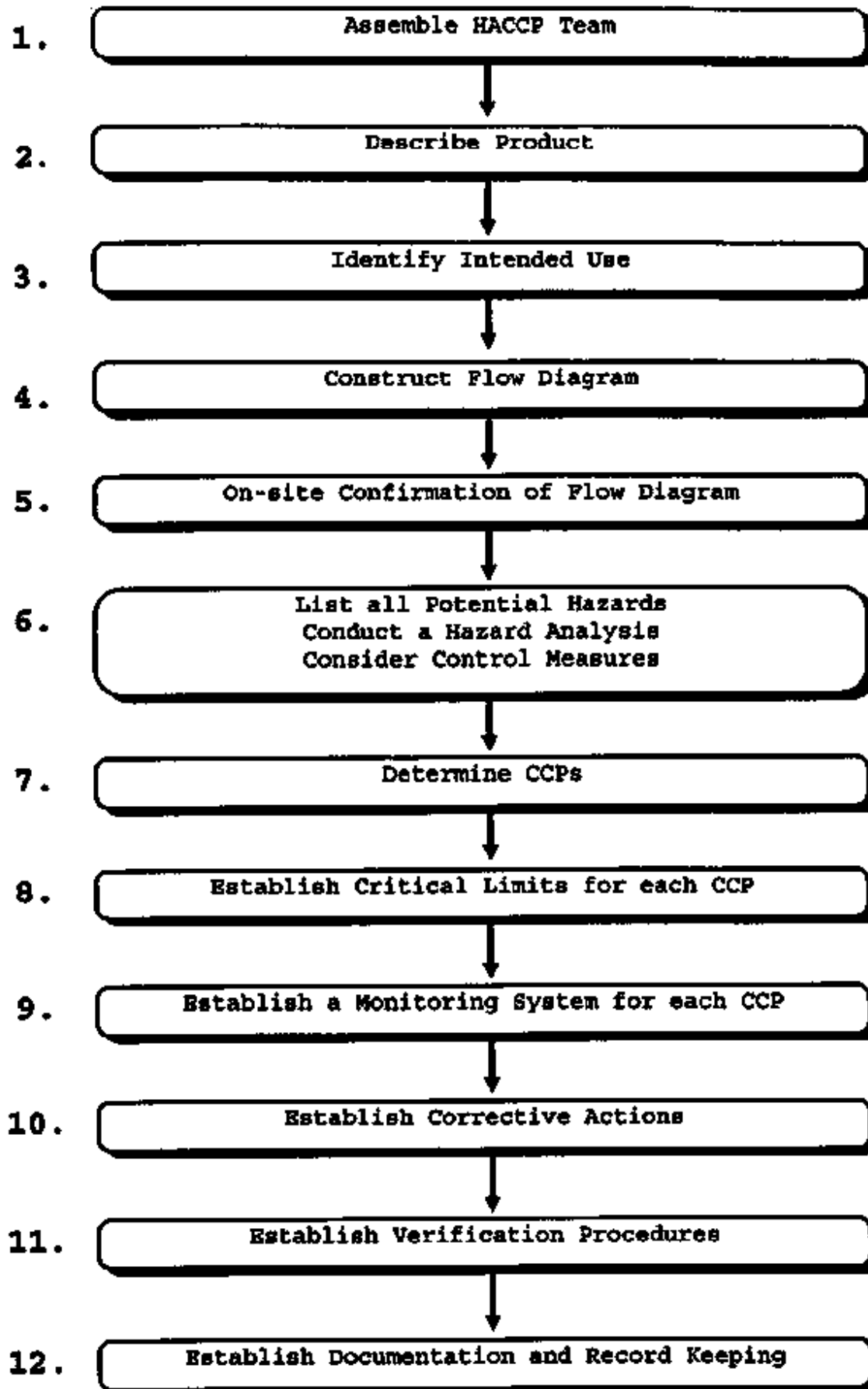
Training of personnel in industry, government and academia in HACCP principles and applications, and increasing awareness of consumers are essential elements for the effective implementation of HACCP. As an aid in developing specific training to support a HACCP plan, working instructions and procedures should be developed which define the tasks of the operating personnel to be stationed at each Critical Control Point.

Cooperation between primary producer, industry, trade groups, consumer organizations, and responsible authorities is of vital importance. Opportunities should be provided for the joint training of industry and control authorities to encourage and maintain a continuous dialogue and create a climate of understanding in the practical application of HACCP.

