FOOD CODE

Version 3.0

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Annexe
1 Preliminary Provisions

1.1 Introduction
Foodborne illness can be very serious and even life-threatening to some consumers, especially children, pregnant women, elderly, and those with impaired immune systems or allergies. Effective control of foodborne illness is vital, not only to avoid adverse effects on human health, but also to safeguard the food industry. The potential business repercussions of foodborne illness are many, including loss of earnings; unemployment and litigation; damage to trade and tourism through negative publicity; lower staff morale; and professional embarrassment. The challenge is to continually reduce the risks and achieve excellence in food safety, while supporting the ability of the food industry to adapt to new technology and survive in a competitive environment.

1.2 Purpose
The purpose of this Code is to provide a set of model requirements to help food establishments achieve a higher degree of compliance with the food regulations, and attain a higher standard of food safety through adoption of good practices. It also provides law enforcement officers of the Food safety Department and persons engaged in food business a common set of comprehensive advice and guidance on the application of the relevant regulations and recommended ways for compliance, with a view to improving consistency in the interpretation and application of the food regulations by all stakeholders.

The ultimate objective of the Code is to provide high level of protection to human life and health and to protect the interests of the consumers by safeguarding them from fraudulent or deceptive practices, adulteration and any other practices that may cause illness or injury to the consumer.

1.3 Application
a. The Code is an interpretative guideline that explains how to meet the objectives identified in the Administrative and Local Orders passed by the Government of Dubai. It is not intended to be used as a rigid and inflexible document.

b. The term “shall” or “must” is used throughout this document to indicate those provisions which the food establishments have to comply with and are an absolute requirement. The term “should” is used to indicate those provisions which the food establishments have to comply with. However, deviations from such provisions are allowed under exceptional circumstances when there is a valid reason to ignore or to seek alternative measures without compromising the food safety objective. The term “shall not” is used to indicate that the provisions that are absolutely prohibited. The term “should not” is used to indicate those provisions that are prohibited. However, deviations from such provisions are allowed under exceptional circumstances when there is a valid reason to ignore or to seek alternative measures without compromising the food safety objective.

c. This document provides an extensive information base to assist in the safe operation of food establishments. As new technology becomes available, operational procedures and equipment standards in a food establishment may vary from that described in this Code.
d. Unless specifically mentioned elsewhere in this document, the provisions of this requirement apply to food products—
   i. Manufactured, sold or prepared for sale in the Emirate of Dubai;
   ii. Imported directly or brought into the Dubai from other Emirates;
   iii. Exported to other countries.

Note: Processes, materials and methods other than those specified in the Code may be used by food business operators, if the operators can provide sound, scientific evidence to the Food safety Department that clearly demonstrate that those processes, materials and methods comply with the regulatory objectives.

1.4 Scope
The requirements apply to every food establishment which imports, sells, offers for sale or distributes free of charge, packages, prepares, displays, serves, manufactures, processes, or distributes food in all areas of Dubai emirate including private development zones and free zones. The Code has, as its primary focus, a broad range of food establishments that include, but are not limited to, the following:
   I. restaurants, hotels, cafeterias and cafés;
   II. food service operations in institutions, including hospitals and schools;
   III. bakeries;
   IV. butcheries;
   V. grocery store, supermarkets and departmental stores;
   VI. food catering establishments, suppliers to cruise ships, events (desert camps), canteens;
   VII. kiosks, temporary or permanent food events, and mobile vending operations;
   VIII. Drinking water in rental buildings, commercial establishments, educational facilities, public places and mosques in the Emirate.

1.5 Guiding Principles
The primary objective of the Code is to ensure the safety of foods. In addition, there are a number of other expected outcomes:
   a. better knowledge of safe food handling practices by all stakeholders;
   b. improved consistency in the interpretation and application of food industry regulations by all stakeholders;
   c. establishment of minimum health and food safety practices;
   d. better communication among all sectors of the industry and government concerning critical requirements in food safety, and a greater commitment to finding cooperative approaches to reducing risks; and
   e. Improved information concerning best practices to compliment industry-driven inspection, auditing and educational programs.
   f. enhancing the concept of shared responsibility and self-commitment.
1.6 Definitions

**Audit:** A systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled.

**Auditor:** A person with necessary competency in food safety approved by Dubai Municipality to conduct an audit.

**Authorized Officer:** An Authorized person from the Food safety Department who can conduct inspections or investigations in food establishment.

**Cleaning:** The process of removing soil, food residues, dirt, grease and other objectionable matter.

**Codex:** Codex Alimentarius Commission (CAC), a United Nations Organization that supports FAO and WHO by developing food standards, guidelines and Codes of practice.

**Concerned Department:** Departments of Dubai Municipality authorized to ensure compliance with relevant regulations.

**Contamination:** The introduction or occurrence of a contaminant in food or the food environment.

**Control Measure:** An action or activity that can be used to prevent, eliminate, or reduce a hazard to an acceptable level.

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

**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.

**Equivalent:** In respect to different systems, capable of meeting the same objectives.

**Food:** Any substance or product intended to be or reasonably expected to be ingested by people. This includes beverages and drinks (except alcohol), chewing gum and any substance including water.

**Food safety Department:** Food safety Department of Dubai Municipality.

**Food Establishment** Any place where food is manufactured, prepared, traded or sold directly or indirectly to the consumer. The term includes any such place regardless of whether consumption is on or off the establishment.. The term includes but is not limited to trading companies, manufacturing companies, hotels, restaurants, cafés, cafeterias, caterers in hospitals, private clubs, caterers or cafeterias in public and private educational bodies, groceries, supermarkets, meat and fish shops, bakeries, mobile vendors, temporary kitchens and snack houses in petrol stations. Unless specified otherwise, the term refers to premises located in the Emirate of Dubai.

**Food establishment Operators:** A ‘food business operator’ means the person who is actively engaged in running the food establishment and is responsible for ensuring that the legal requirements are met.
Food Handler: Any person handling food directly or indirectly in a food establishment, whether packaged or unpackaged food, food equipment and utensils or food contact surfaces.

Food Hygiene: All conditions and measures necessary to control hazards and ensure the safety and suitability of food at all stages of the food chain.

Food Safety Program: A food safety management system based on the principles of HACCP.

Food Transportation Vehicle: Any mode of transport, designated for food, whether self-propelled or not and whether used on land, sea or in the air.

Food Service establishment: Food establishment such as restaurants, cafeteria, central production units, coffee shops, supermarkets, etc. that sell foods directly to the consumers for immediate consumption either on-site or off-site. The definition excludes business activities such as manufacturing, processing, trading, grocery stores etc.

Good Hygiene Practices: All practices regarding the conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.

HACCP (Hazard Analysis and Critical Control Point): A preventive system of food safety management that identifies, evaluates, and controls hazards, which are significant to food safety, based on product design, hazard analysis and process control.

HACCP plan: A document prepared in accordance with the principles of HACCP to ensure control of hazards that 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.

High–Risk Foods: High-risk foods are foods which will support the growth of food poisoning bacteria or the formation of toxins AND which are ready to eat.
Foods such as:
- ready to eat foods such as sandwiches, pizzas, hot meals;
- cooked products containing meat, fish, cheese etc.;
- cooked products that are reheated and served – pies, ready made meals, etc.;
- smoked or cured meats and fish;
- raw ready to eat foods - e.g. Oysters, Kebneyah, Sushi; cut fruits
- dairy based desserts;
- ripened soft or moulded cheese – e.g. Brie, Danish Blue, etc.;
- prepared vegetable salads including those containing fruit;
- foods labelled/described as needing to be kept at a specific temperature;
- Frozen food such as ice cream.
**Licensing Authority:** The government organization that provides trade license and business activity authorizations required to operate a business establishment in Dubai, both food and non food. List of licensing agencies include but are not limited to: Department of Economic Development in Dubai (DED), DIFC, Dubai South, DAFZA, JAFZA, Dubai Creative & Cluster Authority etc.

**Packaging:** Any operation consisting of placing the food in containers (i.e. primary packaging) or placing the food containers in further packaging material (i.e. secondary packaging).

**Raw foods of Animal Origin** Raw foods of animal origin such as meat, poultry products, fish, shellfish etc. that are likely to be contaminated with pathogenic or spoilage microorganisms. They are usually stored chilled or frozen to minimize spoilage.

**Person in Charge:** A person directly responsible for the food related operations in the food establishment and has direct authority, control or supervision over employees who engage in the storage, preparation, display, or service of foods.

**Pests:** The term pest in this document refers to any undesirable animal or insects including, but not limited to, birds, rodents, flies, larvae etc. that could affect the food safety of the food chain and are objectionable or a nuisance.

**Potable Water:** Drinking water that is pure and healthy at the point of usage, and meets the requirements of approved Standards.

**Primary Product:** A product consisting of a natural raw material including goods that are available from cultivating raw materials without a manufacturing process. Significant primary product industries include agriculture, fishing, mining, and forestry.

**Processing:** Action(s) that substantially alters the initial product, including heating, smoking, curing, maturing, drying, marinating, extraction, extrusion or a combination of those processes.

**Raw Food:** Food that is neither cooked nor heat processed.

**Ready-to-Eat Foods:** Any food for consumption without further treatment or processing. Examples of ready-to-eat food items may include: sliced cooked meats, cooked meat products and preparations, cooked/roast chickens, sandwiches and filled rolls, dairy products such as milk and cheese, fruits, pre- washed/topped and tailed vegetables, prepared vegetable salads, whole salad items such as tomatoes or cucumbers, open and canned ready-to-eat fish and fish products such as salmon, tuna or sardines, shellfish, preserves and jams, condiments, bread, confectionery and biscuits.

**Recall:** A recall is an action taken to remove from distribution, sale and consumption, food which may pose a health risk to consumers.

**Shelf-life:** The period during which a food product maintains its microbiological safety and suitability at a specified storage temperature and where appropriate, specified storage and handling conditions.

**Temporary Food establishments:** are those types of establishments that are set up with a time-limited
life (e.g., special events, fairs and festivals, exhibitions etc.).

**Traceability**: The ability to track any food, feed, food-producing animal or substance that will be used for consumption, through all stages of production, processing and distribution.

**Validation**: Obtaining evidence that a control measure or combination of control measures, if properly implemented, is capable of controlling the hazard.

**Verification**: The application of methods, procedures, tests and other evaluations, in addition to monitoring to determine compliance with the HACCP or food safety plan.
2 Licensing, N.O.Cs, Permits, Approvals, Construction, Design and Facilities

2.1 Trade License, N.O.C., Approvals and permits:

a. All food establishments in Dubai must have a valid trade license from the concerned licensing authorities before the start of operation.

b. The operator of the food establishment must choose the appropriate business activity at the time of obtaining the license.

c. The business activity on the trade license of food establishment shall be related to food, and the license must clearly state the exact activity the establishment is involved in.

d. Food establishment shall not carry out any activity other than the business activity (or activities) listed in the trade license.

e. Food establishment shall not carry out any food activity before obtaining N.O.C from the Food Safety Department.

f. Food establishment shall not carry out any food activity outside the licensed site before obtaining a permit from the Food Safety Department.

g. Training and consulting services or any activities related to food safety services or applied nutrition must be approved by the Food Safety Department.

2.2 Approval of Construction Plans and Specifications

a. Proposed layouts for new construction or renovations to an existing food establishment shall be approved by the Food Safety Department prior to the construction, renovation or re-construction.

b. Particulars to be indicated on a layout plan include but are not limited to:
   I. area and space allocated to food handling and cooking, cleaning, preparation, food storage and seating
   II. sanitary fitments, open spaces, restrooms, storage areas
   III. all windows and mechanical ventilation systems
   IV. Location of equipment & facilities to carry out different activities e.g. Handwashing, pots & dishwashing or any different kind of food preparation, etc.
   V. all means of exit and entry

c. In existing facilities, major alterations that affect the main layout or the process flow shall not be carried out without prior approval from the Food Safety Department. Alteration,
addition or deletion which results a change of the approved layout should not be carried out without the prior approval of the Food Safety Department.

d. Plans for minor alterations that do not involve a change in the main layout and the flow of work such as the installation of shelves in a storeroom do not require prior approval.

e. Food establishment shall not carry out any activity before pre-opening inspection by the Food Safety Department.

f. Food establishment with manufacturing & repacking activity must also submit the list of products, process description, control measures & if applicable variance plan to the Food Safety Department before commencing any activity.

g. Where necessary, the information about the preparation area, equipment and process flow shall be provided in digital format via Dubai Municipality’s online system.

2.3 Site and Location

a. Sites for food establishments should be chosen in such a way that they are free from conditions that might interfere with their sanitary operation. Food establishments should be located far enough from waste disposal facilities and incompatible processing facilities so that there is no risk of contamination.

b. Generally, a minimum distance of 30 meters is recommended from potential sources of contamination. However, a greater or lesser distance could be accepted depending on specific site conditions.

c. Streets, lanes and other public places or the common part of the building, which are within a minimum of 10 meters around the food establishment, should be kept clean and free of litter, garbage or waste that can attract pests.

Rationale:
Poorly maintained or unhygienic surroundings and facilities can lead to contamination of food. Conditions, which might lead to contamination, include excessive dust, foul odors, smoke, pest infestations, airborne microbial and chemical contaminants, and other similar conditions. Food establishments should be protected from such conditions that would expose the food to contaminants.

2.4 General Requirements for Design and Construction

a. The design and construction of food establishment should:
   i  Be appropriate for the activities for which the establishment has been approved.
   ii  Provide adequate space & facilities for the activities to be conducted and be suitable for the fixtures, fittings and equipment used for those activities.
   iii  Facilitate effective cleaning and disinfection processes.

b. The design and construction should:
i. help exclude dirt, dust, fumes, smoke and other contaminants;
ii. not permit the entry of pests;
iii. not provide harborage for pests; and
iv. provide a safe environment for workers and where applicable for customers.

c. The layout of food establishment should be designed in such a manner that:
   i. food flow is unidirectional; (i.e. receiving → storage → preparation→ cooking → packaging /serving /dispatch)
   ii. adequate spaces are provided for food preparation, cooking and cooling, storage, storage of equipment / utensils, installation of sanitary fitments, and cleaning facilities;
   iii. Food or clean utensils are not conveyed through an open space or open yard that would expose food to contaminants.

d. Incompatible areas or processes, particularly toilets, clean-up and chemical storage areas, should be separated from food preparation/processing areas. A private home, a room used as living or sleeping should not be used for food operations.

**Rationale:**
A properly designed and operated food establishment will minimize the likelihood of food contamination. At the same time, unnecessary movement of food and personnel within the establishment increases the likelihood of contamination, and hence should be controlled as much as possible. Well-designed layout is a pre-requisite for effective implementation of any food safety program.

2.5 **Spatial Requirements**

a. The space available in a food establishment should be suitable for the business activity, and sufficient to carry out the operations as per the relevant provisions of this Code.

b. Requirements specific to the type of food establishments including area are provided as a separate guideline. Annex1. Total area of food establishments should not be less than the minimum requirements stipulated in the layout approval guideline for food establishments.

c. Food activities should only be carried out within the area as delineated in the approved layout plan.

**Rationale:**
Adequate space for food preparation is essential to ensure safe food preparation and shall support the type of operation and the number of customers to be served. For example, too small a kitchen for a restaurant may cause congestion and unhygienic food operation that increases the risk of food contamination. The general rule for food service establishments is that, establishments with larger gross floor area should provide more space for food preparation. The type of food, number of meals produced and the number of people working at the same time should also be considered when deciding the spatial requirements for food service establishments.

2.6 **Floor, Walls, Ceilings, exterior protective barriers & openings**
The requirements in this section apply to the floors, walls, ceilings, exterior protective barriers & openings of all areas used for food handling and associated activities such as storage and packaging.

2.6.1 Floors
Floors should be designed and constructed in a way that is appropriate for the activities conducted in the food establishment.

2.6.1.1 Floors in Dry Areas
a. The floor should be durable, impervious, easily cleanable, and non-slip.
b. The floor to wall joints should be coved.

2.6.1.2 Floors in Wet Areas
a. In areas where the floor could be wet (such as food preparation or processing areas, walk-in chillers, washrooms), and areas subject to flushing or spray cleaning, the floor should be:
   i. light colored;
   ii. durable, easily cleanable and non-slip;
   iii. constructed of an impervious material that is able to withstand regular wet washing, such as tile or resin;
   iv. coved at the wall to floor joints, and sealed;
   v. designed to prevent the pooling of liquids; and
   vi. Sufficiently sloped for liquids to drain to adequately sized and constructed floor drains (See Section 2.7 below). Generally, a minimum slope of 2% is recommended.

b. If used, clean rubber or plastic mats, excluding carpet or other similar floor coverings, should be designed for easy removal, cleaning and, if necessary disinfection.

c. Absorbent material (e.g. cardboard, newspaper, sponge, unsuitable rubber mats) should not be used as floor material.

2.6.1.3 Temporary Flooring
Requirements as listed in 2.6.1.1 and 2.6.1.2 should be taken into account when constructing temporary floors.

Rationale:
Properly constructed floors facilitate cleaning and disinfection. Impervious materials do not absorb water or organic matter, and sloping helps avoid pooling of liquids, which can lead to unhygienic conditions.

2.6.2 Walls and Ceiling

2.6.2.1 Walls
a. Walls should be designed and constructed in such a way that they can be kept clean.

b. In wet areas, walls should be constructed of an impervious material that is able to withstand regular washing.

c. In areas where open food is handled, internal surfaces of walls and partitions should be surfaced with smooth, preferably light colored, durable, non-absorbent and easily cleanable
materials (e.g. tiles or stainless steel) to a height of not less than 2 Meters. The rest may be painted with a light-color. Junctions between walls, partitions and floors should be coved.

2.6.2.2 Ceiling
a. Ceiling should be of continuous construction so that there are no empty spaces or wide joints. Although ceilings are less likely to require frequent cleaning, the surfaces should allow ease of cleaning.

b. Ceiling in kitchens and food rooms should be of light color and fire proof.

c. Ceiling and overhead fixtures are to be constructed in a way that prevents accumulation of dirt. There should be adequate measures in place to reduce condensation and subsequent growth of undesirable mould.

2.6.2.3 False Ceiling
a. False ceiling if used in food handling areas should have smooth, easily cleanable and impervious surfaces.

b. Access openings to the space above false ceiling should be provided to facilitate cleaning and detection of signs of pest infestation.

2.6.2.4 Exterior protective barriers & openings
a. Exterior openings should be protected against the entry of pests. Examples include:
   i. filling or closing holes and other gaps along the floor, walls and ceiling;
   ii. solid, self-closing, tight-fitting doors; and
   iii. Screen doors that open outward and are self-closing.

b. If windows or doors are kept open for ventilation or other purposes, the exterior openings should be protected against the entry of pests by means such as screens, properly designed and installed air curtains or other effective means to restrict the entry of pests.

c. Windows, doors and other openings should be constructed in a way that prevents accumulation of dirt.

d. Except for areas used only for the loading of water or the discharge of sewage and other liquid waste, through the use of a closed system of hoses, servicing areas shall be provided with overhead protection.

**Rationale:**
Light colored walls and ceilings enable easy detection of dirt for prompt removal. Durable, impervious and easily cleanable surfaces facilitate cleaning work. However, note that the emphasis should be on cleanliness which is the primary objective of this provision. The space between false ceiling and the original ceiling can get dirty and harbor pests. Periodic checks and cleaning are necessary to maintain a healthy and hygienic work environment.

2.7 Floor Drains
a. Floor drains **must** be designed to:
   i. effectively remove waste water;
   ii. be easily accessible for cleaning and equipped with removable and cleanable covers.

b. Drain lines **must** be sloped, properly trapped, vented and connected to a proper drainage system.

c. The drainage system **must** be constructed in a way that there is no cross-connection between the drains or drain lines, and:
   i. the water supply; or
   ii. the food product lines or equipment.

**Rationale:**
The accumulation of waste water on the floor and drain of a food establishment can lead to insanitary conditions. Properly designed drains and drain lines can eliminate the accumulation of waste water and prevent entry and growth of pests.

### 2.8 Stairs and Mezzanines

a. Stairways should be:
   i. located so as to minimize the risk of food contamination; and
   ii. constructed of materials that are impervious and easily cleanable.

b. Mezzanines should:
   i. not be located over food preparation areas where splashing or dripping could pose a contamination risk;
   ii. be constructed of solid masonry or metal
   iii. be equipped, where appropriate, with raised edges of a height sufficient to prevent contaminants from falling onto surfaces below and
   iv. **Stairs and mezzanines shall** meet all the requirements of the concerned department of Dubai Municipality prior to the construction.

