National Agency for Food & Drug Administration & Control (NAFDAC)

Food Safety & Applied Nutrition (FSAN) Directorate

NAFDAC GUIDELINES FOR FOOD HYGIENIC PRACTICES (NGFHP)

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Revised edition

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PREFACE

NAFDAC

National Agency for Food and Drug Administration and Control (NAFDAC) is a regulatory body whose mandate includes addressing food safety issues in Nigeria. The Agency holds the chair of National Codex Committee-General Purposes Technical Committee, (NCC-GPTC). The National Codex Committee, which coordinates CODEX work within the country and NAFDAC as the Chair of NCCGPTC anchors the participation of Nigeria in the elaboration of International Food Standards on food labeling, contaminants in food, food additives, food hygiene and others. The Codex Alimentarius Commission (CAC) Codex for short is an international body, which implements the joint FAO/WHO Food Standards Program aimed at protecting the health of consumers and also ensures fair practices in food trade. Procedures currently employed by NAFDAC towards fulfilling her mandate include registration of products, inspection of food establishments and imported products, laboratory assessments, provision of advisory Codes of Practice, Regulations, Guidelines, etc.; in addition to issuance of alert notices and monitoring of advertisement of Regulated products.

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NAFDAC GUIDELINE FOR FOOD HYGIENIC PRACTICES (NGFHP)

This revised edition of NGFHP is a follow up to the publication of the first edition which was in fulfillment of one of NAFDAC's mandate, which is the compilation of guidelines for the production, importation and exportation, sales and distribution of food. The NGFHP has been produced with extensive reference to Codex texts and NAFDAC's Standard Operating Procedures (SOPs) and presented in a booklet format to allow its wide use and understanding by the food industries, food handlers, consumers, Non – Governmental Organizations (NGOs), regulatory authorities, enforcement authorities and all tiers of government.

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INTRODUCTION

This text – NAFDAC Guideline for Food Hygienic Practices has been prepared for the use of all stakeholders in the food industry- Regulatory Officers, Government Authorities, Primary Producers, Consumers, Food Handlers, Food Establishments, NGOs etc.

It is presented in an understandable and applicable format and divided into sections. Section I-II deals with objectives, Scopes, Uses and Definition of terms as employed in the text while Section III captures the hygienic requirements for the primary food producers. Although, sections IV- IX specifically addressed the hygienic needs of processed food establishments, however, the underlying principles, which gird the listed hygienic requirements, are also of the fundamentals employed for the hygienic requirements of food preparation establishments under sections X and XI.

The food preparation establishments are highlighted because they have become significant in the food distribution chain in our environment. Hygienic requirements for food imports and exports are contained in section XII, while training requirements as a prerequisite for adequate food handling are reflected in section XII. Although it is structured after Codex Alimentarius Commission Food Hygiene Texts, it's content is largely derived from the Standard Operating Procedure (SOP) of the Food Inspection Division of Food Safety and Applied Nutrition (FSAN) Directorate of NAFDAC, which has evolved overtime from the field experience of her inspectors. It is intended to equip the stakeholders in the food industry with acknowledge and skills of food hygiene and food and food safety, which would translate into great benefits for consumers health. It is intended to be a reference material from which different tiers of government; different sectors of the food industry, academia, institutions, NGOs etc could initiate efforts that would meet their specific needs.

Moreover, the text is intended to make the Agency and other stakeholders more focused within the broad scope of food safety issues which include food pathogens, chemical contaminants, residues of drugs and pesticides, microbiological contaminants, food borne disease outbreaks etc. The focal point approach arising from a firm grasp of the basics as contained in the guidelines would definitely enhance food safety and quality.

The input of all stakeholders into this text is highly acknowledged. The efforts should however be translated into conviction by applying the guidelines contained herein dutifully.

Attention of all users of this text is drawn to the HACCP Annex to CAC/RC – 1969 Rev 3 (1917) on page 79 which must be used in conjunction with this text.

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SECTION 1
OBJECTIVE

The objectives of NAFDAC in developing this "Guidelines for Food Hygienic Practice" are to:

1. Identify critical segments of the food chain where consumers must be adequately protected from illness or injury that could be caused by food consumption.
2. Provide public confidence that freely sold food is suitable and safe for consumption.
3. Provide "clear cut" principles and guidance on food hygiene practices to the industry, food handlers and consumers.
4. Encourage the use of food safety management systems by the industry and other food handlers. Provide guidance for the development of in-house hygiene manual by the industry and food handlers.
5. Maintain confidence in internationally traded food.
6. Encourage education of food safety managers in the industry on food safety management system.

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SECTION 2

SCOPE, USE AND DEFINITION

2.1. SCOPE

2.1.1 This document follows the food chain from primary production to the primary level, setting out the necessary hygiene conditions for producing food, which is safe and suitable for consumption. The document provides a baseline structure for the more specific codes and guidelines or regulations applicable to particular sectors of the food industry.

2.1.2 Roles of other Tiers of Governments, Industry, Community Based Organisations (CBOs) Non-Governmental Organisations (NGOs) and Consumers.

2.1.2.1 State Governments, Local Governments and Ward Leaders can consider the guidelines and how best they can encourage and collaborate in its usage to attain the aforementioned objectives in section 1. This could be in form of State Laws, Bye Laws, e.t.c.

2.1.2.2. Industry should apply the hygiene practice set out in this document to:

- Provide food that is safe and suitable for consumption.
- Ensure that consumers have clear and easy- to- understand information by way of labelling and other appropriate means, to enable them protect their food from contamination and growth/survival of food borne pathogens by storing, handling and preparing it correctly.
- Establish post marketing surveillance to ensure proper handling of their products in their distribution network e.g. refrigerating yoghurt and not displaying margarine, etc. in direct sunlight.
- Maintain confidence in internationally traded food.