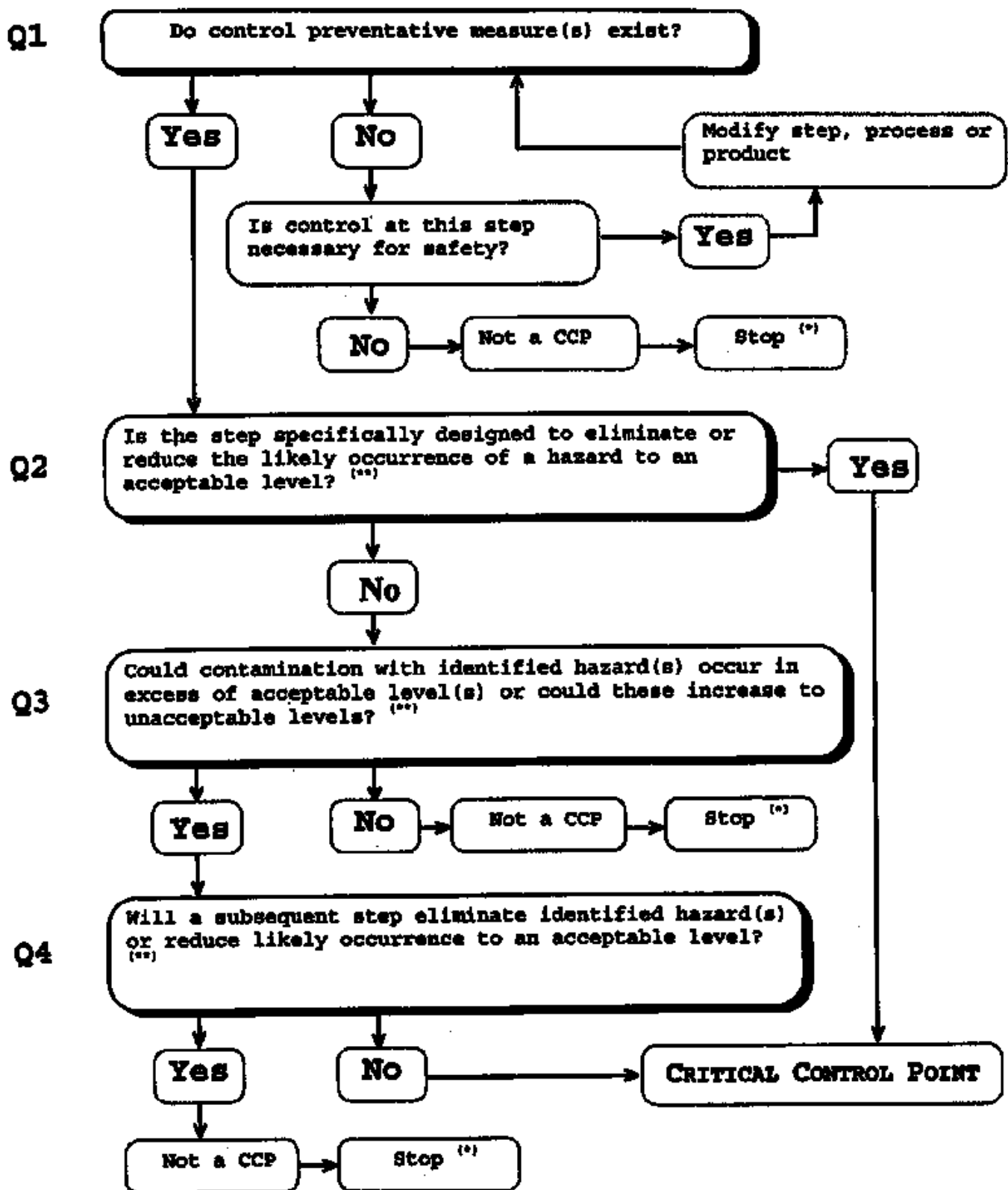
DIAGRAM 1 - LOGIC SEQUENCE FOR APPLICATION OF HACCP

DIAGRAM 2 - EXAMPLE OF DECISION TREE TO IDENTIFY CCPs (answer questions in sequence)

DIAGRAM 3 - EXAMPLE OF A HACCP WORKSHEET



See Diagram 2



(*) 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 HACCP plan.

1.

Describe Product

2.

Diagram Process Flow

3.

LIST

Step	Hazard(s)	Control Measure(s)	CCPs	Critical Limit(s)	Monitoring Procedure(s)	Corrective Action(s)	Record(s)

4.

Verification

PRINCIPLES FOR THE ESTABLISHMENT AND APPLICATION OF MICROBIOLOGICAL CRITERIA FOR FOODS

CAC/GL 21 - 1997

INTRODUCTION

1. DEFINITION OF MICROBIOLOGICAL CRITERION

2. COMPONENTS OF MICROBIOLOGICAL CRITERIA FOR FOODS

3. PURPOSES AND APPLICATION OF MICROBIOLOGICAL CRITERIA FOR FOODS

4. GENERAL CONSIDERATIONS CONCERNING PRINCIPLES FOR ESTABLISHING AND APPLYING MICROBIOLOGICAL CRITERIA

5. MICROBIOLOGICAL ASPECTS OF CRITERIA

6. SAMPLING PLANS, METHODS AND HANDLING

7. REPORTING

INTRODUCTION

These Principles are intended to give guidance on the establishment and application of microbiological criteria for foods at any point in the food chain from primary production to final consumption.

The safety of foods is principally assured by control at the source, product design and process control, and the application of Good Hygienic Practices during production, processing (including labelling), handling, distribution, storage, sale, preparation and use, in conjunction with the application of the HACCP system. This preventive approach offers more control than microbiological testing because the effectiveness of microbiological examination to assess the safety of foods is limited. Guidance for the establishment of HACCP based systems is detailed in *Hazard Analysis and Critical Control Point System and Guidelines for its Application* (Annex to CAC/RCP 1-1969, Rev. 3-1997).

Microbiological criteria should be established according to these principles and be based on scientific analysis and advice, and, where sufficient data are available, a risk analysis appropriate to the foodstuff and its use. Microbiological criteria should be developed in a transparent fashion and meet the requirements of fair trade. They should be reviewed periodically for relevance with respect to emerging pathogens, changing technologies, and new understandings of science.

1. DEFINITION OF MICROBIOLOGICAL CRITERION

A microbiological criterion for food defines the acceptability of a product or a food lot, based on the absence or presence, or number of microorganisms including parasites, and/or quantity of their toxins/metabolites, per unit(s) of mass, volume, area or lot.

2. COMPONENTS OF MICROBIOLOGICAL CRITERIA FOR FOODS

2.1 A microbiological criterion consists of:

- a statement of the microorganisms of concern and/or their toxins/metabolites and the reason for that concern (see §5.1);
- the analytical methods for their detection and/or quantification (see §5.2);
- a plan defining the number of field samples to be taken and the size of the analytical unit (see §6); microbiological limits considered appropriate to the food at the specified point(s) of the food chain (see §5.3);
- the number of analytical units that should conform to these limits.

2.2 A microbiological criterion should also state:

- the food to which the criterion applies;
- the point(s) in the food chain where the criterion applies; and
- any actions to be taken when the criterion is not met.

2.3 When applying a microbiological criterion for assessing products, it is essential, in order to make the best use of money and manpower, that only appropriate tests be applied (see §5) to those foods and at those points in the food chain that offer maximum benefit in providing the consumer with a food that is safe and suitable for consumption.

3. PURPOSES AND APPLICATION OF MICROBIOLOGICAL CRITERIA FOR FOODS

[3.1.1 APPLICATION BY REGULATORY AUTHORITIES](#)

[3.1.2 APPLICATION BY A FOOD BUSINESS OPERATOR](#)

3.1 Microbiological criteria may be used to formulate design requirements and to indicate the required microbiological status of raw materials, ingredients and end-products at any stage of the food chain as appropriate. They may be relevant to the examination of foods, including raw materials and ingredients, of unknown or uncertain origin or when other means of verifying the efficacy of HACCP-based systems and Good Hygienic Practices are not available. Generally, microbiological criteria may be applied to define the distinction between acceptable and unacceptable raw materials, ingredients, products, lots, by regulatory authorities and/or food business operators. Microbiological criteria may also be used to determine that processes are consistent with *the General Principles of Food Hygiene* (CAC/RCP 1-1969).