**Rationale:**
Stairs and mezzanines, over work areas or near these areas can act as a source of contamination. Proper design and construction can prevent contamination.

### 2.9 Equipment and Utensils

Food establishments **shall** use only safe and suitable equipment and utensils at all times. Equipment and utensils should be designed and constructed to be durable and to retain their characteristic qualities under normal use and conditions.

#### 2.9.1 Equipment and utensils Design and Layout

a. Equipment and utensils shall be made of safe and suitable material that will not affect the quality and safety of food.

b. Materials used for making the equipment and utensil should be resistant to denting, pitting, chipping and cracking. Food contact surfaces should be smooth so as to enable them to be kept clean, and where necessary disinfected.

c. Materials used in the construction and repair of equipment and utensils shall be non-toxic, not affected by foods, cleaning compounds, non-absorbent and durable under normal use.
They shall not impart odor, color or taste nor contribute to the contamination of food. They should also maintain their original properties under repeated use. Painted food-contact surfaces are prohibited.

d. Equipment and utensils shall be free from difficult-to-clean internal corners and crevices. Food contact surfaces shall be readily accessible for cleaning. Where necessary, equipment should be movable or capable of being disassembled to allow for maintenance, cleaning and disinfection.

c. Hard maple or other equivalent non-absorbent material meeting the criteria stated in this Code may be used for cutting blocks and cutting boards, baker’s tables and work surfaces. Food contact surface should be smooth, easy to clean.

f. Canvas, cloth and other porous material, other than single-service use, are prohibited as a food-contact surface.

g. Equipment should be used in accordance with its intended use.

h. Equipment used to cook, heat treat, cool, store or freeze food should be designed to achieve the required temperatures as rapidly as necessary to ensure food safety.

i. Equipment containing bearings and gears requiring lubricants shall be designed and constructed so that the lubricant shall not leak, drip or be forced into the food or onto food-contact surfaces. Food-grade lubricants are to be used on or within food-contact surfaces.

2.9.2 Location of Equipment

a. Equipment used in a food establishment should be suitably located or positioned so that it:

i. is not exposed to any sources of contamination;

ii. can be maintained, cleaned and disinfected;

iii. can be inspected easily;

iv. may be properly vented when required; and

v. is installed in such a manner to allow adequate cleaning of the equipment and the surrounding area.

b. Equipment and utensils used in processing, handling and storage of foods (including single-service and single-use articles) shall not be located in staff locker rooms, toilet rooms, garbage storage rooms, mechanical rooms, under sewer or water lines not shielded to intercept leakage/condensate, under open stairwells, or any area where the equipment may become contaminated.

c. Unobstructed aisles, walkways and working spaces shall be sufficiently wide to permit

**Rationale:**

Equipment used in a food establishment shall be kept in a clean and sanitary condition to minimise the risk of contamination of food by equipment surfaces. Therefore, when considering the location of equipment, several factors should be taken into account, including ease of cleaning, the intended use of equipment, and the methods for prevention of contamination of the equipment. Special care should be taken in the placement of food equipment which will be used to process, handle or store food. Such equipment shall not be located in areas where it may become contaminated, since the surfaces of the equipment will be coming in direct contact with food.
employees to perform their duties readily without contamination of food or food-contact surfaces by clothing or personal contact.

2.9.3 Fixed Equipment
a. Equipment that is fixed (i.e., not easily moveable) should be either:
   i. sealed to adjoining walls, floors and equipment; or
   ii. positioned & designed in such a manner to comfortably allow cleaning under and around the equipment.

b. Equipment that is intended to be “Clean in Place (CIP)” should be designed and constructed so that:
   i. cleaning and disinfection solutions circulate through a fixed system and contact all interior food contact surfaces;
   ii. the system is self-draining or capable of being completely drained of cleaning and disinfectant solutions;
   iii. there are inspection access points to ensure all interior food contact surfaces throughout the fixed system are being effectively cleaned.

2.9.4 Calibration and Standardization
Equipment or instruments used for measuring or monitoring products or processes that could have an impact on product safety or legality should be calibrated or standardized to a standard recognized by Dubai Municipality. The calibration or standardization should be done internally or externally at a pre-determined frequency necessary to ensure proper functioning of the equipment.

2.10 Lighting
a. Lighting and lighting fixtures should be designed to prevent accumulation of dirt and be easily cleanable.

b. Food establishment shall provide sufficient natural or artificial light to ensure the safe and sanitary production of food and facilitate cleaning of the establishment. Unless otherwise specified, the minimum lighting intensities should be:
   i. 110 lux (at a distance of 89 cm / 3 feet above the floor) in walk-in-chillers dry food storage areas, and in all other areas and rooms during periods of cleaning;
   ii. 220 lux (at a distance of 89 cm / 3 feet above the floor) in areas where fresh produce or packaged foods are sold or offered for consumption; areas used for hand washing, ware-washing, and equipment and utensil storage; and in toilet rooms; and
   iii. 500 lux at the surface where a food handler is working with unpackaged high-risk foods or with food utensils and equipment such as knives, slicers, grinders or saws where employee/worker safety is a factor.

c. Except as otherwise specified, lighting fixtures should be shatter proof or be shielded with shatter-proof coverings in areas where they are exposed to food, equipment, utensils, linens or unwrapped packing materials. Shielded lighting is not necessary in areas used only for storing food in unopened packages or where the food cannot be affected by broken glass falling onto it.
2.11 Ventilation
a. Food establishment should be provided with adequate mechanical or mixed mode ventilation to ensure good indoor air quality.

b. The design and installation of mechanical ventilation systems should be based on the requirements provided by the concerned Department of Dubai Municipality.

c. Ventilation systems should be designed and installed in a way that:
   i. they are sufficient in number and capacity to prevent grease or condensation on the walls and ceiling;
   ii. the filters or other grease extracting equipment are easily removable for cleaning and replacement if not designed to be cleaned in place;
   iii. the exhaust ventilation hood system components such as hoods, fans, guards, and ducting should prevent grease or condensation from draining or dripping.
   iv. they are equipped with make-up air systems, installed in accordance with the requirements of the concerned Department of Dubai Municipality.
   v. if vented to the outside, ventilation systems should not create a public health hazard or nuisance or unlawful discharge.

d. Mechanical ventilation systems should be installed in such a manner that airflow is directed from the clean area to the contaminated area.

c. Ventilation systems should be cleaned in accordance with the requirements stipulated by the concerned department of Dubai Municipality.

Rationale:
The air supplied to the food establishment shall be of good quality so as not to contaminate the equipment or the food. Unclean air, excessive dust, odors, or build-up of condensation or grease are all potential sources of food contamination. Buildup of grease/fat in equipment such as hoods also pose a fire hazard.

2.12 Storage Areas
a. Food establishments require adequate storage facilities for all food & non food items During storage, food items shall be protected from contamination such as water leakage, pest infestation or any other insanitary condition.

b. The following criteria should be applied to all storage areas:
   i. adequate shelving should be provided in order that all materials can be stored off the floor. All food and food items and equipment should be stored at a minimum of 15 cm (6 in.) off the floor on racks, shelves or pallets. Shelving which is not sealed to the floor should have a clear vertical space of at least 20 cm between the bottom shelf and the floor to facilitate cleaning. Shelving units should be at least 20 cm or more away from the walls to allow for access for
cleaning, and permit easier visual inspection;
ii shelves should be constructed of materials which are durable and easily cleanable.

c. The facilities used for the storage of food, food ingredients, equipment and packaging should be designed and constructed so that they:
   i are cleanable;
   ii are located in a clean and dry location;
   iii restrict pest access and harbourage;
   iv provide an environment which minimizes the deterioration of stored materials; and
   v protect food from contamination during storage.

d. The facilities used for the storage of food, food ingredients, equipment and packaging materials should not be located:
   i in areas used for the storage of soiled or contaminated objects and materials;
   ii in locker rooms, toilets, garbage or mechanical rooms;
   iii under sewer lines that are not shielded to intercept potential drips; or
   iv in the same room/vicinity as chemicals/pesticides.

c. Non-food agents such as disinfectants, detergents, pesticides and other similar products shall be stored separately in a lockable area that prevents the potential for contamination of food, food ingredients, food contact surfaces and non-food materials such as utensils, linens, single-service and single-use utensils, and packaging materials.

f. Personal belongings and uniforms of employees should be stored separately from food storage and food preparation areas.

Rationale:
Contamination of food, food ingredients, equipment, and non-food materials can occur when improper storage facilities are used. Separation of food and equipment from toxic and soiled materials ensures that the opportunity for cross-contamination is minimized.

2.13 Water Supply
a. An adequate supply of potable water obtained from a source approved by the Dubai Municipality or Dubai Electricity and Water Authority must be used in the food establishment for cleaning and food preparation purposes;

b. An adequate supply of water should be provided for all cleaning activities conducted on the food establishment. The water supplied should be of sufficient temperature to achieve effective cleaning;

c. Water storage and overflow tanks should be designed and constructed in a manner that prevents contamination. These tanks should be provided with appropriate covers to prevent the access of animals, birds and other extraneous matters.

d. Where non-potable water is used for non-food purposes, for example fire control, steam production, refrigeration and other similar purposes, a separate duly identified water supply system should be used. Non-potable water lines should not be connected with potable water systems.
c. Steam used directly in contact with food shall not contain any substance that presents a hazard to health or is likely to contaminate the food.

d. Water storage tanks shall be maintained clean at all times. Cleaning and disinfection of tanks should be carried out at least twice per year, but more frequently if necessary. The water tanks should be cleaned only by a cleaning company approved by the concerned department of Dubai Municipality. Once the tank is cleaned, water samples should be tested for safety and quality by a lab accredited by Emirates International Accreditation Centre (EIAC).

g. When a storage tank is shared by several food establishments (such as in a mall), the food establishment should be able to show documented evidence that the water tank is cleaned as required.

h. Drinking water coolers and dispensers shall be regularly cleaned and disinfected so as to keep it free of dirt and microbial contamination.

i. Water filters that are used on coolers and dispensers should be safe and suitable for the purpose, changed when necessary to prevent any accumulation of dirt or formation of biofilms.

Rationale:
Water can be a source of food contamination and thus must be of good standard all the time. Even though the water source is good, a bad supply system of storage tank can recontaminate the water before it is consumed. A safe distribution system and regular cleaning and disinfection of water tanks will ensure that the water is clean and safe to drink and also avoid contamination of food or equipment.

Water filters can be very useful to remove foreign particiles and certain contaminants. However, a poorly maintained filter can be a source of contamination. Filters can get contaminated faster or slower depending on the source of the water, plumbing system, and the type of the filter. Regular service of the filtration equipment and replacement of filters when necessary should be a part of the annual maintenance contract with the suppliers of water filtration systems.

2.14 Sewage and Solid Waste Disposal

a. Sewage disposal systems shall meet all the requirements of the concerned department of Dubai Municipality.

b. Disposal of sewage and solid waste shall be done in a hygienic manner which does not expose the food establishment or food products to potential contamination.

c. Food establishments should follow the requirements for the separation of various solid-waste streams as outlined by the concerned department of Dubai Municipality. Solid waste containers within the food establishment should:
   i. be sufficient in number and accessible;
   ii. be designed to minimize both the attraction of pests, and the potential for airborne contamination;
   iii. be identified as to their contents;
iv. have functional foot operated lids, if closed containers are used.

d. Garbage storage rooms and containers should be emptied, cleaned and disinfected as often as necessary.

c. Solid waste containers/receptacles located outside the establishment should be:
   i. equipped with covers and closed when not in use;
   ii. maintained in a manner that does not attract pests;
   iii. located away from the entrance of the food
   iv. preferably stored in a pest proof structure.
2.15 Grease Traps
a. Grease traps should, whenever possible, be located outside the establishment.

b. Grease traps should be of a suitable type and be regularly inspected. The greasy waste should be promptly removed, and the adjoining floor surfaces should be cleaned thoroughly afterwards.

c. Grease traps shall meet all the requirements of the concerned department of Dubai Municipality.

Rationale:
The proper disposal of sewage and solid waste is critical in preventing the spread of pathogens in the food premises. In addition, the sanitary disposal of both sewage and solid wastes, and the maintenance of waste containers and facilities, will minimize the presence of pests inside and outside the establishment. Open waste containers can be used in a pest free environment if such bins can be emptied and cleaned frequently. Where bins with lids are used, there is always a human tendency to open the lid with hands. Food handlers should refrain from touching the lids with hands.

2.16 Plumbing System
a. The plumbing system conveying water and waste requires the approval from the concerned department of Dubai Municipality.

b. Water conditioning devices such as water filters or screens should be of a type that permits easy disassembling to facilitate periodic servicing and cleaning.

c. In order to prevent backflow through cross connections, back-flow prevention devices (e.g. air gaps, vacuum breakers) should be installed wherever required.

d. Utility service lines and pipes should be concealed or fitted in a way to prevent the accumulation of dust & dirt & should not obstruct or prevent cleaning of the floors, walls, or ceilings.

Rationale:
Cross connections and backflow can contaminate the drinking water supply.

2.17 Overhead Utility Lines
a. Utility lines such as gas, electrical, sewage and water lines, as well as cooling ducts should be suspended away from work areas or areas of open food to minimize the potential for contamination.

b. They should exhibit no sign of flaking rust or paint.
c. Lines should be:
   i. insulated, where appropriate, to prevent condensation
   ii. constructed and covered with a suitable material to minimize the build-up of soil
   iii. easily cleanable; and
   iv. labeled or color-coded.

d. Lines carrying contaminated or hazardous materials, such as sewer or floor drain lines, **shall** be located sufficiently distant from any product or product contact surfaces to prevent any risk of contamination.

**Rationale:**
Conditions such as dripping condensation or excessive dust from overhead utility lines can be a source of contamination when the lines are suspended over work areas or areas of open food. The consequences of contamination due to leakage are significantly greater with lines carrying sewage, hazardous chemicals or highly contaminated materials.

### 2.18 Hand wash Stations

a. At least one hand wash station **shall** be provided in each food preparation area. Additional hand wash stations may be required depending on the type and extent of activity.

b. Hand wash facilities **shall**:
   i. be located to allow convenient access and use by food handlers and other workers;
   ii. be equipped with liquid soap and single-use paper hand towels and/or hand dryer
   iii. provide an adequate flow of water at a suitable temperature (not too cold nor too hot)
   iv. be easily cleanable, and maintained in a clean condition;
   v. indicated with clear signage;
   vi. not be used for purposes other than hand washing.

**Rationale:**
Improper hand washing is a major contributing factor to outbreaks of foodborne illnesses. Provision of proper and adequate hand washing facilities is essential to minimize food contamination and maintaining personal hygiene. The temperature of the water should be suitable to encourage hand washing. If the water is too hot or too cold, employees might have a tendency to avoid hand washing.

### 2.19 Toilet Facilities and Dressing Areas

a. Adequate, suitable and conveniently located toilets should be provided for food handlers. The following criteria should be considered:
   i. toilets should be conveniently located and accessible to workers during all hours of operation;
   ii. toilets should be completely enclosed and provided with a tight-fitting and self-closing door;
   iii. toilets should have a hand wash station equipped with liquid soap and single-use paper towels and/or hand dryer & prominently displayed hand washing signage board;
   iv. toilets should be easily cleanable, well ventilated, and well lit; and
   v. toilets shall not open directly into a food area where food or packaging material is stored, handled or packed;
   vi. when adjacent to a food area, the toilet should be separated with a double door and ventilated space.

b. Toilet rooms for the public, if provided, should be completely enclosed and separated from the
food preparation and storage areas.

c. Dressing and changing areas should be provided if workers routinely change their clothes in the food establishment. Dressing and changing areas should be:
   i. easily cleanable;
   ii. well ventilated and well lit;
   iii. provided with lockers or other suitable facilities for the storage of workers’ possessions and uniforms;
   iv. separate for male and female employees.

Rationale:
Properly located and equipped toilet facilities are necessary to protect the equipment, facility and food from fecal contamination, which may be carried by insects, hands or clothing. Toilet facilities kept clean and in good repair, minimize the opportunities for the spread of contamination.

2.20 Cleaning Facilities
a. Every food establishment should have sufficient and suitable cleaning materials, equipment and facilities to meet the cleaning requirements of the operation.

b. The service sink or curbed cleaning facility, equipped with a floor drain, should be conveniently located for the cleaning of mops or similar wet floor cleaning tools, and for the disposal of mop water and similar liquid waste. Such facilities should be located away from food handling areas.

c. Adequate storage facilities should be provided away from food handling areas to store brooms, mops, pails, and cleaning compounds. Toilets should not be used for storing cleaning materials or equipment.

Rationale:
Liquid waste from wet floor cleaning methods are contaminated with microorganisms and filth. A service sink or curbed cleaning facility with a drain allows for the sanitary disposal of this waste water in a manner that will not contaminate the food. Designated storage areas for brooms, mops, pails, etc., will assist in the sanitary operation of the premises during periods when they are not in use.

2.21 Temporary Food Establishments & Facilities
This requirement covers food establishments including mobile food trucks, vending machines, desert events and camps & other external events that are temporary in nature.

a. Such food establishment shall meet all the requirements of section 2 of the code.

b. A prior approval from the Food safety Department and any other concerned department is required to operate such food establishments.

c. Food establishment should follow relevant temperature requirements and other handling and storage recommendations of this Code.

d. When the food is supplied to a third party such as an event organizer, the food establishment that supplies the food should ensure that handling requirements of food are clearly communicated in writing to the person in charge of the event.
c. Adequate measures should be in place to control both intentional and unintentional contamination in temporary food establishment’s e.g vending machines.

f. Except for machines that vend canned beverages, if located outside, a machine used to vend food shall be provided with overhead protection

2.21.1 Liquid Foods and Ice
In equipment that dispenses or vends liquid food or ice in unpackaged form, the delivery tube, chute and orifice should be designed such that:

a. Splashes and drips (including drips from condensation) are diverted away from the container receiving the food by means of barriers, baffles or drip aprons.

b. Tubes, chutes and openings should be protected from manual contact by being recessed.

c. Where the item is dispensed, the equipment should be provided with means to prevent back siphonage.

d. Delivery tubes, chutes and openings shall be protected from dust, insects, rodents and other contamination by a self-closing door if the equipment is:
   i. located outdoors and is not protected from precipitation, wind-blown debris, pests and other contaminants present in the environment; or
   ii. available for self-service of food during hours when it is not under the full-time supervision of a food employee.

Rationale:
For vending machines that dispense liquid food or ice, it is important to prevent the entry of condensate or splash, which may contaminate the food product. Food contact surfaces which divert liquid food into the receiving container need to be protected from contact by customers/people to prevent contamination of the food product. A self-closing door on outdoor machines or unsupervised machines further protects against accidental or malicious contamination.

2.21.2 Self-Service Beverages
a. Self-service beverage dispensing equipment should be designed to prevent contact between the lip-contact surface of glasses or cups that are refilled and:
   i. the dispensing equipment actuating lever or mechanism; and
   ii. the filling device.

b. Beverage equipment that utilizes carbonation equipment (CO₂) should incorporate a back-flow, back-siphonage prevention device (check valves) to prevent the migration of the carbonated beverage into copper water supply lines.

Rationale:
Through proper design of the dispensing equipment, contamination of the lip-contact surfaces of the refillable containers can be avoided, and the risk of cross-contamination reduced. As well, back-flow into water supply lines has resulted in incidents of copper poisoning after consumption of the dispensed beverage.
2.21.3 Beverages in Paper-Based Packaging
Vending machines designed to store beverages that are packaged in containers made from paper products should be equipped with diversion devices and retention pans or drains for container leakage.

2.21.4 Vending of High-Risk Foods
A machine vending high-risk foods shall have an automatic control that prevents the machine from vending food if there is a power failure, mechanical failure or other condition that results in an internal temperature that cannot maintain the food temperature required in this Code.

Note: The automatic control shall prevent the machine from dispensing food until it is restocked and can maintain food at required temperatures.

Rationale:
Vending machines require a “fail-safe” device that would prevent the dispensing of high-risk foods, in the event of mechanical or power failures which could subject them to temperature abuse.
3 Control of Hazards in Food

This part of the Food Code is based upon the principle that food safety is best ensured through the identification and control of hazards in the production and handling of food as described in the Hazard Analysis and Critical Control Point (HACCP) system, adopted by the joint WHO/FAO Codex Alimentarius Commission, rather than relying on end product standards alone. The Food safety Department requires all food establishments to implement a risk-based food safety program.

