

GUIDELINES FOR INFLIGHT CATERING



MINISTRY OF HEALTH MALAYSIA



MINISTRY OF TRANSPORT MALAYSIA

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GUIDELINES FOR INFLIGHT CATERING

A. INTRODUCTION

Food safety has been recognized as a matter of importance to the airline industry and the Annex 1B of the International Health Regulations (2005) stipulates that designated airports must have the capacity to ensure a safe environment for travelers using point of entry facilities, including potable water supplies, eating establishments, flight catering facilities, public washrooms, appropriate solid and liquid waste disposal services and other potential risk areas, by conducting inspection programmes, as appropriate.

The Guidelines for Inflight Catering has been prepared to meet the requirement of the International Health Regulations 2005 as well as the Food Hygiene Regulations 2009. It has been recognized that to ensure the safety of food and drink when consumed onboard, a food safety management system that encompasses all stages of food production from product design through to service onboard, needs to be in place.

As a result, this document is no longer aimed solely at flight caterers but rather at both airlines and suppliers from production until passenger service. It will provide a guideline and a reference document for all parties.

B. OBJECTIVES

The need for these Guidelines is based on the following considerations:

- i. The need to provide airline passengers food that is hygienic and safe according to international food safety and security standards.
- ii. The need to apply preventive procedures like HACCP, to ensure passengers' a safe healthy flight

C. SCOPE

These Guidelines describe an effective food safety control concept applicable to the airline industry and can be used as a basic reference document for all parties involved including both supplier and airlines as the service provider.

D. LAW

The statutes pertaining to these guidelines are:

1. Food Act 1983 and its Regulations
2. Food Hygiene Regulations 2009
3. Prevention and Control of Infectious Diseases Act 1988
4. International Health Regulations 2005

The implications for caterers are:-

- (i) Enforcement of the food hygiene provisions of the Food Act 1983.
- (ii) Health authorities will be able to prosecute owner of establishments for offences under the Section 11 of the Food Act 1983 which enables an Officer authorized by the Director to make a Temporary Closure Order for insanitary premises.
- (iii) In the case of catering establishments, the Ministry of Health and Local Authority may require them to be registered or licensed.
- (iv) To obtain registration or licensing, the premises are required to be fit for the purpose of manufacturing or preparation of food by the Local Authority or Ministry of Health.

A person who uses any premise in contravention of the above commits an offence.

E. CONSULTATION

Advice must be sought at an early stage from the appropriate nearest health office when designing new catering premises or renovation to existing catering premises.

CHAPTER 1

1 BUILDING AND FACILITIES

1.1 Kitchen Structure

1.1.1 Building

- a) The building must be located in an area which is free from objectionable odor, smoke, dust or other contaminants and not subjected to flooding. The building should not be near the refuse disposal depot to prevent flies and rodent problem.
- b) The building should be designed and constructed according to its intended use and easy to maintain, clean and where appropriate, able to be disinfected.
- c) The building used for the preparation and storage of food is of suitable size, design and construction to permit unobstructed placement of equipments, orderly storage of materials and proper sanitary operation.
- d) The design of the whole kitchen must have work flow that complies with the implementation of GMP/ HACCP in food services.

1.1.2 Floors

- a) They should be easy to clean and disinfect.
- b) They should be of heavy duty materials and withstand water, grease, acids, alkalis, cleaning agents and variations in temperature.
- c) They should be even and impervious without cracks or open joints with a slip-resistant finish.
- d) Junctions with walls should be covered.
- e) Use of figures or raised pattern tiles should be avoided as they can be difficult to keep clean.
- f) Where appropriate, floors should slope sufficiently for liquids to drain to trapped outlets.

1.1.3 Walls

- a) They should be of suitable materials that are waterproof, non-absorbent and non-toxic.
- b) Coving at the junctions with floor and ceilings is desirable.

- c) Textured paint finishes are not suitable. Well-jointed, glazed ceramic tiles are recommended.
- d) Corners should be protected against accidental damage. Wall surfaces behind sinks and cooking equipment, must be resistant to excessive heat, moisture and physical damage.

1.1.4 Ceiling

- a) To be constructed from smooth, impervious materials, that is easy to clean.
- b) False or acoustic ceilings are not suitable for kitchens, as they can present a fire hazard and may harbour pests.
- c) Access must be provided for pest control inspection and cleaning.
- d) Solid ceilings should be insulated to avoid condensation problems.
- e) The ceiling should not be wet, cracked and free from flaking paint.