3.1.1 APPLICATION BY REGULATORY AUTHORITIES

Microbiological criteria can be used to define and check compliance with the microbiological requirements.

Mandatory microbiological criteria shall apply to those products and/or points of the food chain where no other more effective tools are available, and where they are expected to improve the degree of protection offered to the consumer. Where these are appropriate they shall be product-type specific and only applied at the point of the food chain as specified in the regulation.

In situations of non-compliance with microbiological criteria, depending on the assessment of the risk to the consumer, the point in the food chain and the product-type specified, the regulatory control actions may be sorting, reprocessing, rejection or destruction of product, and/or further investigation to determine appropriate actions to be taken.

3.1.2 APPLICATION BY A FOOD BUSINESS OPERATOR

In addition to checking compliance with regulatory provisions (see §3.1.1) microbiological criteria may be applied by food business operators to formulate design requirements and to examine end-products as one of the measures to verify and/or validate the efficacy of the HACCP plan.

Such criteria will be specific for the product and the stage in the food chain at which they will apply. They may be stricter than the criteria used for regulatory purposes and should, as such, not be used for legal action.

3.2 Microbiological criteria are not normally suitable for monitoring Critical Limits as defined in *Hazard Analysis and Critical Control Point System and Guidelines for its Application* (Annex to CAC/RCP 1-1969, Rev. 3-1997). Monitoring procedures must be able to detect loss of control at a Critical Control Point (CCP). Monitoring should provide this information in time for corrective actions to be taken to regain control before there is a need to reject the product. Consequently, on-line measurements of physical and chemical parameters are often preferred to microbiological testing because results are often available more rapidly and at the production site. Moreover, the establishment of Critical Limits may need other considerations than those described in this document.

4. GENERAL CONSIDERATIONS CONCERNING PRINCIPLES FOR ESTABLISHING AND APPLYING MICROBIOLOGICAL CRITERIA

4.1 A microbiological criterion should be established and applied only where there is a definite need and where its application is practical. Such need is demonstrated, for example, by epidemiological evidence that the food under consideration may represent a public health risk and that a criterion is meaningful for consumer protection, or as the result of a risk assessment. The criterion should be technically attainable by applying Good Manufacturing Practices (Codes of Practice).

4.2 To fulfill the purposes of a microbiological criterion, consideration should be given to:

- the evidence of actual or potential hazards to health;
- the microbiological status of the raw material(s);
- the effect of processing on the microbiological status of the food;
- the likelihood and consequences of microbial contamination and/or growth during subsequent handling, storage and use;
- the category(s) of consumers concerned;
- the cost/benefit ratio associated with the application of the criterion;
and
- the intended use of the food.

4.3 The number and size of analytical units per lot tested should be as stated in the sampling plan and should not be modified. However, a lot should not be subjected to repeated testing in order to bring the lot into compliance.

5. MICROBIOLOGICAL ASPECTS OF CRITERIA

[5.1 MICROORGANISMS, PARASITES AND THEIR TOXINS/METABOLITES OF IMPORTANCE IN A PARTICULAR FOOD](#)
[5.2 MICROBIOLOGICAL METHODS](#)
[5.3 MICROBIOLOGICAL LIMITS](#)

5.1 MICROORGANISMS, PARASITES AND THEIR TOXINS/METABOLITES OF IMPORTANCE IN A PARTICULAR FOOD

5.1.1 For the purpose of this document these include:

- bacteria, viruses, yeasts, moulds, and algae;
- parasitic protozoa and helminths;
- their toxins/metabolites.

5.1.2 The microorganisms included in a criterion should be widely accepted as relevant - as pathogens, as indicator organisms or as spoilage organisms - to the particular food and technology. Organisms whose significance in the specified food is doubtful should not be included in a criterion.

5.1.3 The mere finding, with a presence-absence test, of certain organisms known to cause foodborne illness (e.g. *Clostridium perfringens*, *Staphylococcus aureus* and *Vibrio parahaemolyticus*) does not necessarily indicate a threat to public health.

5.1.4 Where pathogens can be detected directly and reliably, consideration should be given to testing for them in preference to testing for indicator organisms. If a test for an indicator organism is applied, there should be a clear statement whether the test is used to indicate unsatisfactory hygienic practices or a health hazard.

5.2 MICROBIOLOGICAL METHODS

5.2.1 Whenever possible, only methods for which the reliability (accuracy, reproducibility, inter- and intra-laboratory variation) has been statistically established in comparative or collaborative studies in several laboratories should be used. Moreover, preference should be given to methods which have been validated for the commodity concerned preferably in relation to reference methods elaborated by international organizations. While methods should be the most sensitive and reproducible for the purpose, methods to be used for in-plant testing might often sacrifice to some degree sensitivity and reproducibility in the interest of speed and simplicity. They should, however, have been proved to give a sufficiently reliable estimate of the information needed.

Methods used to determine the suitability for consumption of highly perishable foods, or foods with a short shelf-life, should be chosen wherever possible so that the results of microbiological examinations are available before the foods are consumed or exceed their shelf-life.

5.2.2 The microbiological methods specified should be reasonable with regard to complexity, availability of media, equipment etc., ease of interpretation, time required and costs.

5.3 MICROBIOLOGICAL LIMITS

5.3.1 Limits used in criteria should be based on microbiological data appropriate to the food and should be applicable to a variety of similar products. They should therefore be based on data gathered at various production establishments operating under Good Hygienic Practices and applying the HACCP system.

In the establishment of microbiological limits, any changes in the microflora likely to occur during storage and distribution (e.g. decrease or increase in numbers) should be taken into account.

5.3.2 Microbiological limits should take into consideration the risk associated with the microorganisms, and the conditions under which the food is expected to be handled and consumed. Microbiological limits should also take account of the likelihood of uneven distribution of microorganisms in the food and the inherent variability of the analytical procedure.

5.3.3 If a criterion requires the absence of a particular microorganism, the size and number of the analytical unit (as well as the number of analytical sample units) should be indicated.

6. SAMPLING PLANS, METHODS AND HANDLING

6.1 A sampling plan includes the sampling procedure and the decision criteria to be applied to a lot, based on examination of a prescribed number of sample units and subsequent analytical units of a stated size by defined methods. A well-designed sampling plan defines the probability of detecting microorganisms in a lot, but it should be borne in mind that no sampling plan can ensure the absence of a particular organism. Sampling plans should be administratively and economically feasible.