2.1.2.3 Community Based Organisations (CBOs) and Non-Governmental Organisations (NGOs) that are concerned with safety and quality of national food supply may use this document in advisory and extension activities such as food safety monitoring and surveillance, data gathering and information dissemination, researches, surveys and studies, educating consumers on safe food hygienic practices, developing and coordinating active consumer groups etc.

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2.1.2.4 Consumers and Domestic food handlers should recognize their roles and possibilities by following relevant instructions and applying appropriate food hygiene measures, as contained in this Guideline.

2.2 USE

The underlying principle in this document is the safety and wholesomeness of any food available to consumers in Nigeria. This runs throughout the various sections of this text which started from primary production spanning through food production in Establishments within the country; food production and distribution through mobile facilities, food preparations at homes for family consumption and hygiene precautions for imported foods to maintain their integrity.

The document presents a general basic application, which may not apply in some instances. Such exceptions where there is the need for specific applications not contained here, or where there may not be need for any application could easily be identified with such phrases as *"where appropriate" "inappropriate cases", "where necessary"*

Food Safety Management Systems such as Good Management Practices (GMP), Hazard Analysis Critical Control Point (HACCP), Risk Analysis, etc are the basic tools for the control of food hazards especially HACCP (See Annex).

2.3 **DEFINITIONS**

For the purpose of this guideline, the following expressions have the meaning stated.

Cleaning – the removal of soil, food residue, filth, grease or other objectionable matter.

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

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. For the purpose of this text, this will include factories, warehouses, cold rooms, hotels, restaurants, supermarkets, kitchen, markets, fast foods and grocery shops, retail shops, etc.

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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 foods, 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, slaughtering, milking, and fishing.

'Bukateria' – a makeshift structure/premises where food is prepared, sold and eaten by consumers.

Roadside Food Seller – a stationary food seller without any protective structure carrying out his or her operations in the open.

Food Hawker – a mobile food seller displaying the wares either on her head or in cart/wheel barrow.

Food Preparation – those activities like purchasing, washing, trimming, peeling, blanching, grinding, boiling, cooking, roasting, frying, etc. that leads to availability of ready – to – eat foods.

Domestic Food Handler – a person involved in food preparation at home and not for commercial purposes.

Food Chain – an imaginary linkage joining all the activities and step involved in food production right from the planting stage onto the consumption by the consumers.

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Primary (Food) Producers – these are basically the farmers, and livestock rearers, fishermen etc.

SECTION 3

PRIMARY PRODUCTION

Objectives

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 food chain. Primary production should be done/managed in a way that ensures that food and its sources are safe; and the food is suitable for its intended use. Where applicable, this will include:

- Avoiding the use of areas where the environment compromises 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.
- Application of Good Agricultural Practices (GAP) and Good Hygienic Practices (GHP);
- Adapting practices and measures to ensure food is produced under appropriate hygienic conditions.
- Avoiding the use of food and water from sources that pose a threat to food safety.

3.1 Environmental Hygiene

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

3.2 Hygienic Production at 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 minimise the probability. The HACCP – based approach may assist in the taking of such measures. *Please see the Annex title Hazard Analysis Critical Control Point (HACCP).*

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

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- Protect food sources from faecal and other contamination

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.
- Label boldly in words and pictorials, segregated materials, chemicals and other materials in order to avoid cross contamination.
- Dispose of any rejected material in a hygienic manner.
- Protect food and food ingredients from contamination by pests, or by chemical, physical or microbiological contaminants or other objectionable substances during handling, storage and transport.

Care should be taken to prevent, as far as reasonably practicable deterioration and spoilage through appropriate measures, which may include controlling temperature, humidity, and/or other 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.
- An appropriate degree of personal hygiene is maintained.

3.5 Record Keeping/Documentation

Adequate record keeping procedures must be in place for control measures, sorting, storage, batch releases, etc.

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SECTION 4

ESTABLISHMENT: DESIGN AND FACILITIES

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

4.1 Location

4.1.1. Establishment's

4.1.1.1. Preferred Location.

Potential sources of contamination must 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. In particular establishments should normally be adequately fenced round with blocks to prevent external interference and should be located away from:

- Environmentally polluted areas and industrial activities, which may pose serious threat of contamination to food.
- Areas where abattoir, graveyard, soak away pit or oil depot is located.
- Areas subjected to flooding unless sufficient safeguard are provided.
- Areas prone to infestations of pest.
- Areas where wastes, either solid or liquid, cannot be removed effectively.

4.1.1.2 Outdoor Condition and Maintenance

- In addition to relevant provisions of other appropriate authorities, the exterior condition and appearance of food establishment must be aesthetically appealing and well maintained.
- Regular and effective good environmental practices such as lawn keeping, painting, cleaning of drainages and pathways, waste disposal etc must be carried out.

4.1.2 Equipment

Equipment should be located and arranged so that it:

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

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- Allows free movement of personnel and materials.

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 food stuffs, personnel, vehicles etc.

4.2.2 Internal Structures and Fittings

Structure within food establishments should be soundly built of durable materials, easy to clean and maintain, and where appropriate, 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 to intended use.
- Walls and partitions should have smooth surface up to a height appropriate to the operation.
- Floor 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, shedding of particles and be unable of harbour pests.
- 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.
- Doors should have smooth, non-absorbent surfaces, be easy to clean and where necessary, disinfect.
- Working surfaces that come into direct contact with food should be in sound condition, durable, 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.
- The paint should not flake.
- There should be proper ventilation.
- There should be no crevices in the structures and fittings that will encourage the harbouring of insects.

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4.3 Equipment

4.3.1 General

Equipment and containers (other than ones-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 on intended use. Where necessary, equipment should be durable and moveable 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, airflow and any other characteristic likely to have a detrimental effect on the safety or suitability of food. These requirements are intended to ensure that

- Harmful or undesirable microorganisms 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.
- Temperatures and other conditions necessary for food safety and suitability can be rapidly achieved and maintain.