3.1 Management of Food Safety

The food business operator is responsible for the safety (and suitability) of the produced food. The management shall ensure that the requirements of laws and regulations on food safety are observed. Compliance with these requirements enable the food business operators to demonstrate their commitment and their responsibility with respect to the production & supply of safe products.

3.1.1 Management – Person in Charge

Establishment must meet all specific requirements related to Person in Charge (PIC) issued by the Food Safety Department of Dubai Municipality.

a. All food establishments shall employ at least one (1) full time, on-site Person in Charge (PIC) certified in food safety.

b. All food service establishments where high-risk, ready to eat or raw foods are prepared shall have at least one PIC certified in food safety present in the establishment during all shifts (duration) of food establishment operation. The PIC should be responsible for and should actively oversee all food establishment operations that could have an impact on the safety of the food.

c. Each certified PIC shall possess knowledge of food safety principles and practices as demonstrated by passing the assessment acceptable to the Food Safety Department.

d. The PIC should be registered on Foodwatch Platform prior to the training and shall be an approved user.

c. Once the employment of a PIC is terminated, establishments can take up-to thirty (30) days to designate a new PIC. The proposed PIC should enroll for the training Program and be certified within 45 days.

3.1.2 Roles and Responsibilities of Person in Charge

a. The PIC should be competent and have appropriate knowledge on food safety risks associated with the type of business.

b. The PIC should ensure that the establishment maintains policies and procedures for all employees to follow in order to assure the production, sale, and/or dispensing of safe food products.

c. The PIC should provide effective supervision of safe food practices, conduct regular inspection of the food establishment, address potential food risks, and, where necessary, take appropriate corrective action.
d. The PIC should maintain measures of accountability for meeting food safety responsibilities, including ensuring that
   i. all employees are trained before they start of work; and
   ii. trained employees are competent and are carrying out responsibilities as required. Training should be provided based on the criteria stipulated under Section 6 of this Code.

c. The PIC shall use the Foodwatch platform to perform the daily checks and report immediately the following observations:
   i. Pest infestations to the pest contractors
   ii. Any illness among employees
   iii. Any rejection of food delivery
   iv. Any rejection of food transportation vehicle from a supplier
   v. Any failure in food equipment

3.1.3 Food Safety Management Systems
All food establishments should implement and maintain a Food Safety Management System recognized and approved by the Food Safety Department.

Where mandated by the Food Safety Department, the food establishment shall use new and evolving digital technologies to:
   a. analyse risk, develop and manage procedures and practices
   b. replace paper-based record keeping and documentation
   c. manage day to day tasks, follow up issues

3.1.3.1 General Requirements for the Food Safety Management Systems
A food establishment should:
   a. Systematically examine all of its food handling operations in order to identify the potential hazards that may reasonably be expected to occur.
   b. Develop and implement a food safety management system to control the hazard or hazards are identified in accordance with paragraph (a).
   c. Maintain all relevant documentation digitally; and paper based when digital solutions are not available
   d. Review the system regularly and make necessary changes to it when any significant modification is made to the product, process, or any step, or in the event of a justified food complaint or food related incident.

3.1.3.2 Auditing of the Food Safety Management System
Food establishments where food safety auditing is mandated by Food Safety Department should:
   a. Ensure that the food safety Program is audited by a third party food safety auditor approved by Dubai Municipality at an auditing frequency applicable to the food establishment
   b. Make the documents and records available to any food safety auditor who has been requested to conduct an audit; and
   c. Retain copies of all audit reports conducted by a food safety auditor;
   d. Provide the audit details and reports to the Food Safety Department when necessary; and to the inspection officials upon their request
3.1.3.3 Content of the Food Safety Management System

A food safety management system should include

a. All processes and activities related to preparation, sale, distribution or display of all food items in the scope.
b. Systematic identification of the potential hazards that may be reasonably expected to occur in all food handling operations of the food establishment.
c. Steps where each hazard can be controlled and the means of control.
d. Systematic monitoring of those controls.
e. Appropriate corrective action when the hazard, or each of those hazards, is found not to be under control.
f. Regular review of the system to ensure its adequacy; and

g. Appropriate records to be made and kept by the food establishment to demonstrate action taken in relation to, or in compliance with, the food safety management system.

3.2 Food Handling and Processing

3.2.1 General requirements for processing food

a. Food establishments must take all practicable measures to process only safe and suitable food.
b. Food establishments when processing food should;
   i. take all necessary steps to prevent food being contaminated; and
   ii. use a process step that is reasonably known to achieve the microbiological safety of food.
c. Food establishments shall process & display high-risk foods under required time & temperature control to minimize the growth of pathogenic bacteria in the food.

3.2.2 Food Source

A food establishment shall take all practicable measures to ensure that it accepts only safe food. The PIC should provide specific information to suppliers for each ingredient, where necessary, to ensure the delivery of a safe & a good quality product.

a. Approved Sources

Food establishments shall obtain food and food ingredients from sources that are approved by Food safety Department. Approved food sources are establishments that are licensed to operate in the United Arab Emirates and are inspected by the local regulatory authority. Food establishments shall have appropriate system in place to ensure that safe food & food ingredients are received if sources are located outside United Arab Emirates.

a. Food establishments should maintain sufficient information related to food; the name, business address of the supplier, vendor, manufacturer or packer or the importer.
b. Food establishments that serve raw or lightly cooked (such as raw oysters, sushi, kebeneyah, steak tartar, carpaccio), should obtain detailed information from the supplier about the source and microbial safety of the products. Relevant records should be maintained as an evidence.

c. Food establishment shall ensure that all their suppliers are registered on the Foodwatch platform and the relevant business activities have been declared and approved by the system.
b. **Unapproved Sources**
Food prepared in a private home, unlicensed establishments, mobile vendors, open trucks or any other place, which is not approved by the Food Safety Department, shall not be commercially offered for human consumption.

3.2.3 **Food Receiving**
Foods that are imported to the different Emirates are inspected by the respective local authorities at the port and then released to the market. Instructions provided at the time of the release should be followed by the importing establishment and the release documents should be verified by the retail establishments. Food establishments should always verify that their supplies are delivered safely.

a. **Inspection of Incoming Food**
   a. Inspection should be carried out at the time of receipt of food from the supplier to ensure that:
      i. Food and packaging are free from visible damage, pests and other contaminants;
      ii. food is in appropriate condition for intended use;
      iii. food is received with appropriate documents;
      iv. food is transported in a suitable vehicle approved by concerned authority and is verifiable on the Foodwatch platform.
   b. Foods that require temperature control for safety are to be delivered at temperatures stipulated in section 3.6 of this Code.
   c. Food containers and packages should be intact and free from damage.
   d. Food items should be properly labeled with ingredient listing & date coding etc.
   e. If the food is pre-packaged, the time gap between the date of receiving and expiration date should be sufficient to use the product and avoid wastage of stock.
   f. Unacceptable food should be returned and the details should be recorded via Foodwatch
   g. Food products should be quickly moved into storage after the inspection.

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**Rationale:**
Safe food starts with reputable and reliable food suppliers who meet food hygiene and safety standards. These suppliers operate in a manner that prevents and controls contamination of foods and ensure the foods are safe for human consumption.
Rationale:

Food contaminated with pathogenic microorganisms, chemicals and foreign matters may compromise food safety. Therefore, food establishment should not accept food known (or suspected) to be contaminated with these substances.

Most pathogenic bacteria grow and multiply rapidly at temperatures between 5°C and 60°C. At temperatures lower than 5°C and higher than 60°C, bacterial growth slows down or stops. However, there are bacteria that can grow slowly up to a temperature of -2°C and most bacteria can survive cold temperatures and resume multiplication later when conditions become suitable again. This range of temperatures between 5°C and 60°C is normally called the TEMPERATURE DANGER ZONE. High-risk food may be contaminated by pathogenic bacteria which can multiply to dangerous levels at ambient temperatures. As such, high-risk food should be kept at or below 5°C, or at or above 60°C during delivery, to prevent growth of these bacteria. The temperature of the food may go up during the delivery time, but this time should be as short as possible.

Freezing is a process in which the temperature of a food is reduced below its freezing point and the majority of the water inside the food undergoes a change in state to form ice crystals. Freezing preserves food for extended period of time by preventing the growth of micro-organisms that cause food spoilage and foodborne illnesses. To maintain the quality of frozen food, a temperature of –18°C or less is preferred.

Product Identification

a. All food products received at a food premise should be properly packaged and labelled, according to requirements outlined by the Food Safety Department or any other relevant standard such as the Gulf Standards.

b. Invoices, receipts, and lot coding information should be retained, to allow tracking of unlabeled products (such as raw fish, oyster, carcasses, produce or bakery products) or split lots.

c. In retail food service establishments such as restaurants and catering establishments, if the original packaging of the food is removed after receiving, the same production and expiration dates on the original label should be marked on the new label. The establishment should have a documented internal policy for date marking of products that are stored after the removal of the original packing. However, the foods that are consumed or heat processed on the same day are exempted from this requirement.

Rationale:

A food establishment should be able to identify the food that they have in the premises in order to facilitate tracing products in the event of a recall or a food incident. The information can be obtained from an invoice, receipt or the packaging of the food when necessary and such documents should be retained for a particular duration not less than the shelf life of the product.

Ingredient inspection and control

a. All ingredients used in food preparation should be inspected prior to their use.

b. Any ingredients that are off-color, have strange odors, show evidence of pest contamination or suspected to be contaminated in any other manner should be discarded.

3.2.4

Food Additives

a. Food additives that are banned by the Food safety Department shall not be used.
b. All additives shall be used at a concentration recommended in the relevant product standard. In the absence of a standard, scientific validation is necessary.

c. Manufacturers and suppliers of food additives should provide information on safe usage of additives to the end user.

d. Food handlers who handle additives should be appropriately trained to use additives.

### 3.2.5 Handling Raw Food

a. Raw and ready-to-eat foods should be kept separate at all times. Contamination of ready to eat foods should be prevented using methods outlined in section 3.4 of the Code.

b. Fruits and vegetables that are consumed raw should be cleaned and disinfected using a chemical disinfectant or any other process approved by the Food Safety Department.

### 3.2.6 Handling of Chilled and Frozen Food

a. Food establishments shall meet the provisions of section 3.6 of this Code during receiving, storage and preparation of frozen and chilled foods.

b. Provisions of section 3.3 should be used during preparation and handling of high-risk foods at ambient temperature. It is strongly recommended that areas used for preparation of cold high-risk foods should be maintained at 20°C or below to minimize bacterial multiplication.

### 3.2.7 Thawing

Frozen foods should be thawed quickly in a manner that will prevent the rapid growth of pathogenic and spoilage bacteria. During the process of thawing, the microbiological count should not exceed the limits specified in the relevant product standard.

a. When thawing high-risk frozen foods, the warmest portion of the food shall not rise above 5°C and the food should be used within 48 hours from the time of start of thawing.

b. Frozen raw meat, poultry and fish can be thawed under refrigeration at air temperature of 10°C or less, or under cold running water, as long as the product core temperature does not exceed 5°C. If the raw food is not to be cooked/prepared immediately after thawing, it should be stored below 5°C. Such foods should be cooked within 72 hours from the time of the start of thawing.

c. Frozen raw meat, poultry and fish when cooked immediately after thawing, can be thawed using methods where the thawed portions of the foods are above 5°C. The time period above 5°C, including the time for preparation prior to cooking should not exceed 4 hours. A prior approval from Food Safety Department shall be required for this process.

d. Raw meat, fish or poultry thawed at a temperature that does not exceed 5°C can be refrozen for specific processes with prior approval of Food Safety Department.

Note: Hazards associated with thawing include cross-contamination from drip and growth of microorganisms 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.

Rationale:

Freezing prevents microbial growth in foods, but will not destroy most microorganisms. Improper thawing provides an opportunity for surviving bacteria to grow to harmful numbers and/or produce toxins. Complete thawing of raw food helps to prevent undercooking.
3.2.8 **Cooking Raw Foods of Animal Origin**

a. The time and temperature for cooking raw foods of animal origin and its mixtures should be sufficient to reduce any food borne pathogen to an acceptable level.

b. Raw foods of animal origin and its mixtures **shall** be cooked until core temperature is at least 75°C or to a time and temperature that would give a:
   - 6.5 log10 (6.5D) reduction in *Salmonella* spp. in meat products that contain no poultry;
   - 7.0 log10 (7.0D) reduction in *Salmonella* spp. in meat products containing poultry

The nature of the product **must** be taken into consideration when defining the equivalent time and temperature requirements.

c. Cooking temperature should be checked regularly by inserting a calibrated thermometer into the slowest heating point, normally the core of a product, and the temperature readings should be recorded.

**Rationale:**

To kill microorganisms, food should be held at a required temperature for specified time. Different species of microorganisms have varying susceptibilities to heat. As well, food characteristics affect the lethality of cooking temperatures. Heat penetrates into different foods at different rates. High fat content in food reduces the effective lethality of heat. High humidity within the cooking vessel and the moisture content of food aid thermal destruction. Heating a large roast too quickly with a high oven temperature may char or dry the outside, creating a layer of insulation that shields the inside from efficient heat penetration. To kill all pathogens in food, cooking should bring all parts of the food up to the required temperatures for the correct duration.
3.2.9 Heat Treated Non Ready-to-Eat (NRTE) of Animal Origin
The following requirements are applicable to the products that have been heated to improve the flavor & texture of the product but the process does not result in a ready-to-eat product. In all cases, the products must be cooked prior to consumption.

a. The establishment shall have adequate controls in place to minimize all the hazards during the production & processing.

b. Minimum thermal lethality shall not be required for such products. However, labeling of the product to prevent it from being mistaken for a cooked RTE product must clearly indicate but not limited to:
   • statement or words like "must be cooked", "raw product", "uncooked" or any equivalent word or statement to indicate that the product requires heat treatment or cooking before consumption; and
   • comprehensive instruction of preparation or cooking.

c. Manufacturer should validate the instruction of preparation or cooking to ensure that the process will result in minimum thermal lethality mentioned in 3.2.8.

3.2.10 Hot Holding

a. Cooked foods to be served hot, shall be held at a temperature of 60°C or above.

b. Appropriate hot holding devices should be used to maintain high-risk foods at the correct temperature.

Note: Surface cooling of hot food can be controlled by keeping hot food covered as much as possible. To minimize the loss of the organoleptic properties and nutritional quality of the food, it is recommended that food should be kept at or above 60°C for no more than 4 hours.

Rationale:
No pathogenic bacteria multiply in food that is 60°C or above.

3.2.11 Cooling after Cooking

a. Cooked high-risk foods intended to be kept under refrigerated storage prior to serving, are to be cooled from 60°C to 20°C or less within two hours and then from 19°C to 5°C or less within 4 hours (total 6 hours).

b. Foods that are cooled this way and stored chilled should be used within 72 hours from the time of preparation.

Note: There are some ways that can help to cool food rapidly:
• reduce the volume of the food by dividing it into smaller portions and / or placing it in shallow containers;
• cut large joints of meat and poultry into smaller chunks before cooking; and
• When cooling equipment is used, ensure there is space around the food containers so that the cold air in the refrigerator or cool room can circulate freely.
3.2.12 Cooling from Room Temperature
When high-risk foods are prepared at room temperature and kept under refrigerated storage prior to serving, they should be cooled from room temperature to 5°C or less within 4 hours. This includes those foods whose ingredients were canned or made from reconstituted foods.

3.2.13 Reheating Cooked Foods for Hot Holding
Cooked foods that are cooled and stored at 5°C and are intended to be held and served hot should be reheated until they reach an internal temperature exceeding 75°C in a manner that they will pass through the danger zone (5°C to 60°C) as quickly as possible. Reheating time should not exceed 1 hour.

Rationale:
Pathogenic bacteria may be present in cooked food due to germination of surviving spores or post-contamination after cooking. These pathogens can grow during cooling and cold storage. Proper reheating provides a major degree of assurance that pathogens will be eliminated. It is especially effective in reducing the numbers of Clostridium Perfringens that may grow in meat, poultry or gravy if these products were improperly held. The generation time for C. Perfringens is very short at temperatures just below adequate hot holding.

The potential for growth of pathogenic bacteria is greater in reheated foods than in raw foods. This is because spoilage bacteria, which inhibit the growth of pathogens by competition on raw products, are killed during cooking. Subsequent recontamination will allow pathogens to grow without competition if temperature abuse occurs.

It should be noted that reheating cannot make high-risk food safe if it has not been cooled properly or protected from contamination. This is because some pathogenic bacteria (such as Staphylococcus Aureus) may continue to multiply and produce heat stable toxins under such circumstances. Reheating such food to 75°C cannot destroy the toxins.

Cooked food that has been reheated should not be cooled and reheated for a second time to avoid it from repeatedly exposed to temperatures that can support the growth of pathogenic bacteria.
3.2.14 Reheating Cooked Food for Immediate Service
a. Cooked foods that are cooled and stored at 5°C, can be reheated once only and served, if for immediate consumption, at any temperature, provided the time the food spent between 5°C and 60°C does not exceed 2 hours.
b. Reheated cooked foods should not be re-cooled for further use.

**Rationale:**
Many foods are at risk during preparation and service. As foods are thawed, cooked, held, served, cooled, and reheated, they pass several times through the temperature danger zone. The duration of time that cooked foods are in the danger zone will have an impact on the safety of the product.

3.2.15 Use of Microwave for Cooking or Reheating
Cooked and cooled food reheated in microwave, should be rotated or stirred throughout or midway during cooking to compensate for uneven distribution of heat, and allowed to stand covered for a minimum of 2 minutes after cooking to obtain temperature equilibrium.

**Rationale:**
The rapid increase in food temperature resulting from microwave heating does not provide the same cumulative time and temperature relationship necessary for the destruction of microorganisms as do conventional cooking methods. Since cold spots may exist in food cooking in a microwave oven, it is critical to measure the food temperature at multiple sites when the food is removed from the oven, and then allow the food to stand covered to allow thermal equalisation and exposure.

3.2.16 Canning
Low-acid canned foods should be cooked to a temperature of 121°C for a minimum of 3 minutes or subject cans to an equivalent process that would ensure the destruction of spores of *Clostridium Botulinum*.

3.2.17 Controlling Growth of Pathogens with Water Activity and Acid Ingredients
Air drying, application of heat, salts, acids or freeze drying or combination of these processes are used to reduce the water activity ($a_w$) of the product to inhibit the growth of microorganisms.

a. Food establishment that dehydrates & dry beef or beef products shall cook such products to achieve minimum thermal lethality mentioned in 3.2.8. The temperature & the humidity in the drying chamber/room shall be uniform and controlled. Establishment shall use accurate measurement devices to measure the humidity, temperature & water activity $a_w$ of the product
b. Foods that have a water activity of 0.91 or less can be stored without temperature control.
c. Foods that have a pH of less than 4.0 can be stored safely without temperature control.
d. Such processes when used shall be validated
e. Salting & curing processes reduce the water activity of the products and addition of such additives shall not exceed the GSO standard limits

3.3 Time as a Safety Control
High-risk foods should be stored under temperature control at all times. However, time can be used as:
a. Safety measure during exceptional situations where temperature control is not possible. However, food service establishments that routinely hold food before service must use temperature control for safety.

b. High-risk hot foods that are intended for immediate consumption shall not be stored, displayed or held for service at temperatures between 5°C and 60°C for a period of more than 2 hours. The food product shall be discarded after that time. High-risk cold foods that are intended for immediate consumption shall not be stored, displayed or held for service at temperatures between 5°C and 60°C for a period of more than 4 hours including the time of preparation. The food item should be discarded after that time. After preparation, the food should be quickly chilled to 5°C before it is displayed.

c. Foods stored without temperature control under section (a) and (b) above should be clearly labelled with the time of expiration to indicate the time when the food has to be discarded.

Rationale:
Food establishment should keep high-risk foods at either 5°C or below, or 60°C or above, during storage, display and transportation. However, it is acceptable for high-risk food to be kept out of temperature control (i.e. between 5°C and 60°C) for a limited time because pathogens (and/or toxin production) need time to grow to an unsafe level. The total time is the sum of the time the food is at temperatures between 5°C and 60°C after it has been cooked (or processed) to make it safe. It does not include the time taken to cool the food after cooking. Provided, the food has been rapidly cooled within the required time and temperature.