In particular, the choice of sampling plans should take into account:

- risks to public health associated with the hazard;
- the susceptibility of the target group of consumers;
- the heterogeneity of distribution of microorganisms where variables sampling plans are employed; and
- the Acceptable Quality Level ¹ and the desired statistical probability of accepting a non-conforming lot.

¹ The Acceptable Quality Level (AQL) is the percentage of non-conforming sample units in the entire lot for which the sampling plan will indicate lot acceptance for a prescribed probability (usually 95 per cent).

For many applications, 2- or 3-class attribute plans may prove useful. ²

² See ICMSF: Microorganisms in Foods, 2. Sampling for Microbiological Analysis. Principles and Specific Applications, 2nd Edition, Blackwell Scientific Publications, 1986 (ISBN-0632-015-675).

6.2 The statistical performance characteristics or operating characteristics curve should be provided in the sampling plan. Performance characteristics provide specific information to estimate the probability of accepting a non-conforming lot. The sampling method should be defined in the sampling plan. The time between taking the field samples and analysis should be as short as reasonably possible, and during transport to the laboratory the conditions (e.g. temperature) should not allow increase or decrease of the numbers of the target organism, so that the results reflect - within the limitations given by the sampling plan - the microbiological conditions of the lot.

7. REPORTING

7.1 The test report shall give the information needed for complete identification of the sample, the sampling plan, the test method, the results and, if appropriate, their interpretation.

GUIDELINES FOR THE DESIGN OF CONTROL MEASURES FOR STREET-VENDED FOODS IN AFRICA

CAC/GL 22-1997¹

¹ In adopting these Guidelines, the Codex Alimentarius Commission requested the Coordinating Committee for Africa to review this text in order to ensure conformity with the revised General Principles of Food Hygiene adopted by the Commission, so that inconsistency between the two texts would be avoided.

[SECTION 1 - INTRODUCTION - SCOPE](#)
[SECTION 2 - DEFINITIONS](#)
[SECTION 3 - GENERAL REQUIREMENTS](#)
[SECTION 4 - VENDORS](#)
[SECTION 5 - DESIGN AND STRUCTURE](#)
[SECTION 6 - APPLIANCES](#)
[SECTION 7 - FOOD PREPARATION](#)
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SECTION 1 - INTRODUCTION - SCOPE

The objective of these Guidelines are to provide the necessary provisions to be considered when elaborating street food control measures in the Region of Africa including the elaboration of Codes of Practice. Its aim is to assist relevant authorities in upgrading the operation of the street food industry to ensure that the population has available wholesome, safe and nutritious foods in accessible places.

The Guidelines specify the general hygienic requirements and practices to be recommended for inclusion in Codes of Practice for the preparation and sale of street foods.

SECTION 2 - DEFINITIONS

For the purpose of these Guidelines, unless indicated otherwise, the following definitions apply:

2.1 **Appliances:** means the whole or any part of any utensil, machinery, instrument, apparatus or article used or intended for use, in or for making, preparing, keeping, selling or supplying of food.

2.2 **Clean Water:** means water from any natural source where there is no reason to believe the water is contaminated.

2.3 **Crockery:** means all glasses, plates, dishes, cups, saucers, spoons, forks, ladles, chopsticks and other articles used in serving and consumption of food, including disposable articles.

2.4 **Disposable Articles:** means any appliance, container, implement, utensil or wrapper that is intended for use only once in the preparation, storage, display, consumption or sale of food.

2.5 **Impermeable:** means not allowing the passage of water and/or fluid.

2.6 **Microorganisms:** means any microscopic living organism that can cause disease or food spoilage.

2.7 **Mobile Vendor:** means any person with/without a vehicle going from place to place for the purpose of preparing, serving, displaying, distributing or delivering any street food.

2.8 **Perishable Food:** means food that is of such a type or is in such a condition that it may spoil.

2.9 **Potable Water:** means treated water which shall comply with WHO Guidelines for Drinking Water Quality.

2.10 **Readily Perishable Food:** means perishable food that consists wholly or partly of milk, milk products, eggs, meat, poultry, fish or shellfish, or ingredients that are capable of supporting the progressive growth of microorganisms that can cause food spoilage, food poisoning and other food borne illness.

2.11 **Ready-to-eat Food:** Any food (including beverages) which is normally consumed in its raw state or any food handled, processed, mixed, cooked, or otherwise prepared into a form in which it is normally consumed without further processing.

2.12 **Relevant Authority:** means the Ministry having responsibility and any local or officially recognized authority.

2.13 **Sealed Container:** means food grade containers such as:

- (a) hermetically sealed containers;
- (b) sealed jars, with anchor and crown type closures;
- (c) milk bottles sealed with aluminium caps;
- (d) glass jars and bottles with screw caps; and
- (e) cans and similar containers with seals.

2.14 **Street Food Centre:** means any public place or establishment designated by the relevant authority for the preparation, display and sale of street foods by multiple vendors.

2.15 **Street Foods:** ready-to-eat foods prepared and/or sold by vendors and hawkers especially in streets and other similar public places (see FAO Food and Nutrition Paper 46).

2.16 **Street Food Stall:** means a place where street food is prepared, displayed, served or sold to the public. It includes carts, tables, benches, baskets, chairs, vehicles with or without wheels and any other structure approved by the relevant authority where on it or in it, any street foods are displayed for sale.

2.17 **Utensil:** means any appliance, container and equipment including traditional types used in the preparation, storage and sale of foods.

2.18 **Waste Water:** means sullage water arising as a result of the activity of vendors.

2.19 **Water Container:** means any form of food grade container which is used solely for the purpose of storing and serving water and has not been used previously for any other purposes which could cause contamination of the water stored in it.

SECTION 3 - GENERAL REQUIREMENTS

[3.1 REGULATIONS](#)

[3.2 LICENSING OF VENDORS](#)

[3.3 CONDITIONS FOR LICENSING](#)

[3.4 DISPLAY OF NOTICES](#)

[3.5 PEST AND ANIMAL CONTROL](#)

[3.6 STREET FOOD ADVISORY SERVICE](#)

[3.7 CONSUMER EDUCATION](#)

3.1 REGULATIONS

3.1.1 To enable official recognition and control of the street food industry as an integral part of the food supply, appropriate regulations should be prepared either separately or for incorporation into existing food regulations.