1.1.5 Doors

- a) They should be of suitable designs so that they can be easily cleaned and maintained.
- b) They should be flushed with adjacent surfaces.
- c) They should be wide enough for equipments (e.g: trolleys) to pass through without damage.
- d) All doors should be pest-proof.
- e) Door should be self-closing

1.1.6 Windows

- a) Make sure that all windows are pest-proof.
- b) Screens should be easily removed for cleaning.
- c) Inward-sloping sills are preferable as they prevent items accumulating on them.
- d) They must allow effective cleaning and prevent the accumulation of dirt.

1.1.7 Drainage

- a) Drain should be of suitable depth and gradient. It should be of semi-circular glazed surface and covered with removable gratings.
- b) Where cooking equipments are grouped in island arrangements, the discharge of waste should be into open channels which also serve for

floor drainage. These are usually semi-circular glazed units, covered by light, removable gratings.

- c) Recommended are designs which provide an individual waste trap for each piece of equipment.
- d) The waste pipes should be of corrosion-resisting materials and have gas-tight joints. They should have traps to prevent escape of odours.
- e) Where grease traps and interceptors are needed to trap grease and silt, they should be sited outside the kitchen area.
- f) Staff who handle food must on no account inspect, empty or clean interceptors and grease traps. This should be done by the cleaning staff.
- g) The drainage channel must be appropriately designed to ensure that waste does not flow from a contaminated area towards or into a clean area.

1.1.8 Sinks

- a) Sinks should be specific for food preparation and washing up (crockeries, equipment etc.)
- b) Buckets to be drained and cleaning water disposed in a separate sluice sink provided with hot and cold water in a cleaner's room.
- c) Sinks units should be of stainless steel material and design for easy cleaning.
- d) In the main cooking area, a sink should be provided with hot and cold water supply.
- e) Food preparation equipments must not be stored under sinks.
- f) Sterilizing sinks capable of maintaining water at a temperature above 60°C must be provided for washing equipment and crockery.
- g) Sinks must not be used for personal hygiene purposes.
- h) Hands free operated taps are recommended.
- i) Sinks should be located at suitable area.

1.1.9 Wash-hand Basins

- a) These should be provided in all entry and preparation areas, preferably of stainless steel and in sufficient numbers.
- b) Hands free operated taps to be provided to minimize cross-infection.
- c) Soap dispensers to be provided with a suitable cleansing agent.
- d) Disposable paper towels or hand dryer to be provided.

- e) Towel dispensers should be filled regularly to ensure no shortage. Paper towel disposal bins should be foot operated.
- f) Notices must be displayed identifying wash hand basins, hand washing techniques and requesting staff to wash their hands.

1.1.10 Lifts and Hoists

- a) The interior of lift cages should be lined with impervious materials so that they can be easily cleaned.
- b) Operating and cleaning instructions should be clearly displayed.
- c) The door and lift shaft should be proofed against pest.
- d) Lifts should be regularly inspected and preventive maintenance carried out to ensure internal lights, warning lights, switches and telephone are kept in working order.

1.2 Kitchen Design

1.2.1 Delivery Bay/Goods Entrance

- a) The entrance should allow delivery vans to back right up to the bay under a roof/canopy.
- b) The surface should be even and impervious with provision for water standpipe, tap, retractable hose reel and proper facilities for sorting, washing and receiving of goods.
- c) Entrances should be well lit and where possible, separation of goods in and out should be allowed for.
- d) Access points must be kept clear at all times. Any refuse and unwanted containers etc should be promptly removed to a proper refuse area.
- e) There is strictly to be "NO SMOKING" sign on site or anywhere near the delivery dock.

1.2.2 Dry Foods Store

The following specifications apply to bulk and daily stores:-

- a) Store should be dry, properly ventilated and well-lit and should be large enough to allow easy access to all contents.

- b) Racks with impervious shelving should be installed, the lowest shelf being 20 cm above ground level. Racks should not be placed against the wall (15 cm away from the wall).

1.2.3 General stores

- a) There should be separate store rooms for different items such as
 - i. Equipment, Crockery and Utensils
 - ii. Chemical/ Detergent
 - iii. Packaging Materials
- b) Separate stores should be provided with adjustable shelves whereby the lowest shelf being 20 cm above ground level.

1.2.4 Cold Storage

- a) Doors must be close fitting with an airtight gasket and should be able to open from inside as well as outside. (Plastic curtains should be available).
- b) Shelves should be removable and adjustable, preferably of stainless steel or alloy construction. Interiors of large cold stores should have easy-clean surfaces, e.g. stainless steel sheeting.
- c) All chiller/chiller rooms and freezers over approximately 10 cubic ft capacity must be fitted with clearly visible external thermometers with alarm triggered and auto defrosts.
- d) All chiller room/freezer room/cold room should be connected to an alternative power supply.
- e) Flooring should be grooved stainless steel, durable, heavy duty and easy to clean with water outlet drainage.
- f) Lighting should be well-lit, covered and easy to clean.
- g) Essential power supply should be considered to accommodate the facility.