3.4 Preventing Food and Ingredient Contamination

3.4.1 Preventing Microbial Contamination

a. Access to food preparation areas should be restricted, as much as practically possible, to designated people.

b. For visitors including management and maintenance staff, all practicable measures should be taken to ensure that they will not contaminate food when visiting food preparation areas.

c. Where the public has access to food other than raw, unprocessed fruit and vegetables, or food specifically served to a customer by a worker of the food establishment, the food should be protected from public handling and contamination by the use of packaging, display cases, or salad bar sneeze guards (food guards), and be provided with suitable utensils or effective dispensing methods.

d. Food handlers should avoid contact with exposed areas of ready-to-eat foods with their bare hands and use, as much as practically possible, disposable gloves and clean and disinfected utensils such as tongs, spatulas, or other food dispensing apparatus.

e. Raw or unprocessed food should be kept separate from ready-to-eat foods.

f. Ready-to eat foods should not be stored below raw animal products or vegetables.

g. During thawing, drips from thawing food should be prevented from contaminating other foods.

h. Raw fruits and vegetables should be, thoroughly washed in potable water to remove soil and other contaminants, disinfected when necessary, before being cut combined with other ingredients, cooked, served, or offered for human consumption in ready-to-eat form. This does not apply to whole raw fruits and vegetables that are intended for washing by the consumer following point of sale.

i. Cleaning and disinfection of food contact surfaces between uses should be carried out as described in Section 4 of this Code. Food should not come into contact with surfaces of utensils and equipment that have not been cleaned and disinfected in accordance with procedures described in this Code.

j. When workers need to taste the food, only cleaned and disinfected utensils should be used, and the utensils
should be immediately cleaned and disinfected after tasting and prior to tasting another food or the same food.

k. Foods that have been previously purchased and returned due to quality or food safety issue to the retailer or food service operation may not be re-offered for sale to another consumer.

l. Separately marked or color-coded cutting boards should be used for the preparation of:
   i. ready to eat foods
   ii. raw, ready to eat animal and sea food (e.g., Fish for Sushi);
   iii. raw vegetable foods intended to be cooked;
   iv. raw animal foods intended for cooking.

m. Separate, freshly cleaned and disinfected food contact surfaces (including preparation tables, cutting boards and knives) should be used for ready-to-eat foods.

n. Equipment with any raw food contamination should never be used for ready-to-eat foods without being cleaned and disinfected.

o. Food transported in conveyors, elevators or similar means should be protected from contamination.

Rationale:
The food industry faces the threat that the food it serves may endanger workers or customers. Microbes are everywhere. Pathogenic microorganisms pose the greatest danger causing foodborne illnesses. Good policies and procedures for preventing microbial contamination serve as barriers to these disease-causing organisms.

3.4.2 Physical and Chemical Contamination

a. The operator of a food establishment should ensure that food is stored, displayed, prepared and served in a manner that prevents the food from becoming contaminated.

b. Non-food items such as chemicals, pesticides or any other substance that can harm consumers must be stored in designated areas away from any food, food equipment or food contact surfaces.

c. Foods should not contain unapproved food additives or food additives in excess of the amounts stipulated under relevant food standards.

3.5 Allergens Control

Food establishment shall integrate allergen management as a part of the food safety management system and should consider the risk from food allergens together with other food safety risks. It should be built into operational standards of the food establishment.

3.5.1 General

a. All food establishments shall implement an allergen management system.

b. Food establishments must declare the most common ingredients known to cause allergic reactions when they are present in the food that is prepared or sold in the establishment.

c. Following ingredients are contained in food—whether as an ingredient, compound ingredient, food additive or processing aid—they must be declared on the label or the menu, no matter how small the amount:
• crustaceans and their products (e.g. prawns)
• peanuts and their products
• soybeans and their products
• tree nuts and their products
• sesame seeds and their products
• fish and fish products
• egg and egg products
• milk and milk products
• gluten and cereals containing gluten (wheat, rye, oats, barley and spelt)
• celery and their products
• mustard and their products
• Sulphur dioxide and sulphites

d. For the product labels on packaged food produced or imported to Dubai where federal or GCC standards are applicable, declaration of allergens can be limited to the ingredients provided in the relevant food standards.

3.5.2 Management of Allergens

a. Food establishments shall conduct an assessment of raw materials to establish the presence and likelihood of contamination by allergens. This assessment should include but not be limited to the review of raw material specifications and, where necessary, acquire additional information from suppliers through questionnaire or supplier audit to verify the allergen status of the raw material, its ingredients and the production facility.

b. The establishment shall identify and list allergen-containing materials handled on site. This list shall include all the allergen containing raw materials, intermediate, finished & newly developed products.

c. Food establishment where a certified food safety management system is mandatory, the establishment shall carry out a risk assessment to identify routes of allergens and establish documented policies and procedures for handling raw materials, intermediate and finished products to ensure cross-contact is avoided. This should include:
   • identification of the scope of the program
   • consideration of the physical state of the allergenic material (i.e. powder, liquid, particulate)
   • systematic identification of probable areas or steps of cross-contact throughout the process flow
   • assessment of identified risk at each process step
   • identification and implementation of suitable controls to reduce or eliminate the risk of cross-contact.
   • establish and implement systematic monitoring of those controls.
   • establish appropriate corrective action when monitoring indicates that control is breached.
   • regularly review the program to ensure that the measures outlined above are working effectively
d. Procedures or controls implemented by the establishment to ensure the effective management of allergenic material to prevent cross contact into non allergen products shall include but not be limited to:

- physical or any other appropriate control during storage, processing & packing.
- the use of separate or additional protective clothing when handling allergenic materials
- the use of good hygiene practices like hand washing, cleaning of food contact surfaces etc. when handling allergenic materials.
- use of identified, dedicated equipment and utensils for processing
- scheduling of production to reduce changes between products containing an allergen and products not containing the allergen
- systems to restrict the movement of airborne dust containing allergenic material
- waste handling and spillage controls
- restrictions on food brought onto site by staff, visitors, contractors and for catering purposes.

e. Procedures shall be in place to avoid contamination during rework

f. The establishment shall fully validate and routinely verify the production process, in case the claim is made regarding an allergen in food.

g. Equipment or area cleaning procedures shall be designed to remove or reduce to acceptable levels any potential cross-contamination by allergens. The cleaning methods shall be validated to ensure they are effective and the effectiveness of the procedure routinely verified. Cleaning equipment used to clean allergenic materials shall either be identifiable and specific for allergen use, single use, or effectively cleaned after use.

h. The establishment shall have appropriate internal and external communication related to allergen management. This includes but is not limited to information related to primary and secondary ingredients, change in recipes, packaging, preparation or production procedures, equipment, layout and staff.

i. Establish documents and records that are appropriate for the nature and size of the food business to demonstrate the effective application of the above mentioned requirements.

3.5.3 Labelling of food with allergens

Food containing any ingredient or derived from a substance or product listed in clause 3.4.1 shall meet the following requirements:

a. If foods containing allergen are packaged or re-packaged, the food establishment must list the presence of these allergen with its type in the ingredient list in bold font. This shall be easily visible, clearly legible and not obscured in any way or “Contains” followed by the name of the food source from which the major food allergen is derived, immediately after or adjacent to the list of ingredients, in type size that is no smaller than the type size used for the list of ingredients

b. Modification of any recipe with an any known allergen ingredient, the food establishment shall clearly declare on the pack with suitable warning like New recipe or Now contains, in addition to the amended ingredients list.
3.5.4 Providing allergen information to non-packaged food

The following allergen labeling regulations apply to food sold in retail and food service establishments.

a. When food is sold to the customers directly, for example in a restaurant or cafe, the establishment must provide allergen information in writing. This could be either:
   - full allergen information on a menu, digital devices or boards
   - a written notice placed in a clearly visible position explaining how customers can obtain this information - for example by speaking to a member of staff
   - Use allergy and intolerance icons to tell your customers how they can find out allergy information.

b. If food is offered on a buffet, allergen information for each food item should be provided separately.

c. If food is sold through online platforms or provided up on phone order for a takeaway, allergen information must be provided before the purchase of the food is completed - this could be in writing (for example on a website, catalogue or menu) or orally (for example by phone)

d. All food handlers and service staff should be formally trained on procedures and policies regarding management of allergens. Service staff should get training on handling allergy information requests and when relevant, be able to guarantee that allergen-free meals are served to the right customers. Food handlers should know the risks of allergen cross-contamination when handling and preparing foods and how to prevent this

e. Where the nature of the production and preparation process is such that cross-contact from an allergen cannot be prevented, a warning shall be included on the label and/or food menu.

3.5.5 Precautionary allergen labelling

If there is a risk of a food product being affected by allergen cross-contamination, the label should include one of the following statements:

- may contain X
- not suitable for someone with X allergy
Precautionary allergen labelling should only be used after a thorough risk assessment. It should only be used if the risk of allergen cross-contamination is real and cannot be removed.

3.5.6 Free-from Allergen Claims
Strict controls are required for ingredients, handling and preparation when foods are sold with ‘free from’ claims. If the label or declaration in any format indicate or suggest that the product is free from a particular allergen, this declaration has to be based on specific and rigorous controls needed to ensure that the produce is completely free from the particular allergen. This should include verification of ingredients and packaging materials and prevention of cross contamination.

Note: Free-from claim is a guarantee that the food is suitable for all with an allergy or intolerance. Exceptions for the lower limit of a particular allergen is applicable to foods when lower limits are specified by food standards applicable in UAE.

3.6 Packaging
Food packaging should be of suitable design to provide the necessary protection to the product during its shelf life. Both packaging and wrapping of food should be carried out by staff with appropriate training in food safety & these activities should be carried out under hygienic conditions to protect the food from risks of contamination.

3.6.1 General Requirements for Packaging Materials
a. Packaging materials should be appropriate for the food to be packed and sufficiently durable to withstand the conditions of processing, storage and transportation.
b. Packaging materials should not pose a threat to the safety of the food to be packed.
c. Packaging materials and design should provide adequate protection for the food to be packed to minimize contamination and prevent damage.
d. Reusable packaging materials should be durable, so that it can withstand cleaning and/or disinfection process.
e. Packaging materials should be stored and handled under hygienic conditions to minimize the risks of contamination and deterioration.

Rationale:
In addition to prolonging shelf-life, retaining quality and nutritional values as well as providing a water vapour/gas barrier, packaging is important for preventing food from being contaminated with chemicals, physical matters and bacteria.

Packaging materials should not endanger the safety and suitability of the food in contact with them. They should be suitable for the food to be packed, non-toxic, durable and clean. Chemicals from packaging materials should not migrate into the food; and if migration occurs, there should be no known toxic effects to consumers.

Packaging materials may contaminate food if they are not clean. They should thus be kept in their original packages and stored in clean areas where they are not exposed to risks of contamination.

3.6.2 Protection of Food Content
Food packages should be in good condition and protect the integrity of the contents so that the food is not exposed to adulteration, damage or potentially harmful contaminants.

3.6.3 Food Containers
a. The operator of a food establishment should ensure that only food grade containers are used.
b. High-acid foods (pH below 4.6) should not be stored or cooked in containers coated with, made of, or containing:
   i. lead or lead-based products, including lead-glazed ceramics, china wares, crystal or pewter;
   ii. zinc, such as galvanized containers;
   iii. enamelware, which may chip and expose the underlying metal; iv copper and copper alloys such as brass; and
   v. cast iron;
   vi. aluminum.
c. Cast iron may be used only under the following conditions:
   i. as a surface for cooking;
   ii. in utensils for serving food, if the utensils are used only as part of an uninterrupted process from cooking through service.

3.6.4 Returnables, Cleaning-for-Refilling
a. Except as specified in (b), returned empty containers intended for cleaning and refilling with food, should be cleaned, disinfected and refilled only in a regulated food processing plant.
b. Food specific containers for beverages only can be refilled in a food establishment, if:
   i. the beverage is not a high-risk food;
   ii. the design of the container, the rinsing described in (iii), and the nature of the beverage, when considered together, allow effective cleaning of the container;
   iii. facilities for rinsing the containers with potable hot water under pressure are part of the dispensing system.

Rationale:
Separating food from non-food items by creating designated storage areas will ensure that accidental contamination from foreign matter (dirt, broken glass and crockery, and other objects) and toxic chemicals (cleaning agents, disinfectants, sanitizers, detergents, pesticides) will be minimized.

Chemical contamination can occur during cooking or storage when certain metals contact high-acid foods. Potentially toxic metals include lead, copper, brass, zinc coating, antimony, and cadmium. Some foods that have been involved in metal poisoning are sauerkraut, tomatoes, fruit gelatin, lemonade, fruit punches, and carbonated beverages.

Damaged or incorrectly applied packaging may allow the entry of foreign matter or other contaminants into the food. Canned foods should be closely inspected for imperfections or damage, such as punctures, bulging or seam defects.

3.7 Storage, Transportation and Distribution of Food Products
To ensure food safety, storage and transport facilities need to be designed and managed to protect food products from potential contamination, damage, and to prevent the growth of...
3.7.1 Food Transportation, Storage and Distribution Units
a. Food transportation, storage and distribution units should be designed, constructed, maintained and used in a manner that permit effective segregation of different foods and protect food products from being contaminated.
b. Food transportation equipment that is intended to be in direct contact with food products shall be constructed of materials which is non-toxic, easy to maintain and clean. Examples include stainless steel and food-grade plastic containers.
c. When necessary, cleaning and disinfection should be done before loading food stuff.
d. Food must be transported in vehicles approved by companies which have been authorized by Food Safety Department. Such vehicles should only be used for transporting of foods as specified in the approval.
e. Food transportation and storage units/equipment must be of suitable capacity and should be maintained at temperatures that are stipulate in this Code.
f. Equipment units must have accurate and reliable monitoring devices. All such devices should be calibrated at a pre-determined interval.
h. In transportation, storage and distribution units, foods should be stored off the floor and away from walls.

3.7.2 Temperature Control during Storage and Transportation
a. All high-risk and perishable foods requiring temperature controlled environments to extend their shelf life or limit microbial growth shall be transported, stored or distributed in equipment that consistently maintains these temperature controls.
   i. at or below 5ºC if cold or at above 60ºC if hot;
   ii. frozen at -18ºC if they are intended to be stored frozen;
b. Areas used for the storage of dry food commodities need to be cool, well ventilated with a relative humidity of 60-65%, to ensure that product quality and safety is not compromised. Temperature of storage should meet the requirements of the manufacturer as specified on the product label (for example Infant formula should be stored below 25ºC).

Rationale:
Temperature control is an effective way to prevent microbial growth and product deterioration. Temperature abuse during transportation, storage or distribution increases the potential for foodborne illness. Food starts to deteriorate as soon as the crop is harvested or the animal is slaughtered. The rate of deterioration is related to the growth of spoilage bacteria and mould. Hence, food should be stored under the right environmental conditions (e.g. suitable temperature, humidity, lighting and atmosphere) to minimize the growth of these microorganisms and to prevent food from becoming unsafe or unsuitable during the expected shelf-life. Proper storage preserves and prolongs shelf-life of raw food materials and prevents them from contamination by food poisoning bacteria, chemicals and foreign bodies that may finally render the food materials or products unfit for processing or human consumption. Proper storage is one of the essential steps for preventing food from becoming contaminated.

3.7.3 Handling and Transfer of Foods
a. Food establishment should take necessary steps to inspect foods at the time of receiving to detect and avoid foods that are unacceptable.
b. Receipt of high-risk foods should be monitored to ensure that proper temperature has been maintained.
maintained during their transportation, storage and distribution. Products and records should be checked at the time of receiving and nonconforming products should not be accepted.
c. Food should not be handled or transferred in any way that may cause damage, contamination or adulteration of the food. Food handlers responsible for loading foods into vehicles, and filling display chillers and freezers should be familiar with capacity levels and restrictions to loading such units i.e. volume limits, air flow, temperature range variances etc. in order to maintain the minimum / maximum temperature needs of the products being placed therein.
d. While transferring chilled foods, foods should be quickly moved into temperature controlled storage to minimize the time in which they are in the danger zone (5°C to 60°C). A deviation of not more than 5°C is allowed for not more than 20 minutes during the transfer of chilled foods.
c. While receiving and transferring raw frozen foods, the temperature of the food shall not exceed -10°C.
f. Contaminated or adulterated foods and foods that have been subject to temperature abuse shall be discarded or disposed off.
g. Damaged food container must be thoroughly examined and if the food is contaminated or adulterated, it shall be discarded or effectively segregated until returned to the supplier or otherwise disposed off.

Rationale:
Careful inspection of transported food will help to minimize the potential of contamination or deterioration of the food product. Prompt handling of foods being transported, stored or distributed serves to minimize the amount of time that perishable foods are in the “danger zone” for growth of pathogenic organisms. Minimizing the amount of handling also minimizes the chance of contamination.

3.7.4 Storage Procedures
a. Rotation of food stocks in storage areas should occur frequently to ensure that the “first- expiry-first- out” rule is followed
b. Food should be stored in suitable and safe containers which are covered properly. If packaged, suitability of packaging should be ensured.

Rationale:
Food that is kept for a long time is also likely to become spoiled and attract pest infestation. Effective stock rotation, to ensure that first-come is used first, is essential to avoiding spoilage and preventing pest infestation. In addition, good stock rotation has the advantage of helping to keep the correct levels of stock.

3.7.5 Disposal of Food
Food that has been found or suspected to be unsafe or unsuitable (e.g. food that is subject to recall or has been returned, temperature abused, contaminated or damaged) shall be rejected or identified properly. Such food should be kept in a separate container or in an isolated area & marked as “Damaged / Not for use”. It should be disposed off as quickly as possible & shall never be used for human consumption. Details of rejected items shall be documented & communicated to supplier.

Rationale:
Food intended for disposal should be kept separate so that it is not accidentally sold or used.

3.7.6 Safety of egg and egg based products
a. Importers of eggs shall ensure that eggs are sourced from suppliers who can provide evidence of microbiological safety specific to Salmonella Spp.
b. When whole eggs are purchased in bulk (non branded), the food establishment shall obtain all relevant information from the supplier about the source of the eggs including the country of origin, production and expiry dates and details of transportation and handling.

c. Shell eggs shall be stored in refrigerated equipment that maintains an air temperature of 5°C or less.

d. Food establishments shall store processed eggs at or below 5°C.

e. Food establishment shall use safer alternatives to raw eggs in foods which are not fully cooked. Pasteurized egg must be used in products that are not heat treated.

f. Pooled eggs shall be prepared in small batches and stored below 5°C until use. Pooled eggs shall be used within 2 hours (from the start of preparation till use).

### 3.7.7 Storage or Display of Food in Contact with Water or Ice

Ice produced in factories in bulk or in ice machines shall be produced, stored and transported in a safe manner. Following general requirements apply to ice produced for human consumption.

a. Ice which comes into contact with food has to be made from potable water.

b. Source of the water used for the production as well as the ice should meet the standards- UAE.S GSO 384/1994 (ice for human consumption) and GSO 149/2000 (Unbottled Drinking Water).

c. Food establishments shall conduct microbiological and chemical analysis of ice periodically to ensure that ice meets the relevant microbiological and chemical standards. Samples should be tested in an EIAC accredited laboratory.

d. The number of samples tested and the frequency of testing should be representative of the nature and volume of production. Food establishments shall establish the such verification programs as a part of the food safety management system in consultation with the authorized officer at the Food Safety Department.

e. Ice should be made, handled and stored under conditions that protect it from contamination.

f. Ice shall not be used as food, if it has been used previously as a medium for cooling the exterior surfaces of food.

### 3.8 Variance Requirement

a. The Food establishment shall obtain necessary approval from Dubai Municipality Food Safety Department for modifying or waiving the requirement of this code under exceptional circumstances or when there is a valid reason to not to follow the recommendation of the code or to seek alternative measures without compromising the food safety objective.

b. Food establishment shall retain all such information in its records.

#### 3.8.1 Procedure for obtaining variance plan approval

The establishment requesting variance plan approval from the department shall provide:

a. Scope of the variance plan and the relevant food code clause where the proposed variance required
b- How the identified food safety hazards in the relevant clause of the code will be controlled by the proposed variance plan without compromising the food safety objective.

c- A Variance plan of product or process which includes but is not limited to:

I. The list of ingredients, materials, and equipment used.
II. Details of recipe that describes the methods and control measures required to obtain the food safety objective of the clause.
III. Description & intended use of the product.
IV. A flow diagram that identifies each step in the process.
V. Identification of hazards and their controls for each step in the flow diagram.
VI. Identification of critical control points and their critical limits.
VII. The method and frequency of monitoring.
VIII. Procedure of verification.
IX. Corrective actions to be taken in case of deviation.
X. Appropriate records to be maintained.
XI. Regular review of the plan by the food establishment to ensure its adequacy.
XII. Supporting documents such as staff training, additional scientific data or other information, as required by the department supporting that food safety is not compromised by the variance plan.