3.1.2 The general hygienic requirements and practices to be followed by the vendors should be translated by the relevant authorities into Codes of practice which are recognized as cost effective tools for the control of street foods, by fully taking into account local conditions including specific risk factors that are relevant to each operation.

3.2 LICENSING OF VENDORS

No vendor shall conduct his/her business of preparation, packing, storage, display and sale of any street foods unless he/she is licensed under the relevant food regulations.

3.3 CONDITIONS FOR LICENSING

3.3.1 No relevant authority shall issue or renew the license of any vendor who does not commit himself to comply with all the requirements of the Code of Practice established by the officially recognized authorities within a determined period of time.

3.3.2 It is essential that basic training in food hygiene is carried out by the relevant authorities prior to issuing or renewing the license of street food vendors.

3.4 DISPLAY OF NOTICES

3.4.1 Every licensed vendor shall at all times display conspicuously his/her vendor's License and any other notices that are required by the relevant authorities to be displayed.

3.5 PEST AND ANIMAL CONTROL

3.5.1 Every vendor shall at all times take appropriate measures to keep his/her stall free from animals and pests, including rodents, flies, insects or vermin infestation to prevent contamination of the food.

3.5.2 Every vendor shall, on becoming aware of the presence of any such pest or harbourage, immediately take all practicable measures to get rid of the pest or harbourage and to prevent reinfestation.

3.5.3 Any food found to have become contaminated by pests shall be appropriately disposed of in a hygienic manner.

3.5.4 The contamination of food with pest control materials such as poisons must be prevented.

3.6 STREET FOOD ADVISORY SERVICE

3.6.1 To facilitate the enforcement of the code of practice they have developed, the relevant authority should provide advisors which role would be:

(a) to work with vendors offering them on-site advice and guidance to improve their operations in accordance with the requirements of the Code;

(b) to participate in the design and/or delivery of the formal training of vendors which is to be provided by the authorities in view of issuance and renewal of licenses;

(c) to work in close collaboration with the enforcement personnel, including the officers in charge of registration and renewal of licenses, so that the code of practice is well understood and correctly applied;

(d) when applicable, to train the enforcement personnel and regularly organize joint inspections to monitor progress in the application of the code of practice; and

(e) to inform consumers as per Section 3.7 of these Guidelines.

3.6.2 Advisors should be good communicators, familiar with the requirements of the Guidelines, and have good understanding of both problems of the vendors and the protection of consumers.

3.6.3 Advisors should possess the trust and respect of vendors, consumers and enforcement personnel.

3.6.4 The advisers should be as far as possible conversant with the Codex International Code of Practice -General Principles of Food Hygiene (CAC/RCP 1-

1969, Rev. 3 (1997)), including the Codex Guidelines for the Application of the Hazard Analysis Critical Control Point System (HACCP), in order to assist vendors to optimize the use of scarce resources.

3.6.5 Street Food Advisory Services should be established with the necessary capacities to carry-out their mission effectively.

3.7 CONSUMER EDUCATION

3.7.1 The relevant authority should inform consumers through posters, the media and publicity campaigns about hazards associated with street foods and the steps the authority requires street food vendors to take to minimize those hazards.

3.7.2 Consumers should also be informed of their responsibility in ensuring that they do not contaminate, dirty or litter street food vending sites.

3.7.3 Street Food Advisory Services should have the leading role in the elaboration of information material and in the monitoring of consumers' education.

SECTION 4 - VENDORS

[4.1 HEALTH STATUS OF VENDORS](#)

[4.2 PERSONAL HYGIENE AND BEHAVIOUR](#)

[4.3 TRAINING OF VENDORS](#)

[4.4 VENDOR'S ASSOCIATIONS](#)

4.1 HEALTH STATUS OF VENDORS

4.1.1 Any vendor, helper or food handler who is suffering from jaundice, diarrhoea, vomiting, fever, sore throat with fever, discharge from ear, eye and nose, visibly infected skin lesions (boils, cuts, etc.) shall cease from handling food in any capacity and seek medical treatment.

4.1.2 Any vendor, helper or food handler who has been identified as or is known to be or has previously been a carrier of food borne disease organisms, shall not be involved in any food handling activity until certified by a Medical Officer of Health or any other medical practitioner as a non-carrier.

4.1.3 Any vendor, helper or food handler shall be required to be immunized against food and water borne disease such as typhoid, hepatitis A or any other food and water borne diseases as required by the relevant authority.

4.2 PERSONAL HYGIENE AND BEHAVIOUR

Every vendor, helper or food handler, during the conduct of his business, shall observe the following:

4.2.1 Wear an identification tag if issued and required by the relevant authority.

4.2.2 Dress in clean and proper attire.

4.2.3 Wash hands thoroughly with soap and clean water before and after handling food, after visiting the toilet, after handling unsanitary articles, touching animals, touching raw food, after handling toxic and dangerous materials as and when necessary.

4.2.4 Finger nails should be kept short and clean at all times.

4.2.5 Hair should be kept clean and tidy and should be covered during operation.

4.2.6 Non-infected cuts shall be completely protected by a waterproof dressing which is firmly secured and routinely changed.

4.2.7 Shall not smoke or chew chewing gum while preparing or serving food.

4.2.8 Refrain from any unhygienic practices such as spitting and cleaning nose, ears or any other body orifice.

4.2.9 Shall not sneeze or cough onto the food.

4.2.10 The use of gloves is not recommended.

4.2.11 No vendor is allowed to use the stall as a sleeping or dwelling place, or for any other personal activity.

4.3 TRAINING OF VENDORS

4.3.1 Every vendor, helper or food handler shall undergo a basic training in food hygiene prior to licensing and further training as required by the relevant authority. Training is to be conducted by the relevant authority or other institutions recognized or approved by the relevant authorities. Vendors should also be made aware of their responsibility to consumers and be informed of available credit facilities and other sources of finance to assist and improve their businesses.

4.3.2 Simple posters illustrating the "dos" and "don'ts" of street food preparation and vending should be widely and prominently displayed in relevant places for the benefit of both vendors and consumers.

4.4 VENDOR'S ASSOCIATIONS

The formation of street food vendor associations or cooperatives should be encouraged to provide a liaison point with the relevant authorities in view of facilitating the implementation of control measures.