4.3.3 Equipment, Verification and Substance.

Equipment and instruments for control and monitoring of food processing and hygiene must be regularly verified and validated to ensure that they are not malfunctioning.

4.3.4 Containers for Waste and Inedible Substances.

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

4.4 Facilities

4.4.1 Water Supply

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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 shall be specified in the Agency's 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 with appropriate colour codes and shall not connect with or be allowed into potable water systems.

4.4.2 Drainage, Waste and Waste Disposal
Adequate drainage, waste and wastewater 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 suitably designated facilities 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 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 washbasins and a supply of hot and cold (or suitable temperature controlled) water.
- Lavatories of appropriate hygienic design.
- 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

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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.
- 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 of operation 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

Adequate facilities for the storage of food, raw materials, intermediate product, finished products, non-food chemical (e.g. cleaning materials, lubricants, fuel etc.) 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;
- 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 and secure facilities for cleaning materials and hazardous substances should be provided.

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SECTION 5

CONTROL OF OPERATION

In order to reduce the risk of producing unsafe food, preventive measures to assure the safety and suitability of food at an appropriate stage in the operation by controlling food hazard are important.

5.1 Control of Food Hazards

Food business operators should control food hazards through the application of control systems such as GMP, HACCP etc.

They should:

- Identify any steps in their operations that are critical to the safety of food.
- Implement effective control procedures to ensure their continuing effectiveness.
- Review control procedures periodically, and whenever the operations change.

The systems should be applied throughout the food chain to ensure food hygiene, proper product formulation and process design.

Control procedures may range from simple to technical methods depending on the nature of food. For example, it could be as simple as checking stock rotation, calibrating equipment or correctly displaying products in sales outlet. In some cases a system based on expert advice and extensive documentation may be involved.

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 food borne 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 food, e.g. its water activity, pH and likely initial level and types of microorganisms.
- The intended shelf life of the product.
- The method of packaging and processing.
- How the product is intended to be use; e.g. further cooking/processing or ready-to-eat.

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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 atmosphere packaging

5.2.3 Microbiological and Other Specifications

Food Safety Management Systems referred to in section 5.1 offers an effective way of ensuring the safety and suitability of food. Where microbiological, chemical or physical specifications are used in any food control system, the specifications must be based on sound scientific principles. Where appropriate, state monitoring procedures, analytical methods and action limits.

5.2.4 Microbiological Cross-Contamination

Pathogen 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 needs to be restricted or controlled. Where risks are particularly high, access to processing areas should be only via changing facility. Personnel may 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, milk and poultry carcass has been handled or processed.

5.3 Incoming Material Requirements

Each establishment must have in place stipulated standards for its raw materials or ingredient and none should be accepted by the establishment if it is known to contain parasites, undesirable microorganisms, pesticides, veterinary drugs or toxic chemicals, 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 conducted to establish fitness for use. Only sound, suitable raw materials or ingredients should be used.

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Stocks of raw materials and ingredients should be subject to effective stock rotation systems such as First-In-First-Out (FIFO) or First-Expiry-First-Out (FEFO), whichever is more appropriate.

5.4 Packaging

Packaging designs and materials must provide adequate protection for products to maintain the integrity of the food products. It must be able to prevent contamination and damage and accommodate proper labeling. Packaging materials or gases where used, must be non-toxic and should not pose a threat to the safety and suitability of food under the specified conditions of storage and use.

In appropriate cases, reusable packaging should be suitably durable, easy to clean and where necessary, disinfected. Such reusable packaging where appropriate must bear manufacturing and serviceable period markings.

5.5 Water

5.5.1 In contact with Food

Only portable water, which meets Nigeria Industrial Standard (NIS) regulation on Drinking Water Quality, can be used in food handling and processing, with the following exemptions:

- 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 stability of food (e.g. the use of clean sea water).

Water re-circulated for reuse should be treated and maintained in such a condition that no risk to the safety and suitability of foods results from its use. The treatment process should be effectively monitored. Re-circulated water which has received no further treatment and water recovered from processing of food by evaporation or drying may be used provided 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 NIS Regulations on Drinking Water Quality. 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

There must be ample knowledgeable control and supervision that is adequate for 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 identify potential risks,

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take appropriate preventive and corrective action, and ensure that effective monitoring and supervision take place.

The personnel responsible for hygiene, safety and suitability of food in an establishment must be independent of production department.

Food safety managers in establishment must be mature and be responsible for their actions or inactions and that of their subordinate(s) in ensuring food safety.

Activities in breach of professional advice offered by food safety managers in an establishment, which could constitute gross threat to the health of the consumer, must be brought directly to the attention of the Director General NAFDAC.

5.7 Documentation and Record

Appropriate and adequate records of raw materials management, processing, production, sanitation, and pest control and distribution must be kept and retained.

5.8 Recall Procedure

Effective procedures must be in place to deal with any food safety hazard and to enable complete, rapid recall of any implicated lot of the finished product 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.

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SECTION 6

MAINTENANCE AND CLEANING

6.1 Maintenance and Cleaning

6.1.1 General

Procedures must be in place for maintaining establishments and equipment in a good condition to:

- facilitate all sanitation procedures;
- function as intended, particularly at critical steps (see section 5.1);
- prevent contamination of food, e.g. from metal shards, flaking plaster, debris and chemicals.

Cleaning must 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, 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 the other methods that avoid the use of water, and chemical methods using detergents, alkalis or acids.

6.2. Cleaning Program

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

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

6.3. Pest Control Systems

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

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

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monitoring practices should be employed to minimize the likelihood of infestation and thereby limit the need for pesticides.