The Food establishment shall obtain a variance plan approval from the food safety department for following processes but not limited to:

- Slow Heat Treated Ready-to-Eat (RTE) Foods of Animal Origin
- Raw ready to eat or partially cooked foods of animal origin.
- Smoking (as a method of food preservation rather than as a method of flavor enhancement), curing & aging.
- Reduced Oxygen Packaging (ROP to include vacuum packaging sous vide, or cook-chill).
- Water activity to control growth of pathogens.
- Acidification, fermentation or adding components or additives to render a product shelf stable.

3.8.2 Specialized Processing Methods

3.8.2.1 Slow Heat Treated Ready-to-Eat (RTE) Foods of Animal Origin

The establishment processing ready-to-eat foods of Animal Origin using slow Heat Treatment shall meet all the requirements of Clause 3.2.8 & 3.7.

3.8.2.2 Raw Ready to Eat Foods of Animal Origin

Where animal or sea food is served raw or lightly cooked (such as sushi, raw oysters, steak tartar, carpaccio, sweets, products made from raw or lightly cooked eggs etc.), the following measures should be taken:

a- Develop and use a variance plan approved by the Food Safety Department.
b- When it is not obvious to the consumer from the name or ingredient that the food or the ingredient is raw, the menu or the label on the packaging should clearly state the name of the ingredient and also state that the ingredient is raw.
c- Ensure that the food is not served to highly vulnerable groups.
d- When packed and sold, the packaging should clearly state the storage and handling requirements necessary to ensure safety of the food.
e- When fish is served raw or the cooking process does not meet the minimum thermal lethality requirements, the establishment should have additional controls:
   i. Freezing of fish to eliminate parasites or any other control measures to ensure the elimination of such hazards. When freezing is use for parasite control, fish shall be hold at:
      −35°C for 15 hours, or
      −20°C for 7 days, or

NOTE: This clause is not applicable to certain species of fish like MOLLUSCAN SHELLFISH; A scallop product consisting only of the shucked adductor muscle, certain species of Tuna e.g. Thunnus alalunga, Thunnus albacares (Yellowfin tuna), Thunnus atlanticus, Thunnus maccyoi (Bluefin tuna; Southern), Thunnus obesus (Bigeye tuna), or Thunnus thynnus (Bluefin tuna, Northern); or Aquacultured FISH, such as salmon raised under controlled conditions

   ii. Consumer disclosure on menu, signs posted or Verbal disclosure by staff when these foods ordered
   iii. If the FISH are frozen by a supplier, a written agreement or statement from the supplier stipulating that the FISH supplied are frozen to a temperature and for a time specified under clause 3.7.2.2 (d - i)

f- When raw or partially cooked whole-muscle intact beef is served in a Ready to Eat form the food establishment shall:
   i. provide any evidence that the whole muscle beef is not injected, mechanically tenderized, reconstructed, or scored and marinated.
   ii. Cook all sides of the steak to a surface temperature mentioned in Clause 3.2.8.

3.8.2.3 Smoking, Curing & Aging
a. These traditional processes improve the flavor & tenderness of beef. The establishment shall use proper time, humidity & temperature control to avoid the growth of mould & spoilage bacteria. The product shall be heat treated before consumption, to achieve the minimum thermal lethality requirements of the clause 3.2.8 & 3.7.

b. All additives used in these processes shall not exceed the concentration recommended in the relevant product standard.

3.8.2.4 Reduced Oxygen Packing
Food establishments that package high-risk foods using a reduced oxygen packaging method shall have adequate measures in place to control the growth and toxin formation of both anaerobic & aerobic pathogenic bacteria.
a. Packaging materials or atmospheric packaging gases, where used:
   i. should not cause harm to people exposed to them;
   ii. should not pose a threat to the safety and suitability of food under the specified conditions of storage and use.
b. Establishment processing food with sous-vide method shall meet all the requirements of Clause 3.2.8 and 3.7 as well as:
   I. Use commercial equipment with adequate heating capacity and excellent temperature control
   II. Use a food grade oxygen barrier bags for cooking
   III. Sous-vide pasteurized foods must be used within 3 days of refrigerated storage at or below 5°C.
   IV. Such food shall be prepared and consumed at the establishment with no distribution or sale of the packaged product.

3.8.2.5 Water activity and acid ingredients to control growth of pathogens
Food establishment using Water Activity and Acid Ingredients to Control Growth of Pathogens to produce food items shall have a variance plan for each individual products & shall meet all the requirements of this code.

3.8.3 Storage, transport and use of portable bottled and non-bottled water

a. Water that is used in food establishments; supplied to food establishments; and supplied for cleaning and disinfecting food or food contact materials shall be obtained from sources approved by the Dubai Municipality or Dubai Electricity and Water Authority.

b. Water tank used for storage of potable water should be cleaned and disinfected by a water tank cleaning company approved by the Food Safety Department at least once in 6 months or when there is an indication of any deterioration in the quality or safety of the water.

c. Chemicals and methods used for cleaning and disinfection of tanks must be approved and registered with the concerned department for the intended use.

d. After tanks are cleaned, water should be tested to ensure that the samples meet the quality and safety parameters set in the UAE.S GSO 149 standard for non-bottled drinking water.

e. Food establishments shall maintain a documented evidence for cleaning and disinfection, analysis report and any other relevant document pertaining to maintenance of the water tank and such documents shall be presented to authorized officials from the Dubai Municipality.

f. Bottles used for water should be made of safe and durable material that can withstand washing, sterilization, and refilling operations (i.e. glass).

- Stations and rooms shall and designed in a way to prevent possible contamination of clean bottles and/or drinking water.
- When re-usable water bottles are shall be clearly labeled as "Filtered Tap Water".
- Filling date and expiry date by day month and year shall be mentioned on the bottles.

g. Washing and disinfection
Bottles shall be washed in a manner and method eliminating all residuals and dirt.
- Washing detergent should be approved by the relative authorities.
- The facility shall implement a procedure to check for the presence of any cleaning chemical residual in Disinfection procedure shall take place to insure the sterility of bottles, temperature of disinfection should be maintained.
- Bottles shall be stored in an isolated area, dry, covered to avoid exposure to any contaminate until filling.

Filling station
Area shall be clean and free from any possible source of contamination, when required covered drainage should be available to prevent water accumulation.
- Water cooler shall be well maintained and cleaned.
- All preventative maintenance, machine cleaning, filter changing and maintenance shall be documented and done following a structured schedule.
- Filled bottles shall be tightly sealed immediately after filling, using clean and sterile cap
- Filled water bottles shall be distributed and consumed in the same day of filing.
- Storage and expiry date shall be the same day of production unless a shelf life study was done.
- Storage condition:
  - In a cooled place, temperature should be from 2°C to 5°C.
  - Away from any poisonous materials and contamination sources.
  - In good and well ventilated store free from distinctive odors.
  - Protected from direct sunlight and high temperature.
  - Distribution shall follow the same as the storage conditions.

Product must be tested monthly in an accredited laboratory as per the UAE.S GSO 1025 standard for bottled drinking water.
- Verification of analysis report must take place after every testing and documents shall be kept available and presented at the time of inspection by Dubai Municipality

Water in general is an essential component for sustaining life. In particular, drinking water should be safe for human consumption. Being safe involves not representing any significant health risk over the period of consumption. Consumers can either choose to drink packaged drinking water in bottles or tap water from the local water provider through the distribution network. Sustainability is an important topic in water management and several businesses in the hospitality sector are exploring means to implement the topic. A practice that is gaining a lot of interest in the hospitality industry is filling filtered drinking tap water in reusable bottles. Based on mandatory GSO standards and relevant regulations, this guideline was developed to insure the safety of drinking water produced from in-house filling stations.
4 Cleaning and Maintenance

Establishment cleaning and maintenance includes the elements of cleaning and disinfection, pest management, waste management, building and equipment maintenance and the need to monitor the effectiveness of these elements. Food establishments should ensure that premises, fixtures, equipment and utensils are maintained to an acceptable standard of cleanliness, and in a good state of repair.

Rationale:
Buildings, materials, utensils and equipment in a food establishment, including waste water and refuse collection systems pose a potential source of contamination of food and food products. These areas should be kept clean, free of pests and maintained in good repair. Equipment, materials and utensils that come into contact with foods, especially raw products (fish, meat, vegetables, and poultry) are generally considered to be contaminated by microorganisms. These microorganisms could contaminate other products. For this reason, it is necessary to have well established programs in place to ensure that physical structures, including equipment and utensils, are maintained in a clean and sanitary condition. In order to achieve thorough disinfection, equipment may require dismantling, cleaning and disinfection at the end of each day or more frequently to prevent microbiological proliferation.

4.1 General Requirements Pertaining to Maintenance

a. All parts of the establishment, fixtures, fittings and equipment should be maintained at all times in a state of good repair and working condition to:
   i. prevent contamination of food by plaster, paint, broken glass or leaking pipes, etc.
   ii. enable effective cleaning and, if necessary, disinfection;
   iii. ensure pests cannot gain access to the establishment from hollow spaces in ceilings, walls, etc.
   iv. ensure that the equipment works as intended.

b. Floor surfaces should be maintained in good condition, free of cracks, crevices or other defects. There should be no dips or hollows. Floors should be free from accumulation of food waste, dirt, grease or other visible obnoxious matter. They should be washed with detergents at least once daily. Hot water or steam may be used for better removal of grease. Coving between floor and wall junctions should be kept clean, in good repair and be bonded firmly to their positions.

c. Walls of food rooms should be cleaned frequently, daily or more if necessary. Wall surfaces or ceilings should be clear of unnecessary fittings or decorations such as unnecessary posters or pictures as far as possible.

d. Junctions between walls, and between walls and ceilings, should be tightly sealed and maintained in good condition, and free from cracks, crevices, holes or gaps or flaking materials. Any holes or gaps that may allow access of pests to wall and ceiling cavities should be sealed up. False ceilings should be cleaned to remove accumulation of dust, particles or debris that may fall on to foods as to cause contamination.

e. Any furniture or equipment, which cannot be moved easily, should not be placed too near to wall inside kitchens or food preparation rooms as to obstruct access to such places for cleaning. Alternatively, heavy equipment should be installed with wheels to facilitate easy removal for cleaning.

f. Food contact surfaces of equipment and utensils shall be maintained in a good state of repair. They should be smooth, free of cracks and crevices, and be kept clean and free from noxious matter.

g. Cutting surfaces such as chopping blocks and cutting boards which are subject to scratching and scoring should be resurfaced if they become too difficult to be effectively cleaned and disinfected,
and should be discarded if resurfacing is impossible.
h. Non-food contact surfaces of equipment such as cupboards, refrigerators, racks, stoves, cooking ranges and food lifts should be kept clean and in good state of repair and working condition. They should be free of unnecessary ledges, projections and crevices; and designed and constructed to allow easy cleaning and to facilitate maintenance.

4.2 Cleaning and Disinfection
4.2.1 General Requirements Pertaining to Cleaning
a. Food contact surfaces of equipment and utensils should be kept clean and free from noxious matter by regular cleaning and disinfection at a frequency that prevents accumulation of grease deposits, dirt and other residues.
b. A food contact surface such as a cutting board used for raw food and ready-to-eat food shall be cleaned and disinfected between each use. If equipment or a utensil is used continuously at room temperature for handling high-risk foods (e.g. meat slicers), it should be cleaned and disinfected at least once every 4 hours.
c. Any part of a thermometer, especially the temperature probe that will be inserted into the food for temperature measurement, should be cleaned and disinfected between use.
d. Non-food contact surfaces should be cleaned at a frequency that prevents accumulation of dirt, grease and other residues.
e. Cleaning has to be carried out in a systematic manner, for example, high-risk area to low risk area with sequence from walls, non-food contact surfaces of equipment such as cupboards, refrigerators, cooking ranges and then the floors.

4.2.2 Cleaning Facilities
Food establishments should have adequate facilities to enable effective cleaning activities. There should be separate cleaning rooms with proper segregation between clean and dirty equipment to prevent cross-contamination.

Rationale:
Accumulation of food waste, dirt and grease, etc. provides food for pests and enables microbial growth, which are conducive to food contamination. This dirt and waste may come from a variety of sources including food spills, food handlers’ shoes, linens and food packaging, etc. Accumulation of liquid on floors could provide a water source for pests and encourage their presence in the establishment. It could also be a source of microbial contamination. Cracks, crevices or similar defects on walls, floors or ceilings can harbour pests or become their breeding grounds. Effective, frequent and regular cleaning, disinfection/ sanitizing, and maintenance of floors, walls, ceilings and equipment are thus necessary for removal of food contaminants and prevention of microbial proliferation.

4.2.3 Cleaning and Disinfection Process
a. Cleaning and disinfection of equipment and utensils should be done as separate processes. A food contact surface needs to be thoroughly cleaned before it is disinfected.
b. After cleaning, food contact surfaces, equipment and utensils shall be:
   i. Disinfected to a temperature of 82°C or equivalent in a dish washing machine; where the washing machine shall be equipped with a temperature measuring device that indicates the temperature of the water in each wash and rinse tank.
   ii. Disinfected by immersing in a non-toxic solution containing a disinfecting agent of a type approved by the concerned department; or
III. Disinfected using any other method that can reduce the microorganisms to a level which is neither harmful to health nor the quality and safety of foods.

c. All cleaned and disinfected equipment and utensils should be thoroughly rinsed and dried by evaporation (air dry);

d. Cleaned and disinfected equipment should be stored in a place and manner that prevents contamination;

e. Adequate care must be taken to ensure that water, debris and other materials are not spread to clean areas when high pressure jets are used;

f. In retail food service establishments:
   i. separate sinks should be provided for food preparation and equipment washing depending on the size and extent of activities;
   ii. all dish-washing activities should be done in sinks and/or dish washers within the food establishment
   iii. wash-up sinks should be cleaned at a frequency that prevents accumulation of grease deposits and other residues;
   iv. sinks used for the purpose of washing ready-to-eat foods should be cleaned and disinfected before use;
   v. wash-up sinks should not be used for miscellaneous articles;
   vi. hand washing should not be carried out in sinks that are used for other purposes. Sinks should be identified by a suitable signage.

**Rationale:**
Cleaning is a process for the removal of contaminants such as food residues, dirt, grease and bacterial film from a surface, which is achieved by the use of water and proper detergent. Utensils and equipment should be disinfected, either mechanical or manually, after cleaning to minimize the risk of food becoming contaminated with micro-organisms.

A bactericidal agent or disinfectant should be applied at the proper concentration, temperature and for the appropriate duration of time to achieve desirable reduction in bacterial level. Disinfected equipment and utensils shall be handled in a sanitary manner after disinfection and should be allowed to dry as quickly as possible as most micro-organisms cannot survive in the absence of water. Drying by towels or storing on a dirty surface may lead to contamination a cleaned and disinfected surface.

**4.2.4 Cleaning Chemicals**

a. Chemicals used for cleaning and disinfection must be suitable for use in food establishments and be approved by the concerned department. The establishment should determine the appropriate cleaning method in consultation with the chemical supplier.

b. Detergents used for cleaning food contact surfaces should be appropriate for the task, and be able to effectively remove food residues on equipment and utensils.

c. Material Safety Data Sheets (MSDS) along with the documents of validation pertaining to the suitability and effectiveness of the chemical and/or the process of disinfection should be retained in the food establishment at all times.

d. The documents should include validation data with the following details:
   i. evidence that the chemicals are suitable for the tasks being carried out;
   ii. evidence that the chemicals will be effective against pathogens of concern;
   iii. evidence that the chemical is suitable for use in food establishments.

e. Effectiveness of the cleaning method should be evaluated by the food establishment and appropriate data should be gathered to validate the method selected and to make adjustments
as needed.

Instructions on how to use the agents should always be followed, especially the optimal combination of the temperature, pH and concentration of the agent. If the instructions are not clear, further advice should be sought from the supplier.

g. All chemicals should be labelled properly and never decanted into food containers.

h. Chemicals should be stored securely and in accordance with the manufacturer’s recommendation.

i. The concerned person in the establishment should:
   i. be trained on the use of the disinfectant;
   ii. check the temperatures of the water and the disinfectant concentration frequently to ensure that effective results are being achieved. Test kits/stripes should be obtained from the supplier and stored at convenient location;
   iii. keep records of disinfectant concentrations.

4.2.5 Cleaning Tools and Equipment
The design of the cleaning tools and their handling and storage are also important to ensure effective cleaning.

a. The design of the cleaning tools must be suitable for effective cleaning with no hiding places for food residues or bacteria to accumulate.

b. Materials should be suitable to withstand the effect of cleaning chemicals.

c. Brushes made of wood and natural bristles must be avoided and worn out brushes must be replaced.

d. Mops with detachable heads that can be washed should be used for cleaning the floor.

e. When high-risk food production areas are very close to potentially contaminated raw food areas such as butchery, produce cleaning area etc., tools should be color coded to restrict the use of tools of a certain color to a specific area.

f. Cleaning tools should be stored clean and dry after use in designated areas that facilitates drying.

g. Equipment such as floor scrubbers and rotating washers should be carefully chosen for the intended use.

4.2.6 Cleaning and Disinfection Program

a. To achieve the appropriate standard of cleanliness, all food establishments should develop a cleaning / disinfection Program that encompasses all equipment and facilities as well as general environmental cleaning. Cleaning schedule need to be developed that are suitable for the item/ equipment/surface to be cleaned and should describe both the method and frequency of cleaning specific areas.

b. Food establishments should conduct an evaluation of each area to decide the cleaning method. Consideration should be given to potential microbiological risks, i.e. pathogenic and spoilage microorganisms, and potential chemical and allergen risks.

c. Cleaning Programs should be maintained with the due consideration to the following details:
   i. the size, type and temperature of the area to be cleaned, the structure of the building and the wall, floor and ceiling finishes and the type of material;
   ii. the type of soiling and water hardness, water pressure and drainage system;
   iii. if cleaning is necessary during food preparation, adequate measures to remove or protect food;
   iv. measures to reduce the risk of spreading contamination, especially when using high pressure jets;

d. Food establishments should maintain a written cleaning schedule that specifies:
what is to be cleaned;
ii chemicals, materials and equipment to be used for cleaning;
iii dilution and contact time of the chemical;
iv method of cleaning (how);
v frequency of cleaning (when and how often);
vi time necessary to clean it;
vii who has to clean it (name of the person);
viii safety precaution to be taken - protective clothing to be worn;
ix who is responsible for monitoring and recording what has been cleaned.

Rationale:
The requirement for a written cleaning & disinfection program is very similar to the requirement, in this Code, for management principles to control food hazards. The objective of the disinfection program is to provide reasonable assurance that the food establishment is being cleaned and disinfected effectively and consistently.

4.3 Pest Management
a. Food establishment should be kept free of food pests including rodents, insects, birds and animals.
b. Food establishment and surrounding areas should be inspected regularly to look for signs of pest infestation.
c. Whenever pests are detected, control actions should be taken promptly to rectify the situation.
d. Pest control activities shall be done by a specialist licensed pest control agencies approved by concerned department of Dubai Municipality and should only use approved chemicals and methods.

Rationale:
Food establishment are easily infested by pests due to the presence of food sources and numerous harbourage places. A pest infestation in a food establishment may leads to contamination by foreign matter (e.g., insect parts, rodent hair, etc.), pest urine/faeces, and/or pathogenic microbes carried by pests. Improper handling of food and food debris, accumulation of unused articles and presence of structural defects render food establishment highly susceptible to pest infestations. Pests will not only pose food safety problems but they also transmit diseases to human. They can carry pathogenic organisms to foods physically by their bodies, hair and excreta.