SECTION 5 - DESIGN AND STRUCTURE

[5.1 LOCATION](#)

[5.2 STRUCTURES](#)

[5.3 SANITATION](#)

5.1 LOCATION

5.1.1 The location of street food stall(s) should be suitable for the purpose of avoiding contamination of the food prepared and served or sold at or from the stall. Stalls shall be located in areas designated by the relevant authorities.

5.1.2 Section 5.1.1 should also apply to mobile vendors.

5.1.3 The area where the stall is located and immediate surroundings should be easily cleaned and capable of withstanding repeated washing and scrubbing.

5.1.4 The space in and around the vendors' stall shall be free of unnecessary stored goods or articles and discarded articles in order to permit easy access for cleaning.

5.1.5 The stall should have a convenient access to an inlet of a drainage system or any suitable means of disposing waste water in a sanitary manner.

5.2 STRUCTURES

5.2.1 Vendors' stalls shall be of a type approved by the relevant authority and shall be constructed from impervious materials that can be easily cleaned such as stainless steel, aluminium, glazed tiles or any other materials as approved by the relevant authority. It shall be properly constructed as to be readily cleaned and maintained in a good state of repair at all times.

5.2.2 Food preparation areas and working surfaces should be made of a smooth and impermeable food grade material.

5.2.3 All cooking ranges, washing equipment, working tables, shelves and cupboards on or in which food is placed should be at least 45 cm above the ground.

5.2.4 There should be adequate provision of artificial light of sufficient intensity to ensure a reasonable standard of illumination for every part of the stall.

5.3 SANITATION

5.3.1 Water Supply: Vendors should ensure sufficient supply of potable water at all times. Where necessary, such as in the case of mobile vendors or where potable water supply is not yet available, potable water should be stored in clean water containers in conformance with Section 6.1.

5.3.2 Waste Water Disposal: Vendors' stalls should have an efficient waste water disposal system which should be maintained in a good state of repair. The system should be large enough to carry peak loads and be provided with traps to ensure only liquid waste is discharged into the drain/sewer.

5.3.3 Solid Waste Disposal: Solid waste material should be handled in such a manner as to avoid contamination of food and/or potable water. Waste should be removed from the working area of the stall as often as necessary and at least daily. All solid waste should be properly disposed into suitable containers which are secured with tight fitting lids or placed in rubbish bins or central rubbish bins.

Immediately after disposal of the waste, receptacles used for storage and any equipment which has come into contact with the waste should be cleaned using one of the methods described in Section 6.5. The waste storage area should also be cleaned daily.

Waste receptacles, equipment which has come into contact with the waste and waste storage areas should be disinfected when required by the relevant authority. Only appropriate and suitable sanitizing agents should be used. In areas without garbage collection service, solid waste is to be disposed of in a sanitary manner, as recommended or approved by the relevant authority.

5.3.4 Cleaning: All working surfaces, table tops, floors and surrounding areas should be thoroughly cleaned at least daily, using one of the methods described in Section 6.5.

5.3.5 Toilet facilities: Every vendor, helper or food handler should have access to facilities which are approved by the relevant authorities and kept at all times in a clean and operational condition.

SECTION 6 - APPLIANCES

6.1 The appliances should be kept clean. The equipment, including containers for storing drinking water, should be made of materials which do not transmit toxic substances, odour or taste, are not absorbent (unless its use is intended for that purpose and will not result in food contamination), are resistant to corrosion and capable of withstanding repeated cleaning and disinfection.

6.2 Every cutting surface used in the preparation of food should be free from cracks and crevices, with only reasonable wear and tear, and should be cleaned using one of the methods described in Section 6.5 at least on the following occasions:

- (a) before and after daily operations; and
- (b) especially after having put unclean material or food on it if the surface is subsequently to be used to cut street foods or foods to be consumed raw.

6.3 Cooked and uncooked food should be handled with separate utensils.

6.4 Every vendor should ensure that all defective, damaged, cracked, rusted, chipped and unsuitable appliances and crockery are removed from use and discarded.

6.5 All utensils should be regularly cleaned by thoroughly washing them in warm water containing adequate amount of soap or other suitable detergents and then either immersing them for one-half (1/2) minute in boiling clean water and draining them or, for two (2) minutes in potable water at a temperature of not less than 77°C and draining them.

In the case where non-disposable crockery is used and water at 77°C or boiling temperatures is unavailable, potable water, wash soap or detergent and running water rinse is allowed. However, this method is not preferred.

6.6 Disposable crockery shall be used only once and properly disposed of. In the case where non-disposable crockery is used, the crockery is to be cleaned after each use using the method described for utensils in Section 6.5.

6.7 All appliances are to be maintained in good state of repair.

6.8 All washed and clean utensils and crockery should be handled, stored or transported separately from unclean and used utensils and crockery and other sources of contamination. They shall be stored in a clean and protected area which is not accessible to pests or vermin.

6.9 Only containers made of food grade material, not previously used for non-food use, shall be used.

6.10 Wash basins and sinks for cleaning utensils and washing hands should always be clean and maintained in a good state of repair.

6.11 Towels used for wiping crockery should be clean, handled in a sanitary manner and only be used for that purpose.

6.12 Containers used for table side condiments should be kept clean and maintained in good condition and protected from pests.

6.13 All hand service articles such as napkins, towels and hand wipes should be of the disposable type.

6.14 Hand washing facilities such as hand wash basins, disposable towels and soap should be provided at all times.

SECTION 7 - FOOD PREPARATION

[7.1 REQUIREMENTS FOR INGREDIENTS](#)

[7.2 COOKING AND HANDLING](#)

[7.3 SERVING FOOD](#)

[7.4 UNSOLD FOOD](#)

[7.5 TRANSPORTATION OF STREET FOODS](#)

[7.6 FOOD STORAGE](#)

7.1 REQUIREMENTS FOR INGREDIENTS

Every vendor should ensure the following:

7.1.1 Supply of ingredients, including ice, must be from known and reliable sources.

7.1.2 The food handling method employed should be such as to minimize the loss of nutrients.

7.1.3 Freshness and wholesomeness of ingredients to maintain quality and safety of food.

7.1.4 Transportation of ingredients should be made in a manner so as to prevent exposure to the environment, spoilage and contamination.

7.1.5 Only permitted food additives should be used and the amount added should follow the specifications provided.

7.2 COOKING AND HANDLING

7.2.1 Soak and thoroughly wash fresh vegetables and fruit whether for cooking or consuming raw, with sufficient running potable water, to remove adhering surface contamination.