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 factory premises, food processing plants food handling establishments etc.

6.3.3. Harbourage and Infestation

The availability of food and water encourages pest harbourage and infestation. Potentials 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. Adequate preventive pest control operations should be carried out at least quarterly.

6.4. Waste Management

Suitable provision must be made for the storage and removal 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.

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. The system should be reviewed regularly and adapted to reflect changed circumstances.

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SECTION 7

ESTABLISHMENT: PERSONAL HYGIENE

To ensure that those who come directly or indirectly into contact with food do not contaminate it, personal hygiene and the monitoring of health status is important.

7.1 Health Status

People known to be suffering from, or suspected to be carriers of a disease or illness likely to be transmitted through contacts with food, should not be allowed to enter any food handling area. Any person so affected or showing signs of illness should immediately be reported ill to the management. Medical examination of a food handler should be carried out if clinically or epidemiologically indicated.

7.2 Food Handlers' Test

Food Handlers test/ medical fitness certificate for production staff should include the following:
a.Typhoid Vaccination Certificate (valid for 3 years from last vaccination date).
b. Hepatitis A Vaccination Certificate
c. Laboratory Investigation
i. Stool microscopy, culture and sensitivity
ii. Hepatitis A Antigen

Note:
See Appendix I for Medical Examination for Food Handlers along the Food Supply Chain as contained in the National Guidelines for Food Handlers' Medical Test 2024

7.3 Personal Cleanliness

Food handlers should maintain a high degree of personal cleanliness and where appropriate, wear suitable protective clothing, head covering, nose and mouth mask and footwear.
Food personnel with cuts and wounds should be reassigned other jobs that do not permit contact with food during the treatment period. Where such personnel are permitted to continue working, cuts and wounds should be covered by suitable waterproof dressings.
Personnel should always wash their hands when personal hygiene may affect food safety, for example:

- at the start of food handling activities;
- immediately after using the toilet; and

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- 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, as appropriate.

7.4 Personal Behaviour

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

- talking
- 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.

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.

7.6 Staff Access Restriction

Procedures must be in place especially in large and medium establishment for restricted movement of staff within the premises, especially in identified sensitive areas. Such procedures may include ON-DUTY card with different colour codes for access levels.

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SECTION 8

TRANSPORTATION

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

8.1 General

Food must be adequately protected during transit. 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 food 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.
- Must provide sufficient protection to maintain product integrity, for example fruits and vegetable should not be transported, negligently stacked on one another.

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 for that purpose.

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8.4 . **Prohibitions**

Conveyances that have been designated and are in use for other products, which may contaminate or impart toxic fumes on foods, should be excluded from transporting food product. Such conveyances include petroleum product tankers, earth moving equipment, waste disposal trucks e.t.c.

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SECTION 9

PRODUCT INFORMATION AND CONSUMER AWARENESS

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

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 Labeling of pre-packaged Foods (CODEX STAN 1-1985) and NAFDAC Pre-Packaged Food (Labelling) Regulations (2022) 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, prepare and use the product safely and correctly.

9.3 **Labelling**

Prepackaged foods should be labeled 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) and NAFDAC Pre -packaged Food (Labelling) Regulations (2022) applies.

9.4 **Consumer Education**

Health education programs by stakeholders identified in section 2.1.2 should cover general food hygiene. Such programs 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 food borne illness.
Distributors of temperature sensitive products such as yoghurts should be educated on the importance of storage at appropriate temperature.

9.5 **Traceability Plan**

Traceability plan is also an important plan for food supply chain in other to protect the safety of the consumers. Food manufacturers and distributors should have adequate records about their

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commodity and product suppliers so that in case of any food safety issue, they can trace to the source of their problem.

9.6 **Food Defence Plan**

Food defense is an important plan to safeguard the food supply against intentional acts of tampering or contamination. Food Manufacturers, Distributors and Consumers should have good knowledge of Food Defence and it should cover the production (raw materials from farms), processing at factory level, distribution and preparation of food at household level.

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SECTION 10

DOMESTIC FOOD PREPARATION

10.0 Home Cooking

10.1 General

Food handlers at home should be aware and conscious of the enormous responsibility their duty or roles imposes them. They should be conscious of the fact that a single meal preparation intended to nourish the family if mishandled can lead to dire consequences. So adequate care must be taken and such handlers should work with ingredients and materials that are traditionally proven to be safe.

10.2 Location

Kitchen should not be located anywhere, where there is a potential source of contamination. Where such could not be helped protective measures must be taken to proven threat to food safety or suitability. In, particular, food must not be prepared in a heavily polluted or unhygienic area e.g. next to open drainage, dunghill, unsightly place etc.

10.3 Ingredients

Food Handlers must be conversant with product information on the ingredients and must follow instructions for use diligently. Care must be taken to avoid contaminated products, expired products, damaged products etc.

Date markings on all food containers shall be checked before the food is used. Expired food ingredients should not be used for the preparation of food.

Agricultural raw materials should be separated from finished products and should be thoroughly washed and sanitized where appropriate before use or consumption.

10.4 Personal Hygiene and Health Status of Domestic Food Handlers

Any person who handles directly packaged or unpackaged food, food equipment and utensils, or a food contact surface is expected to comply with personal hygiene requirement as stated in section 7 of this code.

10.5 Cleaning

Adequate facilities should be provided for cleaning food utensils and equipment. Such facilities should have adequate supply of water where appropriate. Washbasins and sinks for cleaning utensils and washing should always be clean and maintained in a good state of repair.

Towels used for wiping crockery should be clean, handled in a sanitary manner and only be used for that purpose. Adequate hand washing facilities including wash basins and a supply of potable water should be provided at all times.