4.4 Prevention and Control of Pest Infestation
Food establishments should have high standards of hygiene and repair to avoid pest infestation. Proofing measures should be adopted to prevent the entry of pests. Proper protection of food and disposal of waste is required to remove their food source.

a. Prevention of Entry of Pests
   Particular attention should be given to the followings in the prevention and control of pests in food establishment:
   i Any holes or crevices in ceilings, walls and floors should be sealed by cement or metal plates;
   ii Threshold clearance of doors should be lowered to not more than 6 mm and metal kicking plates should be affixed at the lower edges of doors and door-frames to prevent entry of rats and mice;
iii  Windows, ventilation openings and doors should be installed with mesh screens of (16 mesh to 25.4 mm (16 mesh to 1 inch). Doors / screen doors should be self-closing and kept closed at all times;
iv  Any missing or damaged gratings of drains should be installed or replaced immediately.

b. Elimination of harbourage for pests
   i  False ceilings should be avoided in food preparation or storage areas as far as possible;
   ii  Any defects on walls, floors, ceilings, woodwork and all other parts of the structure should be promptly repaired;
   iii  Unused articles or equipment should not be stored in food establishment. If storage is unavoidable, they should be moved regularly to eliminate harbourage of pests.

c. Elimination of food sources to pests
   i  All foods as well as condiments should be covered and stored properly in sealed containers;
   ii  Floors of food establishment should be kept clean and free from food remnants, especially overnight. Preparing food or cleaning utensils is strictly prohibited in the yard or the rear / side lanes;
   iii  Refuse should be stored in refuse containers with well-fitting covers. Refuse bags should be tied up before disposal to prevent spilling and attraction of pests. They should be cleared at least once a day, preferably every night to avoid leaving refuse overnight.

d. Eradication of pests
   i  Pest control devices should be designed and located to effectively control the presence of pests in a food establishment. Insect control devices designed to trap insects by adhesive or devices that may expel the insects or insect fragments should be installed so that the dead insects or insect fragments cannot fall onto exposed food or equipment. To be effective, insect traps (sticky pads or similar devices) should be changed regularly or when loaded with insects;
   ii  Electric Fly Killers (EFKs) equipped with catch trays can be used to eliminate flying insects in food establishment. The EFK should be placed at least 1.5m (preferably 4.5 – 6 M) away from a food handling area. Only low wall or ceiling mounted type EFKs should be used, and EFKs should not be directly above food preparation or storage areas;
   iii  Pest control activities shall be done by specialist pest control agencies licensed and approved by the concerned Department to operate in Dubai. They shall use approved chemicals and methods. The food establishment has the primary responsibility to ensure that a competent person carries out the pest control operation in the establishment;
   iv  Rodenticides and insecticides should be applied in such a manner as not to contaminate foods – they should not be applied while food production / preparation is taking place, and all open foods should be well covered and protected.
   v  Establishment specially restaurant operating 24 hours should use physical control method to prevent chemical contamination during treatment.
   vi  In the event of pest infestation, any contaminated equipment, utensils, clothing and food contact surfaces should be thoroughly cleaned and disinfected. Any food that has been contaminated by pests or pest control chemicals should be disposed off.

e. Keeping of Records
   i  Management of food establishment should keep proper records of pest control inspections, surveys, maintenance and service, etc. in respect of their establishment. Owners/operators should take note of information the pest control technician may provide for follow-up.
   ii  Documentation should include:
• copy of the contract with the pest control agency
• the name of the pest control technician responsible
• the chemicals used for pest control (with the concentrations applied),
• the procedures and methods used
• the frequency of application; and
• records of inspection and monitoring.

Rationale:
Presence of pests increases the likelihood of contamination of food and may cause significant damage to a food establishment. Properly designed and installed pest control devices can be used as a means of eliminating pests.

To ensure that pests are properly, effectively and safely eradicated, the Person in Charge should rely on approved pest control agencies and emphasize integrated pest management practices that minimise the reliance on chemical controls (if pest control measures require the application of chemicals). Since chemicals used to eradicate pests may also be toxic to humans, food should be adequately protected while these substances are being applied in the food establishment. Food establishments which have become infested should be thoroughly cleaned to eliminate pest harbourage. Surfaces contaminated by pests should be cleaned and disinfected to destroy microbial pathogens which might be present and which might contaminate foods.

The first and best line of defense is to prevent entry of pests by proper inspection and maintenance of the establishment. The second line of defense is to deprive pests of food sources by proper storage of food and prompt removal of refuse, food remnants and spills. To verify that appropriate pest control measures have been undertaken, all aspects of pest control operations shall be documented and monitored.

4.5 Use of Chemicals and Toxic Substances
a. Chemicals, cleaning and disinfecting compounds and other toxic substances kept in a food establishment shall be:
   i. used in compliance with the manufacturer’s labelling, directions or specifications and approved by the concerned department;
   ii. used only in such a manner and under such conditions so that the substances do not contaminate food, equipment and food contact surfaces, or cause a health hazard.

b. The chemicals, cleaning and disinfecting compounds and other toxic substances shall be stored:
   i. in a compartment separate from food, food contact surfaces and utensils;
   ii. in clearly labelled, non-food containers, which are (where appropriate) lockable.

Rationale:
Special care should be taken when handling dangerous or toxic substances in a food establishment. They should be used according to manufacturer’s specifications, not only to ensure they function as intended but also to ensure worker safety.

To prevent the contamination of food products, dangerous or toxic chemicals shall be kept in containers, which are clearly labelled to identify the contents, and stored in areas separate from food and food equipment. Locked containers or storage facilities can prevent malicious or accidental contamination of food.
5 Personal Hygiene

5.1 Personal Health and Illnesses

a. High standards of personal hygiene should be maintained in all food establishments to ensure that those who come 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.

b. All food handlers should be in good health, have good eyesight and be able to read, especially if they are responsible for checking thermometers, instructions on labels, date coding etc.

c. Food handlers should undergo medical fitness tests conducted by the concerned government authority and retain relevant occupational health cards.

d. All staff engaged in food handling must:
   i. be free from any symptoms of illnesses or communicable diseases such as diarrhoea, vomiting, fever, sore throat, abdominal pain and jaundice;
   ii. not be carriers of food-borne diseases e.g. typhoid/paratyphoid, cholera, hepatitis type A.
   iii. not be suffering from discharging wounds or sores on any exposed part of their bodies; or from discharge from their ears, eyes or noses.

c. A food handler should be instructed in writing to report to the person in charge if they are suffering from a communicable disease in the following situations:
   i. they have any symptoms associated with an acute gastrointestinal illness, such as diarrhea, fever, vomiting;
   ii. they are suspected of causing or being exposed to a confirmed communicable disease outbreak; or,
   iii. they live in the same household as a person who is diagnosed with a communicable disease.

f. If a food handler is suffering from an illness or communicable disease, the Person in Charge is responsible for ensuring appropriate action is taken. This may include excluding the individual from activities that involve the handling of food or food contact surfaces, food utensils and equipment, or authorizing the individual’s absence from the work place.

g. When returning to work after medical leave or illness, food handlers should have written clearance from the treating physician, particularly in the case of diagnosed, reportable communicable diseases.

5.2 Injuries

a. Food handlers with open infected lesions, cuts, wounds on their bodies must not be allowed to handle food or to come into contact with food utensils, equipment and food contact surfaces.

b. Food handlers with clean cuts / wounds can work if the cuts are completely protected by brightly colored, waterproof dressings that can be spotted easily if fallen in to the food.
5.3 Personal Hygiene Practices

a. Food handlers should maintain high levels of personal hygiene at all times.

b. In the course of handling food and for any person entering a food preparation or storage area, hair should be covered with a clean hat or hair net. Where required, beards should be completely covered with beard nets.

c. While in food handling area, food handlers should not wear watches, or jewellery which may easily become detached (e.g. ear rings).

d. Only clean and preferably light colored outer clothing or protective overalls should be worn by food handlers. If they become soiled during food preparation, they should be changed or cleaned as necessary. Food handlers should have at least 4 sets of uniforms to ensure that they can change to clean uniforms when necessary.

e. Hand hygiene is an important step to prevent spread of foodborne illnesses.

   i. Hands of food handlers should be kept clean at all times. Nails should be kept short and free of nail varnish.

   ii. Food handlers shall wash their hands & dry their hands:

      • before commencement of work
      • before handling food
      • after visiting the toilet
      • after putting on or changing a wound dressing
      • after dealing with an ill colleague or customer
      • after coming into contact with pests or their faeces
      • after handling contaminated raw foods of animal or plant origin
      • after handling soiled equipment or utensils
      • after coughing, sneezing, smoking, eating, drinking or blowing nose
      • after handling animals or waste
      • after engaging in any activities that may contaminate hands (e.g. handling money, carrying out cleaning duties, etc.); or
      • after returning from a break.

   iii. Hand washing must be frequent, thorough and performed in hand wash basins;

   iv. Wearing gloves should not be an alternative to proper hand washing.

Rationale: Several types of communicable disease can be transmitted by consumption of food. Food handlers should eliminate the opportunity for pathogenic micro-organisms being transferred to food and spread to consumers.

Food handlers can carry communicable diseases, especially if they themselves have been infected or are in contact with persons or objects that may carry the harmful microbes of those diseases. Consequently, food handlers may spread these diseases throughout the food establishment if they do not maintain an appropriate level of personal hygiene and avoid habits that may contaminate food.

Some food poisoning bacteria are commonly found on open wounds or cuts of their bodies. Illnesses may be spread to consumers if food handlers suffering from illnesses or with open wounds are allowed to take part in food activities.
5.4 Personal Habits

a. Inside food preparation areas, food handlers should refrain from performing the following behaviors/habits which may result in contamination of food:
   i. smoking or using tobacco and spitting;
   ii. chewing, eating, sneezing or coughing over unprotected food or food contact surfaces;
   iii. touching ready-to-eat food with bare hands;
   iv. sitting, lying or standing on any surface liable to come into contact with food;
   v. tasting food with fingers; and;
   vi. touching hair or other parts of bodies such as noses, eyes or ears
   vii. dining inside food preparation area.

Rationale:
Pathogens are commonly found on the skin and in the noses of healthy people. Scratching the head and nose can result in bacteria being transferred by hands onto food, which may cause illnesses to customers. Smoking in food rooms may cause food contamination by cigarette ends, ash or hands.

Prevention of foodborne illnesses should begin with good personal hygiene practices by food handlers in both personal cleanliness and habits to prevent contamination of food by pathogens.

5.5 Visitors and contractors

Any visitor or contractor in a food preparation area should be appropriately dressed and should observe the same hygiene as food handlers, including hand washing, protective clothing and hair restraint policies. They should refrain from coming into proximity or contact with food and food equipment, and from any activities that could contaminate food. In a food establishment where contracting staff are working as food handlers they should comply with the requirement of clause 5 and 6.
6 Training of Food Handlers

6.1 Role of the Person in Charge
The Person in Charge in a food establishment should ensure that all food handlers are trained to a level of food hygiene training appropriate to the type of work they undertake. After successful completion of the formal training Program, the food handlers should be competent and capable of demonstrating the skills at work.

6.2 Training Program
Food establishments should maintain a documented training plan for all employees based on their training needs. The training Program should be based on the level of food safety risk in the food establishment, as listed below.

a. All food handlers must be formally trained on food safety. Where necessary, staff who are not directly involved in food preparation, but are involved in managing food related services (such as a person handling the buffet counter, food delivery etc.), should also be formally trained.

b. Food handlers should be trained in food safety to a level appropriate to the job they perform. Such trainings should also be based on the level of food safety risk in the food establishment. Factors for assessing the level of food safety risk include:
   i. the nature of food produced or manufactured in the establishment;
   ii. the manner in which food is handled or served;
   iii. the type of menu items or the complexity of the processes used (i.e., prepared-from-scratch menu items versus preparation or reheating of pre-packaged, ready-to-eat foods; and
   iv. the number of meals served daily, the size of establishment, and the type of customers the food is catered to (i.e., vulnerable populations).

c. Formal food safety training should be obtained from a trainer approved by the Department.

d. The management of the food establishment should promote food safety training to employers/food handlers by conducting on-going in-house courses for them or arranging for them to participate in courses.

e. Periodic assessment of the effectiveness of training and instruction Program should be made by the PIC.

f. The PIC must maintain records indicating those employees who have been trained and their relevant particulars.

6.3 Continuing Educational Training

a. Every food establishment should promote food safety education through ongoing training, which may include additional classroom instruction, on-the-job training, seminars, and employee meetings.

b. Food handlers should participate in a refresher or updating course after two years of training or, shall be retrained if incompetency in food handling practices is noticed.

c. The PIC shall provide evidence of continuous learning and refresher training appropriate to the level of food safety risk in the business.
7  Provisions and Requirements Applicable to Import, Sale and to Export of Foods

Food establishments working in the food import and re-export field shall comply pre import and post import requirements:

7.1 Pre-Import Requirements:
Must be licensed by any of the related authorities in the UAE having related to foodstuffs trading or a general trading activity.

a- Registering in the Food Import and Re-Export (FIRS) system through Dubai Municipality website to get access to the system

b- Paying required deposit amount based on the company activity.

c- Register the food items in the ZAD federal system

d- Procure Label assessment of food items intended to import to ensure to comply UAE food standard

e- Testing of food items before importation to avoid any rejection of consignment after the arrival (recommended).

f- To be aware of the required documents and their acceptance conditions to release the consignments

   i) All food consignments must accompanied with required documents as in general and also for specific items related to specific country, reasons and conditions.

   ii) Health certificates must be original having consignments details issued by the competent authority of the exporting country.

   iii) Packaging list must be listing of actual imported items with packing details must match in the consignment reference number

   iv) Halal certificate for meat and poultry products and food containing ingredients from animal source like gelatin should be issued by approved Halal certification bodies in UAE.

   v) Any additional documents required by the Food Safety Department according to international developments and local food notifications (Certificate of Dioxin free/pesticide residue free/color and heavy metal free, etc)

   vi) Supporting documents issued by the competent authority of the country of origin in case of any claim on the food label such as Organic / Genetically Modified Organism free (GMO Free) products and others health or nutritional claims from whenever required.

   vii) All above required documents shall be uploaded in the food import request and must be submitted at the time of inspection.
g- Company must have at least one full time Food Trade Person in Charge (Food Trade PIC) certified by the Food Safety Department

h- Company shall be responsible in proper storage, transportation and distribution of imported food stuffs.

i- Enable the person in charge to take all the decisions related to food safety and the release of consignments and ensure that the person in charge is the only person from the food establishment transacting with the Food Safety Department.

j- Implementing the best food safety practices to protect public health from food borne diseases and shall train all food handlers on food safety principles and the training shall be provided by a training company approved by Dubai Municipality.

k- Food establishment shall ensure that food that come to Dubai are obtained or procured from sources that are regulated by the relevant food authority at the country of origin and produced under sanitary conditions in an establishment regulated by the relevant food authority at the country of origin.

7.2 Post-Import Requirements:

All imported food products are inspected by the Food Safety Department at the port of entry. Authorized officers verify the documents and collect samples for laboratory analysis when necessary to ensure their compliance to relevant standards and regulations

- Assuring compliance with the undertakings not to use or dispose consignments except after obtaining the official release permits from the Food Safety Department
- Conform with conditions and criteria of undertakings of submitting the original documents of imported consignments within the time limit set by the Food Safety Department
- Execute the decisions issued with regards to rejected consignments with in grace period by providing relevant document of proof.
- Following up on-line on every status of consignment release and providing required documents whenever required until the final release given by Food Safety Department of Dubai Municipality
- In case the food label has animal products in the ingredients, it must be specified its source (like gelatin) and must submit halal certificate.
- In case of non-comply/rejected/unfit laboratory results of imported food item, the food establishment commit to return such item to the country of origin within given grace period
- Immediate withdrawal and recall of products whenever required
- Reducing the percentage of rejected food items by raising the extent of the food establishment’s compliance with the approved procedures and legislations
- Ensure that food handlers in food establishments comply with the conditions and criteria of the release permits issued by Dubai Municipality.
**Rationale:**
Operators of food establishments should ensure that all the information pertaining to a food product is collected prior to importation. The information should include the nature and type of the product, handling requirements, shelf life, labelling etc. This information will help the importer to prepare the necessary documents that have to presented at the port of entry.

Prior approval of the labels through the FIRS will help to make necessary changes in the label if required. This will be useful to eliminate unnecessary delay in the release of the consignment or even avoid possible rejection in the case of a serious violation of the requirements.
8 Miscellaneous

8.1 Food Fraud
Food fraud is an act of an intentional or deliberate addition, substitution, alteration or misrepresentation of food product, ingredients, label or packaging to hide the true identity or contents of a food ingredient or product for economic gain.

I. The establishment must also consider known or reasonably foreseeable hazards that may be intentionally introduced for purpose of economic gain while identifying the potential hazards (Clause 3.1.3).
II. Food establishment shall prepare, implement & document a Food Fraud Vulnerability Control Plan, which includes:
   a. Documented vulnerability assessment using suitable methods to identify significant vulnerabilities at each step, process & procedure for each food type manufactured, processed, packed or stored at food establishment.
   b. Documented & systematic identification of control measures to ensure that the significant vulnerability identified at each process step is minimized or prevented.
   c. Documented procedure for the systematic monitoring of control measures.
   d. Appropriate corrective action as appropriate to the nature of the process and the control measures.
   e. Regular verification of the program
   f. Appropriate records to demonstrate the compliance with the requirements of clause 8.1

8.2 Food Labelling

   g. Food establishments should not import, sell, consign or deliver any pre-packed food item if the package on the food does not bear a label containing all the information required by Food safety Department.
   h. Unless otherwise exempted by the Department, the package should bear a label that is printed on or securely attached in a prominent and conspicuous position to the package, containing such particulars, statements, the required information in Arabic.
   i. Pictorial, or other descriptive matter appearing on or attached to, or supplied along with or displayed on the food or the packaging of the food, shall not include any false or misleading statement, word, brand, picture, or mark purporting to indicate the nature, stability, quantity, strength, purity, composition, weight, origin, age, effects, or proportion of the food or any ingredients thereof.
   j. Illegal or unauthorized nomenclature, terminology, coding, illustration/photograph shall not be used on the packaging. This includes but is not limited to:
      i. any words, expressions, pictures or symbols which are offensive to any religion;
      ii. any photos, pictures, expression or words which imply any immoral impressions
      iii. any words or expressions which are offensive to the traditions and values of the country or its symbols.
   k. Commercially manufactured pre-packaged food items sold as individual units should bear or have embossed or impressed on the label or elsewhere of the package, a date mark with the production and expiration dates, in the manner specified and approved by the Food safety Department.
   l. Date marking on the original packaging should not be removed, erased, altered, obscured, superimposed or in any way tampered with.
m. Where the validity of the date mark of any pre-packaged food is dependent on its storage, the storage requirement of that food should also be stated on its label or package.

n. In food service establishments, refrigerated ready-to-eat high-risk foods, prepared and held for more than 6 hours, should be marked with the expiration time or date.

o. Where necessary, instructions for use after opening the original packaging should be provided, e.g. store chilled after opening and consume within three days.

p. For those pre-packaged foods that are intended to be eaten cooked, the following requirements apply:
   i. instructions for use are required on the food label when it would be impossible to prepare the food in the absence of such instructions;
   ii. instructions for use should be indicated in such a way to enable appropriate use e.g. where cooking is required then cooking instructions **must** be provided
   iii. where cooking or reheating instructions are included, they should be validated by the producer or manufacturer to ensure the pathogen(s) of concern will be destroyed and the product is safe to consume. This validation study should take into consideration whether the products will be cooked/reheated from frozen or thawed prior to cooking. These instructions, e.g. cook from frozen or thaw prior to consumption should also be included on the label.

8.3 **Product Shelf Life**

a. The food establishment is responsible for determining the shelf-life of food products under defined conditions, which should take into account reasonably foreseeable conditions of distribution, storage, and use.

b. For those products for which the shelf-life is mandated by the Food safety Department, the shelf-life should not exceed the time specified by the Department.

c. In food service establishments such as restaurants, shelf-life of high-risk or perishable foods prepared as per the process outlined in section 3 of this Code do not require validation if stored for three days or less. However, food establishments should, as a part of the review of the food safety program, periodically verify the effectiveness of control measures and the stability and suitability of the product during the shelf-life.

d. Food manufacturers, and establishments such as bakeries, catering companies and departmental stores that prepare and distribute pre-packaged high-risk or perishable foods should validate the shelf-life and obtain shelf life approval from the Food safety Department prior to the label approval process.

e. While determining the shelf life, the food establishment should take account of the following:
   i. controls on suppliers for assuring raw material quality;
   ii. analysis of trends in results of microbiological testing of raw materials and final products;
   iii. analysis of trends in results of microbiological testing of the process environment and equipment;
   iv. hygiene controls applied in the process environment;
   v. well established industry standards;
   vi. rate of microbiological spoilage and maintaining the organoleptic quality under foreseen conditions of storage and use.

g. Pre-packaged foods that are prone to rapid deterioration after the original packaging is removed (such as canned foods, juice bottles etc.) should be used as per the recommendation of the manufacturer.
h. Shelf life of raw cereals, pulses and dry foods depend on the raw materials, storage and handling. Such products are exempted from the requirement for validation. However, such foods should be handled and stored in an appropriate manner.