7.2.2 Where appropriate, wash raw food before using in food preparation to reduce the risk of contamination. Never wash perishable raw food with other foods that will be consumed raw or in a semi-cooked state.

7.2.3 There should be an area for handling, storing, cleaning and preparing raw food ingredients, separate and apart from the cooked, street food display, handling and serving areas.

7.2.4 Thawing: Frozen products, especially frozen vegetables, can be cooked without thawing. However, large pieces of meat or large poultry carcasses often

need to be thawed before cooking. When thawing is carried out as an operation separated from cooking this should be performed only in:

(a) a refrigerator or purpose-built thawing cabinet maintained at a temperature of 4°C; or

(b) running potable water maintained at a temperature not above 21°C for a period not exceeding 4 hours; or

(c) a commercial microwave oven only when the food will be immediately transferred to conventional cooking units as part of a continuous cooking process or when the entire, uninterrupted cooking process takes place in the microwave oven.

Note: Hazards associated with thawing include cross-contamination from drip and growth of micro-organisms on the outside before the inside has thawed. Thawed meat and poultry products should be checked frequently to make sure the thawing process is complete before further processing or the processing time should be increased to take into account the temperature of the meat.

7.2.5 The time and temperature of cooking should be sufficient to ensure the destruction of non-spore forming pathogenic micro-organisms.

7.2.6 Water used for the purpose of drinking, preparation of hot or cold drinks and beverages should be of potable water quality, or of clean quality and boiled, or disinfected in any other way such as the use of an appropriate chemical agent.

7.2.7 Ice should be made from potable water. Ice should be handled and stored so as to protect it from contamination. Containers used to transport or store ice should meet the requirements for water containers prescribed by Section 2.19.

7.2.8 Food should not be re-heated more than once and only the portion of the food to be served should be re-heated. A temperature of at least 75°C should be reached in the centre of the food within one hour of removing the food from refrigeration. Lower temperatures may be used for reheating providing the time/temperature combinations used are equivalent in terms of destruction of microorganisms to heating to a temperature of 75°C.

7.2.9 Utensils used for tasting food should be washed immediately after each use.

7.3 SERVING FOOD

Every vendor should observe the following:

7.3.1 All vendors purchasing street foods for the purpose of serving or selling must assure that such food is from licensed and reliable sources.

7.3.2 Cooked street foods should not be handled with bare hands. Clean tongs, forks, spoons or disposable gloves should be used when handling, serving or selling food.

7.3.3 All crockery used should be clean and dry and not handled by touching the food contact surfaces.

7.3.4 Plates filled with food should not be stacked one on top of the other during display, storing or serving.

7.3.5 Food grade packing materials should be used.

7.3.6 Printed material should preferably never be used to serve food. Only food grade aluminium foil, waxed paper, food grade plastic and any other suitable material should be used for packing and serving food.

7.3.7 Never blow into plastic bags, wrappers or packages used for food.

7.3.8 All beverages offered for sale should be dispensed only in their individual original sealed containers or from taps fitted to bulk containers and made of food grade plastic or other suitable material. Bulk containers should be covered with tight fitting lids.

7.3.9 Cut fruit or other foods ordinarily consumed in the state in which they are sold may be set out in an enclosed display case, cabinet or similar type of protective device and should be displayed in a manner which will not affect the wholesomeness and cleanliness of such foods.

7.3.10 Food handlers should avoid handling money. If this is unavoidable, the food handler should wash his hands after handling money and before handling food again.

7.3.11 Ready-to-eat foods intended for continuous serving should be protected from environmental contamination and kept at the following holding temperatures:

- (a) for food served hot..... 60°C or above;
- (b) for food served cold.....7°C or below;
- (c) for food served frozen..-18°C or below.

7.3.12 A food warmer should be used to maintain continuous holding temperatures (Section 7.3.11 (i)), and should not be used for re-heating purposes (Section 7.2.8).

7.4 UNSOLD FOOD

All unsold cooked food and prepared beverages that cannot be properly preserved should be disposed of in a sanitary manner at the end of the day.

7.5 TRANSPORTATION OF STREET FOODS

7.5.1 Street foods which require transportation to the point of sale should be placed in a well protected, covered and clean container to avoid contamination

7.5.2 Any vehicle used in transporting food should be clean and in good condition, appropriately equipped to accommodate any special requirements of the food being transported and provide protection from environmental contamination.

7.5.3 Milk should be transported to the point of sale in an insulated container maintained at a maximum temperature of 4°C.

7.5.4 Street foods should not be transported together with raw food and ingredients, animals, toxic substances and any other materials which may contaminate the food.

7.6 FOOD STORAGE

7.6.1 The food should at all times be kept clean and free from contamination, and be adequately protected from pests, environmental contaminants and stored at proper temperatures where appropriate.

7.6.2 Readily perishable food should be placed or stacked so that it is not likely to be contaminated by contact with raw food, pet food, toxic materials or any other materials which may cause contamination. The bulk of readily perishable foods should be stored in clean containers placed in a clean ice box or refrigerator in which the food should not exceed a temperature 10°C. Quantities displayed for continuous serving should be handled according to the requirements listed in Section 7.3.11.

7.6.3 All dry ingredients should be stored and maintained in their original labelled commercial container or subsequent containers and should be properly labelled as to the content and designed to prevent moisture absorption.

7.6.4 All non-perishable food should be stored in a clean, protected and closed container/cupboard to prevent cross contamination by pests.

7.6.5 Once cleaned, following the requirements of Sections 7.2.1 and 7.2.2, the bulk of perishable raw food including wet milled legumes, cereals or pulses should be stored in clean separate containers preferably placed in a clean ice box, a refrigerator or a freezer to prevent spoilage.

7.6.6 Refrigerators and freezers should not be overloaded and their temperatures should be maintained at a maximum of 4°C and -18°C or below, respectively.

7.6.7 All enclosed spaces, cupboards, shelves and racks used for the storage of food should be constructed so as to be easily cleaned and to protect the food from pests.

7.6.8 All food stored in bulk should be stored in an orderly fashion and should be placed so as to facilitate ventilation, inspection and the detection of pests.

7.6.9 All food should be stored and handled separately from toxic, poisonous, deleterious and injurious substances.

7.6.10 The principle "First in, first out" should be applied to stock rotation.

7.6.11 Date marking on all food containers shall be checked before the food is used. Expired food shall not be sold or used for the preparation of food.