1.2.5 Chiller/ Chiller Room

- a) Chilled stores, larders and cooling-rooms: Temperature should be kept by controlled ventilation at less than 5°C. Floors should be at the same level in the kitchen for ease of access to mobile food-storage racks and trolleys.
- b) Kitchen refrigeration should be checked to ensure a temperature within 0°C to 10°C and maintained. Preferably the temperature should be 3°C as chiller/chiller rooms calibrated at this temperature have automatic defrost facilities.

1.2.6 Freezer/ Freezer Room

- a) Deep-freeze stores: For long-term storage of quick-frozen foods, a temperature of below minus 18°C is required. In all other respects, the above recommendations apply. The working temperatures recommended for foods in storage should be displayed on the outside of the store.

1.2.7 Preparation and Cooking Areas

- a) To prevent food contamination, preparation and storage surfaces should be impervious and capable of thorough cleaning.
- b) Cutting slabs and chopping boards/blocks should be of impermeable materials. Color coded chopping boards/blocks should be used for cutting different types of food, e.g. meat, fish, vegetables, and fruits.
- c) Tables and worktops should be away from walls to make cleaning easier. Ideally, they should be mobile. Stainless steel mobile worktops should be durable, hygienic and easy to clean.

1.2.8 Refuse collection area

- a) A separate storage covered room/area is necessary for refuse prior to collection.
- b) It should be purpose-built and well ventilated with walls of a smooth, non-absorbent finish.
- c) The area should be paved, and have proper drainage (standpipe) tap and retractable hose reel.
- d) Refuse areas must be sited to cause minimum nuisance and ideally be well away from areas where food is delivered.
- e) All bins should have close fitting lids and covered.
- f) Wet refuse should be separated from dry refuse.
- g) Wet refuse should be kept in a location with suitable temperature (air-conditioning is recommended).

1.2.9 Waste Disposal

- a) Waste bin throughout the unit must be well maintained and clean. The lid must be foot operated. It is recommended to have different waste bins for different types of waste (meat and fish, vegetables, recycle wastes).
- b) Waste should be removed regularly and when necessary.

1.2.10 Washing Area

- a) There should be separate areas for washing equipments (e.g. Trolley, crockeries and cooking utensils).
- b) Walls to be tiled up to 2 meters in height: The rest painted with impervious paint in white or a light colour.
- c) Steam cleaning apparatus may be kept in this area.

1.2.11 Toilet Facilities/Rest Room

- a) These should be provided for food service staff and include proper hand-washing facilities.
- b) A ventilated corridor or space between toilet and food preparation area is essential.
- c) Toilet areas should be well lit and properly ventilated.
- d) Walls, floors and window ledges should have impervious and, easy to-clean surfaces.
- e) Toilet facilities should be adequate and comply with the required norms.
- f) Female toilet should include sanitary towel dispensers and disposers with instructions clearly displayed.

1.2.12 Changing Rooms

- a) Good lighting and proper ventilation are a must in these areas.
- b) Each staff should have a locker or at least hanging space for outdoor clothes, which should be kept apart from clean protective clothing.
- c) Shower rooms should be included.
- d) A container for dirty linen should be provided and removed daily.

1.2.13 Staff Entry Area

Allocated staff entry area should be determined.

1.2.14 Staff Dining Room

The room should be of adequate size, well ventilated, clean and well maintained.

1.3 Kitchen Equipment

1.3.1 Choice and Sitting of Equipment

- a) Equipments should be safe to operate and easy to clean and maintain.
- b) Design for equipments should not be potential dirt traps. It should have a smooth finish without joints or ledges.
- c) Bench-type machines should be mounted on stainless steel tables that are suitably reinforced.
- d) Fixed equipments should be sited to allow easy cleaning access to all sides as well as adjacent walls and floors.
- e) The materials used in the construction should be checked to make sure they will not contaminate food.
- f) Cooking equipment should preferably be mobile.
- g) Damaged and worn out equipment which cannot be readily cleaned must be replaced.
- h) Surplus or condemned equipment/utensils and infrequently used equipment should be stored in a separate clean storage area and not in a kitchen area.
- i) Utensil, food containers and pans should be washed thoroughly using hot water and detergent and then rinsed in water above 82°C. This can be achieved by using the automatic pan washer and the three sink method.
- j) Equipment/utensil used for raw meat and vegetable preparation **MUST NOT** be used for high risk food preparation or for ready to eat food.
- k) Utensils/ crockeries should be made of impermeable materials and safe to use, easy to clean and maintain.
- l) Separate labeled/colour code must be used for raw meat, cooked meat and vegetable preparation purposes.
 - i. Knives
 - ii. Chopping boards/blocks

1.3.2 Kitchen Preparation Surfaces

- a) Stainless steel should be used for all food preparation surfaces. All surfaces must be joint less and well maintained. Tables and benches should be free standing and not fixed to walls.
- b) Surfaces must be checked **DAILY** by The Head of Department/ Unit, and/or Supervisor to ensure that they have not deteriorated, cracked, chipped or broken and that they are adequately cleaned.
- c) Food preparation surfaces should be used for one purpose only. Each surface should be clearly marked for its intended use.