Note: Validation study should take into consideration the intrinsic and extrinsic properties of the product that affect shelf-life. Intrinsic properties are those properties that are an inherent part of the food product such as pH and water activity. Extrinsic properties are the properties of the environment in which the food is stored such as temperature and atmosphere.

Rationale:
No food can be kept indefinitely. In the case of high-risk products, shelf life could have a significant impact on the safety of the product. Product shelf life should be established by taking into account of the production environment, packaging and storage conditions, and the handling of the product.

The identification of the pathogens associated with raw materials and the production environment is critical for the accurate determination of a safe shelf-life. It is important to note that deviations from normal conditions, such as high levels of initial contamination in raw materials or elevated temperatures during storage or transport will impact on the safety of the product during its shelf-life.

8.4 Product Menu in Food Service Establishments
a. Food service establishments such as restaurants and cafeteria shall have product menu printed both in Arabic and English. Foods with allergens or Non-Halal ingredients shall be clearly identified in the menu.

b. Food service establishments such as restaurants and cafeteria shall provide all information about the product when requested by the customer.

8.5 Filtration and Disinfection Facilities for Fish Tank Water
a. Water used for keeping marine live fish or shellfish intended for human consumption should be filtered and disinfected by filtration and disinfection facilities. These facilities should be maintained in good working order at all times.

b. The filtration / disinfection system should be a closed loop system capable of providing continuous filtration and disinfection action.

c. Dedicated staff should be assigned to take care of the cleaning and maintenance of the whole system.

d. Fish tank water should be changed regularly to remove harmful substances produced by the stock after a period of time.

8.6 Single-Use Items
When using single-use items (non-reusable) such as instrument, apparatus, utensil or any other item for handling of food, such as drinking straws, disposable eating and drinking utensils, disposable food containers and disposable gloves, etc.;

a. Such items should be properly protected from risk of contamination by storing inside dust and pest proof containers or cupboards until they are used, and should be discarded if they are contaminated. They should not be re-used for any other purpose.

b. If gloves are used for handling food,
i. Hands must be washed properly before wearing gloves and when they are removed;
ii. Only disposable gloves shall be used, which shall be used only for single task, e.g. either handling ready-to-eat food or raw food;
iii. The same disposable gloves should never be used to handle raw food and then ready-to-eat food;
iv. They should be discarded if damaged, soiled, or when interruptions occur in the operation.

c. A food establishment without facilities for cleaning and sanitizing kitchenware and tableware shall provide only single-use kitchenware and articles for use by food employees and consumers.

Note: Gloves are not an alternative for proper hand washing.

Rationale:
Single-use items are not manufactured to permit effective cleaning and disinfecting. If these items are reused, food coming into contact with these items may become contaminated. Use of the same disposable gloves for handling raw and ready-to-eat food easily leads to cross-contamination.

8.7 Prohibition of Animals
Live birds, pets or animals, such as dogs and cats, except live seafood are not allowed to be kept or present in food service establishments and in food establishments that are not legally authorized to handle such animals or birds.

8.8 Procedures for Handling Non-Halal Food/Product
Animal slaughtered or food prepared in the manner prescribed by Islamic law:
- Does not consists of any part of or item from animals that are prohibited for Muslims by Islamic law, or halal animals that have not been slaughtered according to Islamic law.
- Does not have any substance that is considered impure in Islamic law.
- Is not prepared, processed or manufactured using equipment or utensils that are not free from impurities as defined by Islamic law.
- That, in the preparation, processing or storage stage, does not come in contact with any kind of food that does not meet the requirements of para(s) (a), (b) or (c) or any substances that are considered impure by Islamic law.

a. Non-Halal Food/Products shall not be mixed with Halal foods intended for consumption by Muslims during transportation, storage, preparation, or display.
b. Food establishment with Non –Halal permit shall have a prior approved layout from food safety department.

8.8.1 Requirements for Imports, Purchase and Sale of Non-Halal Food/Products
c. Non-Halal Food/Products shall not be imported, exported, processed or sold without obtaining a prior permit from the Food safety Department.
d. The food label on packaged Non-Halal Food/Products shall clearly and visibly state the ingredients in Arabic and English Languages.
e. The importer/trader has the primary responsibility to ensure that Halal Food/Products are not mixed with Non-Halal Food/Products or ingredients.
f. The importer/trader should ensure that Non-Halal Food/Products are sold ONLY to food establishments that have prior permit for the sale of Non-Halal Foods/Products.
g. The importer/trader shall transport Non Halal Food/Products in a separate vehicle designated
8.8.2 Requirements for Storage of Non-Halal Food/Products

a. Refrigerated and frozen Non-Halal Food/Products shall be stored in designated refrigerators or freezers.
b. Dry Non-Halal Food/Products shall be stored in a separate designated area or facility.
c. Non-Halal Food/Products shall be stored in separate cabinets, bins, and storage vessels to prevent mixing with Halal Food/Products.
d. Food establishment shall have the permit from food safety department to store Non-Halal Food/Products & shall ensure that Non-Halal Food/Products are received ONLY from food establishment that have prior permit for the sale or/and preparation of Non-Halal Food/Products.

8.8.3 Requirements for Preparation of Non-Halal Food/Product

a. A complete physically separated area shall be provided where Non-Halal Food/Products are prepared, processed, displayed or sold and shall not be opened directly to Halal Food/Products preparation, storage & handling area.
b. Separate, color coded cutting boards and knives shall be used for Non Halal Food/Products.
c. Cutlery, crockery, utensils & equipment used for Non-Halal Food/Products activities shall be clearly marked/identified.
d. The equipment and utensils designated for Non-Halal Food/Products preparation shall not be used for the preparation of Halal Food/Products.
e. Cutlery, crockery, utensils and equipments used for Non Halal Food/Products shall be washed separately.
f. Outlet serving Non Halal Food/Products items on buffet shall have a separate & adequate pre washing facility for crockery, cutlery & utensils before final washing.
g. Access to Non-Halal Food/Products preparation area shall be restricted, as much as practically possible, to designated food handlers.
h. Food handlers shall not handle Halal & non-Halal Food/Products at the same time. Non-Halal Food/Products shall neither be prepared nor stored in areas that are for Halal Food/Products.
i. Where non-halal Food/Products are handled, a sign board shall be placed in both Arabic and English language stating ‘Non – halal Food/Products only.’ The signage should be clearly visible to food handlers.

8.8.4 Serving Non-Halal Food/Products in food outlets

a. Food business operator has the primary responsibility to inform the customer that the restaurant serves Non-Halal Food/Products.
b. Non-Halal Food/Products shall clearly be mentioned in Menu card as PORK, ALCOHOL or NON HALAL Food/Products.
c. Non-Halal Food/Products shall not be served along with Halal Food/Products. Separate serving utensils and equipment should be used.
d. Outlets that serve Non-Halal Food/Products in buffet area shall have a separate counter that at least 2 meter away from Halal Food/Products.
e. In display, Non-Halal Food/Products shall be clearly stated in Arabic and English.

8.8.5 Sale of Pork Products

a. A departmental store or supermarket shall be allowed to display and sell pork products after
prior approval from the food safety department of Dubai Municipality.
b. Pork products can be sold in a departmental store or supermarket with an area not less than 7000 Square Feet.
c. Space provided for pork products should be adequate and based on the extent of activity.
d. Preparation and storage facilities shall be provided as per the requirements mentioned in the Code.
e. If there is butchery for handling pork products, it shall be separate and equipped with all necessary supplies.
f. Departmental stores and Supermarkets must have a designated person to handle pork products, and a separate cash counter to sell such products.

8.8 Product Traceability and Recall
a. A system to ensure traceability of food and any other substance intended to be or expected to be incorporated into a food should be established at all stages of food importation, production, processing and distribution.
b. All food items imported, sold, consigned or delivered in to the Emirate of Dubai must be registered with the Food safety Department.
c. Food establishments shall be able to identify any person/establishment that has supplied them with, or any substance intended to be, or expected to be, incorporated into food or packaging material. To this end, establishments should have in place documented systems and procedures which allow for this information to be made available to the Food safety Department if required.
d. Food manufacturers should have a system to identify and trace product lots and follow this through all raw materials (including ingredients, all types of packaging materials and processing aids), all stages of processing and distribution of the finished product to the customers in a timely manner.
e. Food establishments shall have in place documented systems and procedures to identify businesses to which their products have been supplied. This information should be made available to the Food safety Department when required.
f. Food which is placed on the market or is likely to be placed on the market in the community shall be adequately labelled or identified to facilitate its traceability, through relevant documentation or information in accordance with these regulations.
g. Food manufacturers, importers and distributors shall promptly withdraw or recall food products they import, produce or distribute to other establishments if such foods are found to be unacceptable, unsafe or adulterated, or do not conform to the Islamic law or the traditions and norms in the United Arab Emirates.
h. Food manufacturers, importers and distributors shall promptly recall foods if the Food safety Department or other concerned authorities issue a memorandum or a decree to recall specific food form Dubai markets.
i. Food establishments should notify the Food safety Department in the event of a withdrawal or a recall. Consumers should be notified if the product has entered the market and has reached the consumers.

8.9 Customer Complaint Handling
a. The food establishment should have a customer complaint handling system that gives guidance on how to respond, investigate and take preventive action when there is a food related complaint.
b. All food related complaints which include product related complaints and complaints pertaining to suspected foodborne illnesses should be logged in the complaints record.
c. Complaints must be investigated promptly and efficiently, and the details of investigation and corrective action must be retained for a period of at least one year.

d. Food establishment operator must contact the Food safety Department immediately if:
   i. an outbreak of foodborne disease is suspected;
   ii. a customer is injured or critically sick.

Note: A foodborne-disease outbreak is defined as an incident in which two or more persons experience a similar illness resulting from the ingestion of a common food.

8.10 Emergency Preparedness Plan
i. Food establishment shall have procedures in place to respond to any potential emergency situations or incidents that can have an impact on food safety such as but not limited to food outbreaks, power outage, flooding, fire & storm.

ii. Food establishment shall identify & communicate all such incidents to regulatory body, customers & suppliers.

iii. Food establishment must take appropriate actions appropriate to the type, extent & potential food safety impact in order to reduce the consequences.

8.11 Use of Wood in Food establishment
a. Hard maple or an equivalently hard, close-grained wood may be used for cutting boards, cutting blocks, bakers’ tables; and utensils such as rolling pins, doughnut dowels, salad bowls, and chopsticks. Such items should be suitable for contact with food, disinfection, and be maintained well.

b. Wooden pallets should be handled and stored in a way that poses no threat to the safety of the food. When wooden pallets are used:
   i. the food safety Program should include a ‘wood use policy’ that clearly states where wooden pallets will be used;
   ii. an effective documented verification practice must be in place to ensure that the pallets are clean and free of damage and pests.

Note: Both wooden and plastic pallets should be clean and free of damage. Chipping of wood can lead to contamination of food and measures should be in place to ensure that equipment are well maintained.

Rationale:
The limited acceptance of wood as a food contact surface is determined by the nature of the food and the type of wood used. Moist foods may cause the wood surface to deteriorate and the surface may become difficult to clean. In addition, wood that is treated with certain preservatives may lead to illness due to the migration of the preservative chemicals in the wood, into the food. Soft wood shouldn’t be used if in contact with food.

8.12 Use of Linens and Other Accessories
Linens such as wiping towels, table cloths, aprons, clothing, uniforms, etc. may be used in food establishment. They should be of light-color, kept clean and in a hygienic condition.

a. Cleanliness
i. Clean linens should be free from food residues or other soiling. They should be washed if they become wet, sticky or soiled; and

ii. Linens should be cleaned and disinfected as often as necessary. This may be achieved by a hot wash in a commercial washing machine, by immersing in boiling water for not less than one minute or by using a disinfection agent approved by the concerned department.

b. Sole Use of Linens
Linens should be used for one single purpose only. For example, wiping towels used for wiping food spills on table surfaces should not be used for any other purpose such as for polishing dried utensils or wiping surfaces used for raw animal foods.

c. Wiping Towels
Use of cloths for drying of food contact surfaces of equipment is not recommended as the cloth is likely to contain bacteria or contaminants that would be transmitted to the equipment during the drying process. Food contact surfaces should be air dried. Dry clothes or disposable paper towels may be used for polishing dried utensils.

d. Protective clothing, including aprons and uniforms
Aprons, clothing and uniforms should be clean and fit to wear. Buttons should preferably be avoided for those who directly handle food to prevent them from falling into food. Protective clothing should be washed at least once a day, or when it becomes soiled or sticky.

e. Table Cloths
Table cloths should be cleaned after each use as they have been in contact with food remnants and debris.

f. Menu cards
Menu cards that come in contact with hands, food remnants and debris should be kept clean at all times.

g. Storage of Soiled Linens
Soiled linens should be kept in suitable receptacles or laundry bags away from food preparation areas to prevent contamination of food, food contact surfaces, food equipment and utensils.

**Rationale:**
Linens are likely to contain foreign substances such as hair, dirt and micro-organisms, all of which would contaminate food and equipment. They should not be allowed to come into contact with food or food equipment/utensils unless thoroughly cleaned and disinfected. Napkins and menu cards for customers may help transmit diseases from person to person, unless adequately cleaned and disinfected after each use.
Annex 1

Risk Factor Reduction

The foodborne disease surveillance data in Dubai from 2011 to 2019 have consistently identified major risk factors related to food safety practices within the food industry that contribute to foodborne illness outbreaks. Many segments of the food industry require significant improvements in the control of these risk factors. These risk factors include:

a. Use of unpasteurized eggs in foods that are not heat treated
b. Poor disinfections of leafy green salad vegetables
c. Improper holding/time and temperature or ready to eat foods
d. Poor disinfection of food equipment and food contact surfaces
e. Sourcing and handling of raw-ready to eat foods of plant and animal origin

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<tr>
<th>Risk Factor</th>
<th>Interventions for Reduction</th>
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| a. Use of unpasteurized eggs in foods that are not heat treated | - Identify the foods with egg or egg based ingredients  
- Verify whether the cooking temperature is sufficient to ensure microbiological safety of the product (75°C or above)  
- If the food is not heat treated or the temperature is not achieved, ensure the use of pasteurized egg supply  
- Verify the source of the egg, ensure full traceability of the product  
- Ensure that fresh eggs are used  
- If eggs are pooled, store refrigerated and use the pooled eggs within 2 hours |
| b. Poor disinfections of leafy green salad vegetables | - Ensure facilities for disinfection are available  
- Separate sinks or containers used for disinfection |
| c. Improper holding/time and temperature or ready to eat foods | Refer to Section 3 |
| d. Poor disinfection of food equipment and food contact surfaces | Refer to Section 4 |
| c. Sourcing and handling of raw-ready to eat foods of plant and animal origin | Ensure full traceability of products  
Ensure that leafy greens are bought only from registered shops. |

These interventions will be a part of the training curriculum for PICs. Consultants and auditors must provide adequate emphasis for verification of the effectiveness of the interventions.
Annex 1

Guidelines for Microbiological Testing of Ready-to-Eat Foods

Definition and Interpretation

(1) ‘batch’ means a group or set of identifiable products obtained from a given process under practically identical circumstances and produced in a given place within one defined production period;

(2) ‘compliance with microbiological criteria’ means obtaining satisfactory or acceptable results set in Annex I when testing against the values set for the criteria through the taking of samples, the conduct of analyses and the implementation of corrective action, in accordance with food law and the instructions given by the competent authority.

(3) ‘food safety criterion’ means a criterion defining the acceptability of a product or a batch of foodstuff applicable to products placed on the market;

(4) ‘food intended for infants’ means food specifically intended for infants,

(5) ‘high risk foods’ are foods which will support the growth of food poisoning bacteria (or the formation of toxins) and which are ready to eat, or have gone through most, if not all, steps in their preparation which might control such hazards.

(6) ‘micro-organisms’ means bacteria, viruses, yeasts, moulds, algae, parasitic protozoa, microscopic parasitic helminths, and their toxins and metabolites;

(7) ‘microbiological criterion’ means a criterion defining the acceptability of a product, a batch of foodstuffs or a process, based on the absence, presence or number of micro-organisms, and/or on the quantity of their toxins/metabolites, per unit(s) of mass, volume, area or batch;

(8) ‘process hygiene criterion’ a criterion indicating the acceptable functioning of the production process. Such a criterion is not applicable to products placed on the market. It sets an indicative contamination value above which corrective actions are required in order to maintain the hygiene of the process in compliance with food law;
(9) ‘shelf-life’ means either the period corresponding to the period preceding the ‘Expiration Date’ or the minimum durability date, as defined respectively in GSO 9 2007

(10) ‘ready-to-eat food’ means food intended by the producer or the manufacturer for direct human consumption without the need for cooking or other processing effective to eliminate or reduce to an acceptable level micro-organisms of concern;

(11) ‘sample’ means a set composed of one or several units or a portion of matter selected by different means in a population or in an important quantity of matter, which is intended to provide information on a given characteristic of the studied population or matter and to provide a basis for a decision concerning the population or matter in question or concerning the process which has produced it;

(12) ‘representative sample’ means a sample in which the characteristics of the batch from which it is drawn are maintained. This is in particular the case of a simple random sample where each of the items or increments of the batch has been given the same probability of entering the sample;

General requirements

A high level of protection of public health is one of the fundamental objectives of food law as laid down in the local and administrative orders on general principles and requirements of food safety. Microbiological hazards in foodstuffs form a major source of food-borne diseases in humans. Food control has evolved from a focus on end-product testing to preventative approach through adequate process controls along the chain. Nonetheless, laboratory testing remains an important component of any system which aims to produce safe food. Carefully planned programmes of sampling and testing provide an assurance that hygiene controls applied by food chain operators result in safe food products that comply with local, national and international food safety requirements and food standards.

Having regard to regulation - Local Order No. 11/2003 (Public Health & Safety in the Emirates Dubai) issued by Dubai Municipality, other relevant national and international standards, the Food Safety Department has set the following general principles for Microbiological sampling and testing.

(1) Foodstuffs should not contain micro-organisms or their toxins or metabolites in quantities that present an unacceptable risk for human health.

(2) Local Order No. 11/2003 (Public Health & Safety in the Emirates Dubai) lays down general food safety requirements, according to which food must not be placed on the market if it is unsafe. Food business operators have an obligation to withdraw unsafe food from the market. In order to contribute to the protection of public health and to prevent differing interpretations, it is appropriate to establish harmonised safety criteria.
on the acceptability of food, in particular as regards the presence of certain pathogenic micro-organisms.

(1) Microbiological criteria also give guidance on the acceptability of foodstuffs and their processing, handling and distribution processes. The use of microbiological criteria should form an integral part of the implementation of HACCP-based procedures and other hygiene control measures.

(2) The safety of foodstuffs is mainly ensured by a preventive approach, such as implementation of good hygiene and manufacturing practices based on the Food Code and application of procedures based on hazard analysis and critical control point (HACCP) principles. Microbiological criteria can be used in validation and verification of HACCP procedures and other hygiene control measures. It is therefore appropriate to set microbiological criteria defining the acceptability of the processes, and also food safety microbiological criteria setting a limit above which a foodstuff should be considered unacceptably contaminated with the microorganisms for which the criteria are set.

(3) According to Local Order No. 11/2003, food business operators are to comply with microbiological criteria. This should include testing against the values set for the criteria through the taking of samples, the conduct of analyses and the implementation of corrective actions, in accordance with food law and the instructions given by the competent authority. It is therefore appropriate to lay down implementing measures concerning the analytical methods, including, where necessary, the measurement uncertainty, the sampling plan, the microbiological limits, the number of analytical units that should comply with these limits. Furthermore, it is appropriate to lay down implementing measures concerning the foodstuff to which the criterion applies, the points of the food chain where the criterion applies, as well as the actions to be taken when the criterion is not met. The measures to be taken by the food business operators in order to ensure compliance with criteria defining the acceptability of a process may include, among other things, controls of raw materials, hygiene, temperature and shelf-life of the product.