SECTION 8 - STREET FOOD CENTRES

[8.1 GENERAL REQUIREMENTS](#)

[8.2 LOCATION, DESIGN AND CONSTRUCTION](#)

[8.3 LIQUID AND SOLID WASTE](#)

[8.4 CUSTOMER FACILITIES](#)

8.1 GENERAL REQUIREMENTS

All vendors located in a street food centre should comply with all provisions stated in the officially recognized regulations applicable to street food vendors.

8.2 LOCATION, DESIGN AND CONSTRUCTION

8.2.1 The location of any street food centre is to be approved beforehand by the relevant authority, having taken into consideration the provisions stated in Section 5.1 - Location, of these Guidelines.

8.2.2 The design of the street food centre shall:

- (a) be reviewed and approved beforehand by the relevant authority;
- (b) provide sufficient and adequate space and orderly placement of vendor stalls, carts, display cases, food preparation, handling, storing, serving and selling areas;
- (c) allow for the orderly flow of materials and goods, in and out of the centres, which will prevent possible routes of food contamination;
- (d) Allow for the proper placement of client facilities, such as toilets, hand washing and eating facilities and be located or arranged in a manner that prevents routes of food contamination;
- (e) provide suitable, sufficient and properly placed areas for solid waste storage and crockery and appliance cleaning, washing and sanitizing;
- (f) be adequately ventilated to remove hazardous obnoxious gases and odours, cooking fuel fumes and other offensive airborne materials and provide a continuous and sufficient supply of fresh air to support the activities within the centre;
- (g) be provided with sufficient and adequate electrical power supply to support the vendors in the centre to operate appliances,

equipment and other implements used in the preparation, handling, storage, serving and selling of food; and

(h) have available an ample supply of potable water, under adequate pressure and of suitable temperature, with adequate facilities for its storage, where necessary, and distribution, and with adequate protection against contamination.

Note: Samples should be taken regularly, but the frequency should depend upon the origin and the usage of the water, e.g. more frequent from private supplies than from public supplies. Chlorine or other suitable disinfectants may be used. If chlorination has been employed checks should be made daily by chemical tests for available chlorine. The point of sampling should preferably be at the point of usage, but occasionally it would be useful to sample at the point of entry of the water to the establishment.

8.2.3 Street food centres shall be properly constructed in a manner using materials approved by the relevant authority, taking into consideration the provisions stated in Section 5.2, Structure, of these Guidelines. In addition to these provisions, street food centres should:

(a) have smooth cement, glazed tile or tarmac paved floors, equipped with properly placed floor drains for the purpose of removing surface water and to facilitate cleaning and sanitizing;

(b) have, where applicable, smooth non-permeable surface walls or partitions, such as glazed tile, to facilitate cleaning and sanitizing;

(c) have, if applicable, a smooth non-absorbent ceiling to facilitate cleaning;

(d) provide sufficient artificial lighting, properly placed to facilitate food preparation, handling, storage, serving and selling for each vendor located at the centre;

(e) provide for smoke hoods and flues above cooking ranges to enable the removal of fuel and cooking gases, smoke and fumes from the centre into the open air.

(f) provide centralized or individualized appliance, crockery, utensil and other implement washing facilities, equipped with hot and cold running potable water, wash basins or sinks with appropriate drains to an approved sewer or drain system, detergent and sanitizing agents to satisfy the proper sanitary and complete cleaning needs of the vendors in the centre; and

(g) comply with any other requirement of the relevant authority related to the structure of street food centres.

8.3 LIQUID AND SOLID WASTE

8.3.1 Pertaining to liquid waste disposal, street food centres are to:

- (a) be equipped with an efficient centralized or individual (for each vendor in the centre) liquid waste disposal system(s) approved by the relevant authority and of suitable size and design to exceed the level of demand for liquid waste disposal at peak levels of activity by the vendors in the centre;
- (b) maintain the liquid sewage disposal system in good working condition;
- (c) ensure that the liquid waste disposal system exits to a relevant authority approved sewage drain system capable of efficiently carrying away the liquid waste from the centre; and
- (d) comply with any other relevant authority requirements related to liquid waste disposal.

8.3.2 Regarding solid waste disposal, street food centres are to have an efficient system for disposal of solid waste complying with all solid waste disposal requirements of the relevant authority, to include:

- (a) the allocation of an appropriate and separate amount of space for solid waste storage, located at a convenient but suitably distant location from food preparation, storage, handling, serving or selling areas to prevent contamination;
- (b) sufficient number of suitably designed and constructed waterproof solid waste containers with tight fitting lids to adequately contain the volume of accumulated solid waste produced by vendor activity in one day. Containers should be lined with suitable disposable liners or inner containers for securing waste and which are easy to handle at time of disposal;
- (c) the daily, and more often if necessary, disposal of solid waste from the street food centre to:
 - (i) rubbish bins approved, designed and intended for the centralized collection of solid waste by garbage service agencies;
 - (ii) approved sanitary land fill; or

- (iii) other disposal methods authorized and approved by the relevant authority.
- (d) routine inspection of solid waste disposal areas for the presence or harbourage of pests, taking any and all practical measures to eliminate and further prevent any infestation; and
- (e) compliance with any other requirement of the relevant authority related to solid waste disposal.

8.4 CUSTOMER FACILITIES

Street food centres should have sufficient toilet facilities for each sex to accommodate the vendors, their employees and clientele, conveniently located but separate and apart from food preparation, handling, storage, serving and selling areas to prevent contamination of the food. The toilet facilities should be approved and subject to all requirements for such facilities by the relevant authority. Among other requirements the facilities should:

- (a) have smooth walls of glazed tile to a height of at least two (2) meters;
- (b) should be clean, free of bad odours and provided with a flushing system;
- (c) be well lit, ventilated, and routinely cleaned and sanitized and maintained in good working condition;
- (d) include hand washing and drying facilities and properly supplied with soap and other needed supplies;
- (e) contain posters instructing vendors and employees to wash hands thoroughly after each use of the toilet facilities before returning to work; and
- (f) have doors which are equipped with self-closing devices.

In June 1997 the Codex Alimentarius Commission adopted three newly revised basic texts on food hygiene. These texts are now published officially in this supplement to Volume 1B of the Codex Alimentarius. Their wide use and understanding by governments, regulatory authorities, food industries, all food handlers and consumers will ensure that food is safe suitable for human consumption.