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10.6 Food Preparation

REQUIREMENTS FOR PRELIMINARY PREPARATION

Fruits and Vegetables

- Only fruits and vegetables that have been protected from cross contamination and properly conserved should be used.
- Select fruits and vegetables, remove parts or items that are in poor conditions, and check that they are intact and fit for human consumption.
- Wash and clean (for example with salt) as appropriate, fruits and vegetables before using them directly or as a food ingredient.
- Prepare each kind of fruit and vegetable in the appropriate manner and according to its intended use.
- Peel, squeeze and/or cut as appropriate, fruits and vegetables with appropriate and hygienic equipment and utensils.
- Keep previously prepared foods and vegetables in hygienic and properly covered recipients at the appropriate temperature such as refrigeration suitable for the product in question.

Meat and Fish

- When necessary, thaw frozen meat and fish in the refrigerator for the required time; a microwave oven can be used to accelerate thawing. Avoid thawing at room temperature.
- Avoid excessive exposure of fresh meat and fish to room temperature.
- Handle fresh meat and fish in such a way as to prevent immediate or subsequent, direct or indirect cross contamination of the meat and fish and the working surfaces, utensils and other food products.
- Clean the fresh meat and fish, removing undesirable parts, when necessary.

Other Foods

- Cheeses ‘warankasi’, fresh fruit juices, salami, sausages and similar foods should be handled under hygienic conditions.
- Avoid contact with hands; conduct all operations such as slicing, cutting, grinding, etc. with appropriate instruments and/or utensils.
- Avoid excessive exposure at room temperature.
- Prepare the amount necessary for a maximum of four hours of work.
- Food containers and packaged foods should not present any alteration (corrosion, visual alteration, etc).

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- Grains, flour, sugar, salt and similar products should not be stored in humid places and should be kept in appropriate covered containers to prevent alteration /contamination.
- Do not use raw eggs in the preparation of food and beverages intended for direct consumption i.e. food that are not to be cooked afterwards.
- Mayonnaise, sauces with egg, mouse and similar dishes prepared with raw eggs should come from industrial establishments.

10.7 Storage

When necessary, adequate facilities for the storage of food ingredients and non-food chemicals should be provided. The type of storage facilities required will depend on the nature of the food. For instance, raw ingredients e.g. meat should be cleansed and packaged appropriately before being stored in the freezer.

Left over foods must be avoided because due to the tropical climate of our environment, toxin producing moulds and bacteria replicate easily and be a threat to the health of subsequent consumers. If such foods must be kept, they should be packaged and kept under chilling temperature. Before consumption, where necessary, they should be heat-treated.

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SECTION 11

PUBLIC/MOBILE FOOD OPERATORS

11.1 General

The public food operators carry out their activities in public places or locations approved by the relevant authority. They also operate street food stalls and they include mobile operators that display their food wares on motion either physically on the head or through street vending vehicles.

11.2 Regulatory Control

Since street food has become an integral part of the national food supply, official control by relevant authorities through appropriate regulations must be put in place.

11.3 Location

Provision in section 4.1 apply here

11.4 Design

Premises must meet the requirement as prescribed by the relevant authorities. Such premises, structures and conveyances in section 10.1 must be designed and constructed to avoid, as far as reasonably practicable, contaminating food and harbouring pests.

11.5 Applicable Condition

In applying the specific conditions and requirement in relevant sections of this code such as Sections 6, 7, 8 and 10 any food hygiene hazards associated with facilities in 10.1 should be adequately controlled to ensure the safety and suitability of food. For example, livestock intended as p[art of ingredients should not be kept either in the cooking, processing, serving or eating area to avoid faecal contamination.

11.6 Cooking and Handling

- Fresh vegetables and fruits whether for cooking or consumption is preferably soaked and washed in water containing salt, to remove adhering surface contamination.
- 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.
- 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.

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.

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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 temperatures of 4; or

b) Running potable water maintained at a temperature not above 21 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

11.7 Serving Food

Every vendor should observe the following:

- All vendors purchasing foods for the purpose of serving or selling must ensure that such food is from licensed and reliable sources.
- 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.
- All crockery used should be clean and dry and not handled by touching the food contact surfaces.
- Plates filled with food should not be stacked one on top of the other during display, storing or serving.
- Food grade packaging materials should be used.
- Never mouth blow air into plastic bags, wrappers or packages used for food.
- 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.
- Cut fruits 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.
- Food Handlers should avoid handling money. If this is unavoidable, the food handlers should wash his/her hands after handling money and before handling food again.
- Cooked street foods should be covered to avoid contamination from dust, aerosol and other sources of contamination.

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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……. 5˚C or below

c) For food served frozen…….... -18˚C or below

11.8 Unsold Food

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

11.9. Transportation of Street Foods

Transport vehicles for street foods that require transporting, 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.

Perishable foods such as milk and milk products etc. should be transported to the point of sale in an insulated container maintained at a maximum temperature of 4˚C.

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SECTION 12

ENTRY PORT OPERATIONS

General

- Importers and Exporter of food and food products should apply specific conditions and requirements of this NAFDAC Guidelines, especially section 6.3,8 and 9 on measure to control food hygiene hazards associated with such operations, to ensure the safety and suitability of imported food and food products.

- This must be in addition to NAFDAC Guidelines and Regulation on Imports and Exports.

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SECTION 13

TRAINING

13.1 Awareness and Responsibilities

Food hygiene training is fundamentally important. All personnel should be aware of their role and responsibility in protecting food from contamination or deterioration. Food handlers 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 on safe handling techniques.

13.2 Training Programs

Factors to take into account in determining 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.

13.3 Instruction and Supervision

- Periodic assessments of the effectiveness of training and instruction programs should be made, as well as routine supervision and checks to ensure that procedures are being carried out effectively.
- Managers and Supervisors knowledge of food processes should have the necessary knowledge of food hygiene principles and practices to be able to spot potential risks and take the necessary action to remedy deficiencies.