(4) Local Order No. 11/2003 on official controls performed to ensure the verification of compliance with food law, requires that official controls are carried out regularly, on a risk basis and with appropriate frequency. Those controls should take place at appropriate stages of the production, processing and distribution of food to ensure that the criteria laid down in this regulation are complied with by food business operators.

(5) The producer or manufacturer of a food product has to decide whether the product is ready to be consumed as such, without the need to cook or otherwise process it in order to ensure its safety and compliance with the microbiological criteria. The instructions
for use of a foodstuff are compulsory on the labelling when it would be impossible to make appropriate use of the foodstuff in the absence of such instructions. Such instructions should be taken into account by food business operators when deciding appropriate sampling frequencies for the testing against microbiological criteria.

(6) Sampling of the production and processing environment can be a useful tool to identify and prevent the presence of pathogenic micro-organisms in foodstuffs.

(7) Food business operators should decide themselves the necessary sampling and testing frequencies as part of their procedures based on HACCP principles and other hygiene control procedures. However, it may be necessary in certain cases to set harmonised sampling frequencies at Community level, particularly in order to ensure the same level of controls to be performed throughout the Community.

(8) Test results are dependent on the analytical method used, and therefore a given reference method should be associated with each microbiological criterion. However, food business operators can use analytical methods other than the reference methods, in particular more rapid methods, as long as the use of these alternative methods provides equivalent results. Moreover, a sampling plan needs to be defined for each criterion in order to ensure harmonised implementation. It is nevertheless necessary to allow the use of other sampling and testing schemes, including the use of alternative indicator organisms, on condition that these schemes provide equivalent guarantees of food safety.

(9) Trends in test results should be analysed, as they are able to reveal unwanted developments in the manufacturing process enabling the food business operator to take corrective actions before the process is out of control. It is strongly recommended that results be recorded in a way that the results can be analysed easily. Food businesses can use Microsoft excel or similar spreadsheets or use software programs that help analyse trends. The Department will continue to actively discourage storage of printed sheets of individual test results.

(10) The microbiological criteria set in this document will be open to review and revised or supplemented, if appropriate, in order to take into account developments in the field of food safety and food microbiology. This includes progress in science, technology and methodology, changes in prevalence and contamination levels, changes in the population of vulnerable consumers, as well as the possible outputs from risk assessments.

(11) The Food Safety Department will prioritise the testing of certain food products based on the foodborne disease surveillance data and the incidence data. Food businesses shall include such testing requirements when relevant to the business operations.
Food business operators shall ensure that foodstuffs comply with the relevant microbiological criteria set out in Table 1. To this end the food business operators at each stage of food production, processing and distribution, including retail, shall take measures, as part of their procedures based on HACCP principles together with the implementation of good hygiene practice, to ensure the following:

a. that the supply, handling and processing of raw materials and foodstuffs under their control are carried out in such a way that the process hygiene criteria are met,

b. that the food safety criteria applicable throughout the shelf-life of the products can be met under reasonably foreseeable conditions of distribution, storage and use.

As necessary, the food business operators responsible for the manufacture of the product shall conduct studies to set the shelf life and to investigate compliance with the criteria throughout the shelf-life. The following questions should be considered while evaluating the product shelf life:

a. Has the manufacturer of the product carried out shelf-life studies to investigate compliance with the relevant food safety criteria under reasonably foreseeable conditions of distribution, storage and use?

b. Did the shelf-life studies include any or all of the following:

- Was the characteristics of the product determined including pH, water activity, salt content, concentration of preservatives and the type of packaging system, taking into account the storage and processing conditions, and the possibilities for contamination of the product and the effect on the desired shelf-life?
- Was there a review or consultation on available scientific documents and/or research data on the microbiological hazards associated with the food, after establishing the characteristics of the product?
- Was any predictive mathematical modelling carried out for the identified microbiological hazards associated with the food and its characteristics?
- Were any laboratory tests carried out to investigate the ability of identified pathogens to grow or survive in your product under different reasonably foreseeable storage conditions? i.e. challenge tests
- Were any laboratory tests carried out to investigate the ability of identified pathogens of concern that may be present in your product during the desired shelf-life under reasonably foreseeable conditions of distribution, storage and use? i.e. durability tests
- Are there microbiological hazards which may influence the safety of your product other than those addressed in GSO standards?
Has a margin of safety been applied to the shelf-life established under reasonably foreseeable conditions of distribution, storage and use?

Have systems been placed to evaluate the product shelf-life as part of a regular review of your food safety management system?

Testing Frequency and Criteria

(1) Retail food service businesses that include hotels, caterers, bakeries and manufacturers for Ready to Eat packaged foods shall conduct microbiological analysis of at least 5 samples each in a month. The samples should include
- Drinking water/ice
- Animal foods that are served raw or partially cooked before consumption
- Spices and ingredients that have been previously associated with outbreaks
- Swabs of food contact surfaces

Note: Food service establishments shall refrain from testing foods that have been fully cooked, especially if these food samples are collected immediately after cooking. If recontamination or spore germination is expected in foods that have a shelf life of more than 4 hours, such products can be tested for specific organisms of concern.

(2) When the frequency of sampling is not specified by the regulatory authorities, the sampling frequency must be determined by the food business operator. The type of food establishments that have to determine food sampling include but is not limited to manufacturing units, trading establishments, importers and exporters of food, catering units that supply prepackaged food to retailers etc.

The appropriate sampling frequency must be determined through a risk assessment process considering the following:
- The microbial hazards of concern associated with the food, ingredients and the environment in the production facility
- Susceptibility of the intended consumers of the food
- Intended use of the food
- Historical issues identified by monitoring
- Food safety management system

Such plans must be periodically reviewed for the appropriateness by a competent team and sampling frequency should be amended when necessary.
(3) Food business operators shall perform testing as appropriate against the microbiological criteria set out in Annex I, when they are validating or verifying the correct functioning of their procedures based on HACCP principles and good hygiene practice.

(4) Food business operators shall decide the appropriate sampling frequencies. Food business operators shall make this decision in the context of their procedures based on HACCP principles and good hygiene practice, taking into account the instructions for use of the foodstuff.

Note: The frequency of sampling may be adapted to the nature and size of the food businesses, provided that the safety of foodstuffs will not be endangered.

Specific rules for testing and sampling

(1) The analytical methods and the sampling plans must be standard and should be performed in accredited laboratories that meet the competency requirements of the standard ISO/IEC 17025:2005.

(2) Samples shall be taken from processing areas and equipment used in food production, when such sampling is necessary for ensuring that the criteria are met. In that sampling the ISO standard 18593:2018 shall be used as a reference method.

(3) Food business operators preparing or manufacturing ready-to-eat foods, which may pose a Listeria Monocytogenes risk for public health, shall sample the processing areas and equipment for Listeria monocytogenes as part of their sampling scheme.

(4) The number of sample units of the sampling plans set out in Annex I may be reduced if the food business operator can demonstrate by historical documentation that it has effective HACCP-based procedures.

(5) If the aim of the testing is to specifically assess the acceptability of a certain batch of foodstuffs or a process, the sampling plans set out in Annex I shall be respected as a minimum.

(6) Food business operators may use other sampling and testing procedures, if they can demonstrate to the satisfaction of the competent authority that these procedures provide at least equivalent guarantees. Those procedures may include use of alternative sampling sites and use of trend analyses.
Food examination

The microbiological testing of ready-to-eat foods should be appropriate to the type of food sample being examined and to the processing it has received. Not all the organisms listed in the table are equally applicable to all food groups, nor should all the organisms listed be tested for routinely. Interpretation of results should also be based on knowledge of the product components and the production process. The significance of the microbiological tests that may be conducted is discussed below.

A. Aerobic colony count

The Aerobic Colony Count or the total viable count, is one of the most common tests applied to indicate the microbiological quality of food. The significance of ACCs, however, varies markedly according to the type of food product and the processing it has received. When ACC testing is applied on a regular basis it can be a useful means of observing trends by comparing ACC results over time.

Three levels of ACC are listed in Table 1 based on food type and the processing/handling the food has undergone.

**Level 1**: applies to ready-to-eat foods in which all components of the food have been cooked in the process/preparation of the final food product and, as such, microbial counts should be low.

**Level 2**: applies to ready-to-eat foods which contain some components that have been cooked and then further handled (stored, sliced or mixed) prior to preparation of the final food or where no cooking process has been used.

**Level 3**: ACCs not applicable. This applies to foods such as fresh fruits and vegetables (including salad vegetables), fermented foods and foods incorporating these (such as sandwiches and filled rolls). It would be expected that these foods would have an inherent high plate count because of the normal microbial flora present.

If a specific ready-to-eat food is not included in Table 1, food examiners and microbiologists should use their own judgment to assess where a product would fit – based on the type of product, the processing it has received, and the potential for microbial growth during storage.

Note: An examination of the microbiological quality of a food should not be based on ACCs alone. The significance of high (unsatisfactory) ACCs cannot truly be made without identifying the microorganisms that predominate or without other microbiological testing. When unsatisfactory aerobic colony counts are encountered microbiologists should attempt to identify the microorganisms that predominate. From these results, and additional detailed information about the food sample, it should be possible to provide a more helpful interpretation of high aerobic colony counts.
B. Indicators

**Enterobacteriaceae**
The family *Enterobacteriaceae* includes many bacteria that are found in the human or animal intestinal tract, including human pathogens such as *Salmonella* and *Shigella*. *Enterobacteriaceae* are useful indicators of hygiene and of post-processing contamination of heat processed foods. Their presence in high numbers (>10⁴ CFU/gm) in ready-to-eat foods indicates that an unacceptable level of contamination has occurred or there has been under-processing (e.g. inadequate cooking).

Testing for *Enterobacteriaceae* is not applicable to fresh fruits and vegetables or foods containing these.

**Escherichia coli**
The presence of *E. coli* in fully cooked ready-to-eat foods is undesirable because it indicates poor hygienic conditions which have lead to contamination or inadequate heat treatment. Ideally *E. coli* should not be detected and as such a level of <3 (the limit of the Most Probable Number test) has been given as the satisfactory criteria for this organism. Levels exceeding 100 CFU/gm are unacceptable and indicate a level of contamination which may have introduced pathogens or that pathogens, if present in the food prior to processing, may have survived.

C. Pathogens

**Coagulase-positive Staphylococci**
Contamination of ready-to-eat foods with coagulase-positive *staphylococci* is largely as a result of human contact. Contamination should be minimised through good food handling practices and growth of the organism prevented through adequate temperature controls.

Unsatisfactory levels of coagulase-positive *Staphylococci* indicate that time/temperature abuse of a food is likely to have occurred following improper handling during food preparation. A test for enterotoxin, SET, may be appropriate where levels of coagulase positive *staphylococci* exceed 10³ CFU/gm per gram or where poor handling practices are suspected but it is likely that viable organisms may no longer be present in significant numbers. Levels of ≥10⁴ CFU/gm are considered as potentially hazardous as foods with this level of contamination may result in food borne illness if consumed.

**Clostridium Perfringens**
Unsatisfactory levels of *C. perfringens* generally occur as a result of temperature abuse where cooked foods are held at warm temperatures (<60 ºC, particularly room temperature) for extended periods of time or cooled (to 5 ºC or below) too slowly. Foods associated with foodborne illness caused by *C. perfringens* include joints of meat (especially large and rolled joints) and meat and vegetable dishes such as stews and pies. The detection of high levels (>10³ cfu per gram) of *C. perfringens* should result in an investigation of the food handling controls used by the food business. Levels of ≥10⁴ cfu per gram are considered as potentially hazardous as consumption of foods with this level of contamination may result in food borne illness.
**Bacillus cereus and other Bacillus spp**

An unsatisfactory level of *B. cereus* in cooked foods generally occurs as a result of inadequate temperature control. As for *C. perfringens*, cooked foods should be held at or above 60°C or at or below 5°C to prevent growth, or held outside this temperature range for a limited time. Foods associated with *B. cereus* food poisoning include cooked rice dishes, other cereal based foods such as pasta/noodles, dairy based desserts and meat or vegetable dishes incorporating spices. The detection of high levels (>10³ cfu per gram) of *B. cereus* should result in an investigation of the food handling controls used by the food business.

Levels of ≥10⁴ cfu per gram are considered potentially hazardous as consumption foods with this level of contamination may result in food borne illness. Other *Bacillus* species, such as *B. subtilis* and *B. licheniformis*, have also been associated with food borne illness and may also be tested for.

**Vibrio parahaemolyticus**

Testing for *V. parahaemolyticus* is relevant to seafoods only. High levels of *V. parahaemolyticus* (>10² CFU/gm) in cooked seafoods indicates that the food has been inadequately cooked or cross-contaminated after cooking with subsequent time/temperature abuse and should result in an investigation of the food handling controls used by the food business. Higher levels (up to 10⁵ CFU/gm) of *V. parahaemolyticus* in raw seafoods may be expected because of natural contamination from the aquatic environment, however levels from 10³ to 10⁴ CFU/gm in raw seafoods would indicate inadequate temperature controls since harvesting and should be considered as unsatisfactory.

**Campylobacter**

*Campylobacter* should not be present in ready-to-eat foods as consumption of food containing this pathogen may result in food borne illness. The detection of *campylobacter* indicates poor food handling controls, particularly cross contamination (especially where raw poultry is handled) or inadequate cooking (e.g. raw or undercooked meat and poultry). The use of raw milk or of contaminated water may be alternative sources of *Campylobacter* that should be considered.

**Salmonella Spp.**

Ready-to-eat foods should be free of *Salmonella* as consumption of food containing this pathogen may result in food borne illness. The presence of this organism indicates poor food preparation and handling practices such as inadequate cooking or cross contamination. Consideration may also be given to investigating the health status of food handlers on the premises who may have been suffering from salmonellosis or asymptomatic carriers of the organism.

**Listeria monocytogenes**

*Listeria monocytogenes* is widespread in the environment and can be isolated from a wide variety of foods. Its detection in ready-to-eat foods which have not undergone a listericidal treatment, therefore, does not immediately indicate a problem with food practices within the food establishment. Higher levels of *L. monocytogenes* (10² cfu per gram), however, do indicate a failure with food handling controls and based on current epidemiological evidence are considered a public health risk. Foods in which all components have been cooked in the final food preparation,
or have received some other listericidal treatment, should be Listeria free. The detection of *L. monocytogenes* in such foods indicates the food was inadequately cooked or the food was contaminated post preparation. Additionally, the detection of *L. monocytogenes* in foods which have been prepared specifically for at risk. Population groups such as the elderly, immunocompromised and infants should be considered as potentially hazardous.

**Categories of microbiological quality**

Four categories of microbiological quality have been assigned based on aerobic colony counts, levels of indicator organisms and the number or presence of pathogens. These are satisfactory, marginal, unsatisfactory and potentially hazardous.

**Satisfactory:** results indicate good microbiological quality. No action required.

**Acceptable:** results are borderline in that they are within limits of acceptable microbiological quality but may indicate possible hygiene problems in the preparation of the food. Action: Re-sampling may be appropriate. Premises that regularly yield borderline results should have their food handling controls investigated.

**Unsatisfactory:** results are outside of acceptable microbiological limits and are indicative of poor hygiene or food handling practices.

**Action:** Further sampling, including the sampling of other foods from the food premise may be required and an investigation undertaken to determine whether food handling controls and hygiene practices are adequate.

**Unacceptable:** the levels in this range may cause food borne illness and immediate remedial action should be initiated.
### Microbiological Limits for Assessment of Microbiological Quality of Ready-to-Eat Foods

**Table 1**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Microbiological quality (Colony-Forming Unit (CFU) per gram unless specified)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class A</td>
</tr>
<tr>
<td></td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Aerobic Colony Count (ACC) [30°C/48hours]</td>
<td></td>
</tr>
<tr>
<td>Level 1</td>
<td>&lt; 10⁴</td>
</tr>
<tr>
<td>Level 2</td>
<td>&lt; 10⁶</td>
</tr>
<tr>
<td>Level 3</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Indicator organisms (apply to all food categories)**

- *E. Coli* (total)  
  - < 20  
  - 20 – < 10⁰  
  - ≥ 10⁰  
  - N/A

- *Enterobacteriaceae*  
  - < 10²  
  - 10² – 10⁴  
  - ≥ 10⁴  
  - N/A

**Pathogens (apply to all food categories)**

- *Campylobacter* spp.  
  - Not detected in 25g  
  - N/A  
  - N/A  
  - Present in 25g

- *E. Coli* O157  
  - Not detected in 25g  
  - N/A  
  - N/A  
  - Present in 25g

- *L. Monocytogenes*  
  - Not detected in 25g  
  - N/A  
  - N/A  
  - Present in 25g

- *Salmonella* spp.  
  - Not detected in 25g  
  - N/A  
  - N/A  
  - Present in 25g

- *V. Cholerae*  
  - Not detected in 25g  
  - N/A  
  - N/A  
  - Present in 25g

- *V. Parahaemolyticus*  
  - < 20  
  - 20 – < 10⁰  
  - 10⁰ – < 10³  
  - ≥ 10³

- *S. Aureus*  
  - < 20  
  - 20 – < 10⁰  
  - 10⁰ – < 10⁴  
  - ≥ 10⁴

- *C. Perfringens*  
  - < 20  
  - 20 – < 10⁰  
  - 10⁰ – < 10⁴  
  - ≥ 10⁴

- *B. Cereus*  
  - < 10²  
  - 10² – < 10³  
  - 10³ – < 10⁴  
  - ≥ 10⁴

N/A denotes “Not applicable”
## Food Category Table for Aerobic Colony Count Assessment

<table>
<thead>
<tr>
<th>Food group</th>
<th>Food item</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat</td>
<td>Beef burgers and kebabs</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Dim sum</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pate (meat, seafood or vegetable)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Cooked Poultry (unsliced)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Preserved meat</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Salami and fermented meat products</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Sausages</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Smoked meat</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sliced meat (ham and tongue) (cold)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sliced meat (beef, poultry, etc.) (dried)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Steak and kidney / meat pies</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Roasted Meat sold in retail</td>
<td>1</td>
</tr>
<tr>
<td>Seafood</td>
<td>Crustaceans</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Pickled fish</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other fish (cooked)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Oysters (raw)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Seafood meals</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Shellfish (cooked)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Smoked fish</td>
<td>2</td>
</tr>
<tr>
<td>Dessert</td>
<td>Cakes, pastries, slices and desserts – with dairy cream</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Cakes, pastries, slices and desserts – without dairy cream</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Cheesecake</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mousse / dessert</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Tarts, flans and pies</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Milk sweets</td>
<td>2</td>
</tr>
<tr>
<td>Savoury</td>
<td>Bean curd</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Cheese-based bakery products</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fermented foods</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Flan / quiche</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Dips</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Mayonnaise / dressings</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Samosa</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Satay</td>
<td>2</td>
</tr>
<tr>
<td>Vegetable</td>
<td>Coleslaw / salads (with or without meat)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fruit and vegetables (dried)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fruit and vegetables (fresh)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Rice</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Vegetables and vegetable meals (cooked)</td>
<td>1</td>
</tr>
<tr>
<td>Dairy</td>
<td>Cheese</td>
<td>1</td>
</tr>
<tr>
<td>Food Item</td>
<td>Sub-item</td>
<td>Quantity</td>
</tr>
<tr>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Ice-cream (dairy and non-dairy)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ice lollies / sorbet</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Yoghurt / frozen yoghurt (natural)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ready-to-eat meals</td>
<td>Pasta / pizza</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fully cooked Meals (others)</td>
<td>1</td>
</tr>
<tr>
<td>Sandwiches</td>
<td>With salad</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Without salad</td>
<td>2</td>
</tr>
<tr>
<td>Filled rolls</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sushi &amp; sashimi</td>
<td>Fish fillet and fish roe sashimi / sushi</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sashimi</td>
<td></td>
</tr>
</tbody>
</table>

**Follow-up action in the event of unsatisfactory results**

In the event of an unsatisfactory result for either a process hygiene or a food safety criterion, food business operators must take specific actions. Such actions must include but not limited to:

- taking measures to find the cause of the unsatisfactory result in order to prevent recurrence
- taking any other corrective actions defined in your HACCP-based procedures and any other actions necessary to protect the health of consumers
- withdrawing or recalling the foodstuff from the market in accordance with the requirements of the Food Code or any other relevant legal requirement
- Or, if the product is on the market but has not reached retail level, the product be submitted to further processing to eliminate the hazard
- take measures to find the cause of the unsatisfactory result in order to prevent recurrence
- take any other corrective actions defined in the HACCP-based procedures and any other actions necessary to protect the health of consumers