13.4 Refresher Training

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

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13.5 Training Responsibility

- Appropriate offices within the agency and other relevant organizations including NGOs should design and ensure availability of required and relevant up to date trainings, workshops seminars and other food hygiene and safety programs to the industries, regulatory and Enforcement Officers, Customers and Food Handlers.

- This may be in collaboration with International Development Partner Agencies.

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

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.

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 access 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.

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Critical limit: A criterion which separates acceptability from unacceptability.
Deviation: Failure to meet a critical limit.
Flow diagram: A systemic 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 point (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.

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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 the 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 have in place prerequisite programs such as Good Hygienic Practices according to the Codex General Principles of Food Hygiene, the appropriate food safety requirements. These prerequisite programs to HACCP, including training, should be well established, fully operational and verified in order to facilitate the successful application and implementation of the HACCP system.

For all types of food business, management awareness and commitment is necessary for implementation of an effective HACCP system. The effectiveness will also rely upon management and employees having the appropriate HACCP knowledge and skills.
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 products, categories of consumers of concern and epidemiological evidence relative to food safety.

The intent of the HACCP system is to focus control at Critical Control Points (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.

The application of the HACCP principles should be the responsibility of each individual business. However, it is recognized by governments and businesses that there maybe obstacles that hinder the effective application of the HACCP principles by individual business. This is particularly relevant in small and/or less developed businesses. While it is recognized that when applying HACCP, flexibility appropriate to the business is important, all seven principles must be applied in the HACCP system.

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This flexibility should take into account the nature and size of the operation, including the human and financial resources, infrastructure, processes, knowledge and practical constraints.

Small and/or Less Developed Business (SLDB) do not always have the resources and the necessary expertise on site for the development and implementation of an effective HACCP plan. In such situations, expert advice should be obtained from other sources, which may include: trade and industry associations, independent experts and regulatory authorities. HACCP literature ad especially sector specific HACCP guides can be valuable. HACCP guidance developed by experts relevant to the process or type of operation may provide a useful tool for businesses in designing and implementing the HACCP plan.
Where businesses are using expertly developed HACCP guidance, it is essential that it is specific to the foods and/or processes under consideration. More detailed information on the obstacles in implementing HACCP, particularly in reference to SLDBs, and recommendations in resolving these obstacles can be found in "obstacles to the application of HACCP, particularly in small and less developed businesses, and approaches to overcome them" (document in operation by FAO/WHO).
The efficacy of any HACCP system will nevertheless rely on management and employees having the appropriate HACCP knowledge and skills, therefore ongoing training is necessary for all levels of employees and managers, as appropriate.

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, such as, trade and industry associations, independent experts, regulatory authorities, HACCP literature and HACCP guidance (including sector-specific HACCP guides). It may be possible that a well-trained individual with access to such guidance is able to implement HACCP in-house. 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).

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2. Describe product

A full description of the product should be drawn up, including relevant safety information such as: composition, physical/chemical structure (including Aw, pH, etc.), microcidal/static treatments (heat treatment, freezing, brining, smoking, etc.), packaging, durability and storage conditions and method of distribution. Within businesses with multiple products, for example, catering operations, it may be effective to group products with similar characteristics or processing steps, for the purpose of development of the HACCP plan.

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 for a specific product. The same flow diagram may be used for a number of products that are manufactured using similar processing steps. 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

Steps must be taken to confirm the processing operation against the flow diagram during all stages and hours of operation and amend the flow diagram where appropriate. The confirmation of the flow diagram should be performed by a person or persons with sufficient knowledge of the processing operation.

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 (see “assemble HACCP team” above) should list all of the hazards that may be reasonably expected to occur at each step according to the scope from primary production, processing, manufacture and distribution until the point of consumption.

The HACCP team (see “assemble HACCP team”) should next conduct a hazard analysis to identify form 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

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- 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
- conditions leading to the above.

Consideration should be given to what control measures, if any exist, can be applied to each hazard.
More than one control measure may be required to control 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]
   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 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 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.

[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 judgments.*

8. Establish critical limits for each CCP

   (SEE PRINCIPLE 3)
   Critical limits must be specified and validated 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, Aw, available chlorine, and sensory parameters such as visual appearance and texture.

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Where HACCP guidance developed by experts has been used to establish the critical limits, care should be taken to ensure that these limits fully apply to the specific operation, product or groups of products under consideration. These critical limits should be measurable.

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 online 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 verification procedures

(SEE PRINCIPLES 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.
Verification should be carried out by someone other than the person who is responsible for performing the monitoring and corrective actions. Where certain verification activities cannot be performed in-house, verification should be performed on behalf of the businesses by external experts or qualified third parties.

Examples of verification activities include:
- Review of the HACCP system and plan and its records;
- Review of deviations and product dispositions
- Confirmation that CCPs are kept under control.

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

11. *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 and size of the operation and sufficient to assist the business to verify that the HACCP controls are in place and being maintained. Expertly developed HACCP guidance materials (e.g. sector-specific HACCP guides) may be utilized as part of the documentation, provided that those materials reflect the specific food operations of the business.

Documentation examples are:

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

Record examples are:

- CCP monitoring activities.
- Deviations and associated corrective actions.
- Verification procedures performed.
- Modifications to the HACCP plan

An example of a HACCP worksheet for the development of a HACCP plan is attached as Diagram 3.

A simple record-keeping system can be effective and easily communicated to employees. It may be integrated into existing operations and may use existing paperwork, such as delivery invoices and checklists to record, for example, product temperatures.

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, work instructions and procedures should be developed which

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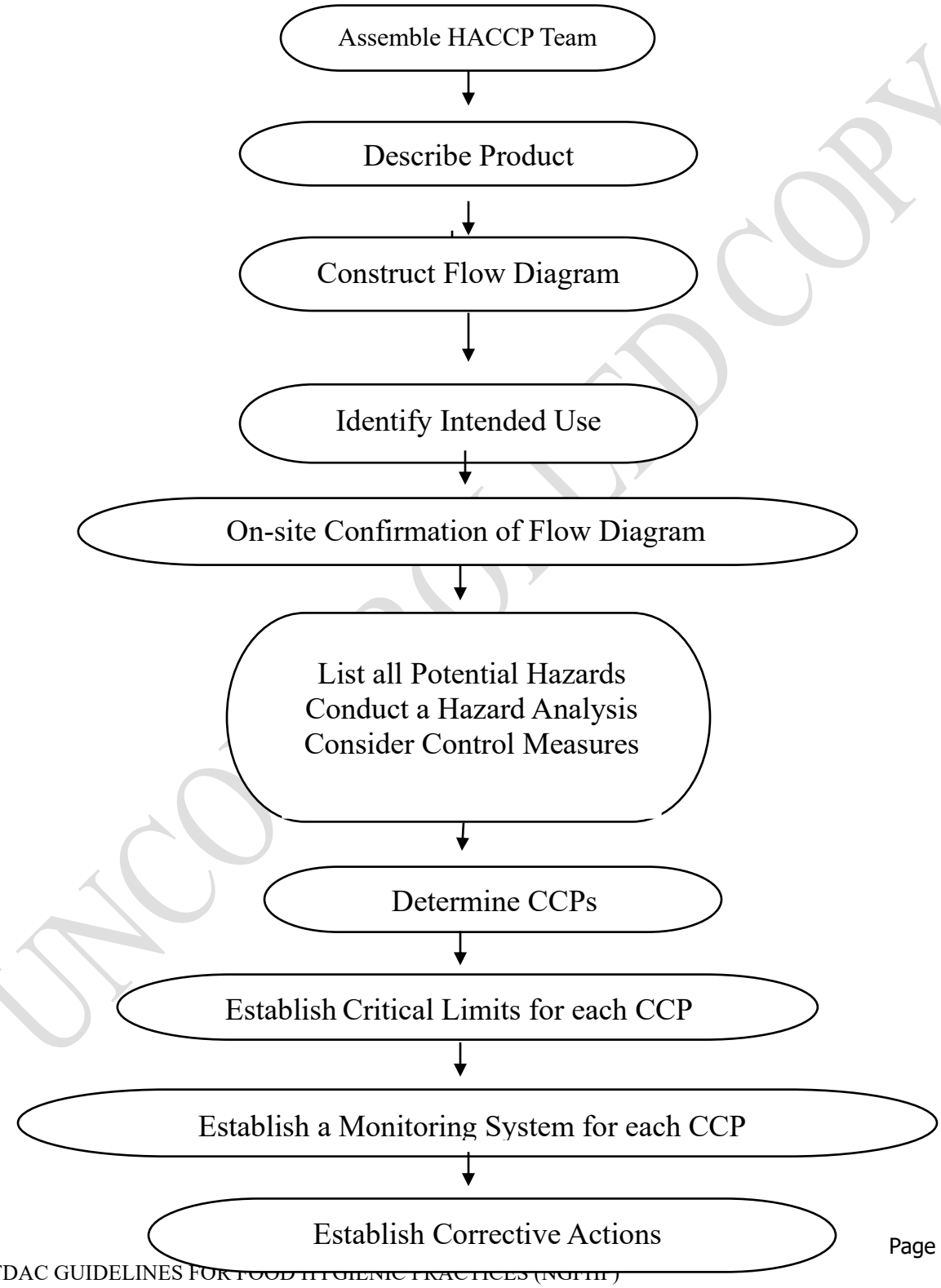
DIAGRAM 1
LOGIC SEQUENCE FOR THE APPLICATION OF HACCP



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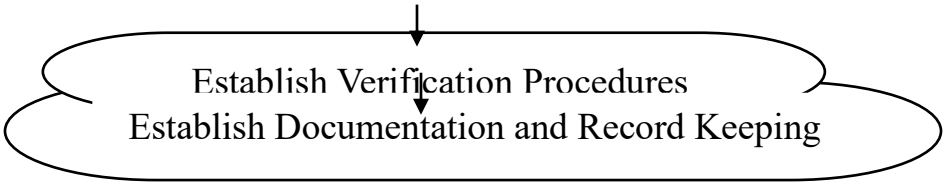

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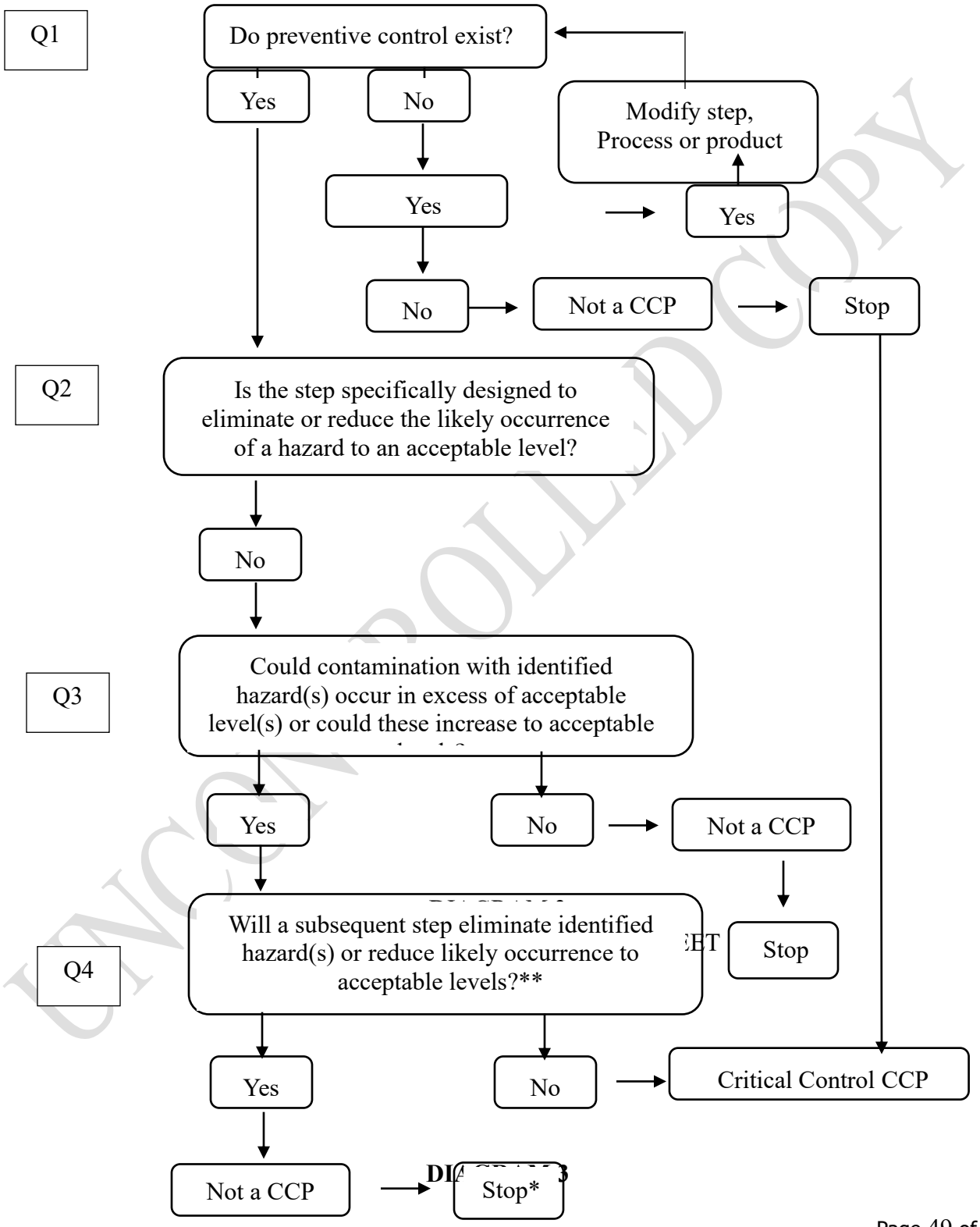
DIAGRAM 2

EXAMPLE OF AN HACCP WORKSHEET

(Answer questions in sequence)



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*Power by the ……

Power by the ……

EXAMPLE OF AN HACCP WORKSHEET

1. Describe the 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

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REFERENCES

1. Recommended International Code of Practice

   General Principles of Food Hygiene (CAC/RCP1-1969, Rev. (1997)

2. Food Safety Issues: Guidelines for strengthening National Food Safety Programme-WHO/1996.

3. National Policy on Food Factory Inspection- NAFDAC (Food Safety and Applied Nutrition Directorate)

4. Checklist for Food Factory Inspection- NAFDAC (Food Safety and Applied Nutrition Directorate)

5. Standard Operating Procedure for Inspection and Release of Imported Food Products and Food Raw Materials- NAFDAC Port Inspection.

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APPENDIX I MEDICAL EXAMINATION FOR FOOD HANDLERS ALONG THE FOOD SUPPLY CHAIN

Name:			
State of Domicile			
Nationality:		**Hospital No:**	
Address:	**Home:**	**Work Place:**	
Contact No:			

A. Declaration Form (to be completed by food handler)	**Yes**	**No**
1. Are you now, or have you over the last seven days, suffered from diarrhoea/vomiting?		
2. Have you suffered from a fever since more than one week ago?		
3. At present, are you suffering from:		
a. Skin trouble affecting hands, arms or face		
b. Boils, styes or sepsis on your fingers or hands		
c. Discharge from eye, ear, nose or gums/mouth		
4. Do you suffer from:		
a. Recurring skin or ear infection		
b. A recurring bowel disorder		
5. In the last 5 days, have you been in contact with anyone who may have been suffering from cholera?		
6. In the last 7 days, have you been in contact with anyone with diarrhoea or vomiting?		
7. In the last 21 days have you been in contact with anyone who may have been suffering from typhoid or paratyphoid or jaundice person?		
8. Have you ever had, or are you now known to be a carrier of typhoid or paratyphoid?		
9. Have you ever had, or are you now known to have typhoid fever?		

B. Physical Examination (To be completed by a doctor)	**Yes**	**No**
1. Fever		

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2. Jaundice		
3. Skin infection on hands, arms, face		
4. Boils, styes or sepsis on finger		
5. Discharge from eye, ear, nose or gums/mouth		

C. Food Handlers Vaccination Record

Name of Recipient:

Date of Birth:

Gender:

Address of Recipient: Name of Employer:

Stamped picture

Vaccine	Date of vaccination	Brand name of Vaccine	Batch Number	Signature	Next visit (Where applicable)	Comments
Typhoid Fever						
Hepatitis A						

Name of Vaccinator:
Hospital name/address:

D. Laboratory Test

1. Stool culture (if required)
   a. Typhoid
   b. Cholera
2. Other tests (if required)

Result

Positive	Negative

Case Summary

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I hereby confirm that Mr/Ms/Mrs …… Hospital no.

……..…. registration/referral no..... had undergone medical examination and found to be:

- Healthy and fit to work as food handlers
- Not fit to work as a food handler
- Can return to work on _____

I declare that all the above statements are true and complete to the best of my knowledge. Signature: ……. Date: ……..……

Name……..

Name of Hospital or Place of Practice: ……..

Official Stamp

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