- d) Work surfaces must always be cleaned immediately.

1.3.3 Deep fryers

- a) Fryers should have a cool zone, where sediment can collect without charring, and with provision for draining off fat or oil. Oil filtering machine or system should be used. An over-riding thermostat must be fitted. Check and recalibrate thermostats regularly.

1.3.4 Microwave Ovens/Convention Ovens

- a) Installation should comply with the local electricity board's requirements. Instructions for use must be displayed prominently on or next to the oven. Regular safety checks should be made by the manufacturer or a qualified person. This will reduce the risk of high-frequency emission for microwave ovens.

CHAPTER 2

2 CONTROL OF OPERATION

2.1 Cook Chill Process

- a) Cook-chill is a catering system based on normal preparation and cooking of food followed by rapid chilling and storage in controlled conditions at low temperature between 0°C and 3°C.
- b) Distribution from a central production unit can then be temporarily stored and reheated. If it is to be served hot, heat to a temperature above 70°C for service.
- c) The concept of the system is that prolonged storage, up to five days, including the day of production and the final service, can be undertaken without affecting the bacteriological and organoleptical quality of the food.

2.2 Preparation

- a) Precautions must be taken to avoid temperature rise in food above 10°C whilst in preparation.
- b) Division of large quantities of food into smaller units may be necessary. Refrigeration will be necessary if there is any delay between preparation and cooking. This time must be kept to a minimum.

2.3 Cooking

- a) This must take place immediately after preparation in order to prevent any spoilage, deterioration of quality or bacteriological growth.
- b) Food must be cooked to ensure the destruction of pathogenic micro-organisms. This is normally achieved when the centre temperature of the food reaches 70°C. However, certain types of micro organisms can produce spores which are heat resistant and these will not be killed by normal cooking techniques at atmospheric temperature. These sporing organisms may cause food poisoning eg. *Clostridium perfringens*. The growth of these surviving organisms must therefore be controlled by keeping the food chilled.

- c) The cooking process is fundamentally the same as in any conventional kitchen.
- d) Automatic control of bulk cooking operation is essential to avoid over processing which will lead to loss of nutritional value and palatability.

2.4 Portioning

- a) A large variety of containers including individual meals in disposable or reusable containers, as for flight catering, or large dishes may be used.
- b) All food should be portioned and transferred to a blast chiller unit as quickly as possible and within 30 minutes of cooking.
- c) The chilling and portioning of large joints of meat is particularly hazardous and must be undertaken within two and a half hours. It is recommended that the joint size be kept to a maximum of three kilogram's. The use of blast chiller to reduce the temperature quickly is essential.
- d) The food depth in the container should not exceed fifty millimeters.
- e) Following chilling, handling should be kept to a minimum with cold portioning being undertaken in a temperature controlled environment.

2.5 Chilling

- a) The methods of chilling generally available are :
 - i. Mechanical air blast chilling – low temperature air is passed over the food at high velocity.
 - ii. Cryogenic processes
 - Liquid nitrogen chilling – liquid nitrogen is injected into the cabinet. Fans distribute the suocer cold gas produced, resulting in a uniform temperature drop.
 - Carbon dioxide tunnel chilling – designed to deposit a layer of frozen carbon dioxide onto the product producing a uniform temperature drop as the product is conveyed through the system.
- b) The food must achieve a temperature of less than 3°C as soon as possible after cooking and portioning. In any event the maximum time period for chilling is one and a half hours.
- c) The rate of cooling of the food will depend on :
 - i. Container size, shape, weight and construction material
 - ii. Food density and moisture content

- iii. Heat capacity of the food
- iv. Thermal conductivity of the food.
- v. Temperature upon entering the chiller
- vi. Whether the container is lidded or not.

Note :

If the container is lidded, 10% extra time for the cooling of food is required. It is recommended that food containers be lidded to protect against contamination and minimize dehydration.

2.6 Primary Storage of Cook-Chilled Food

- a) The food must be transferred to a refrigerated store and kept at a temperature of 0°C and 3°C.
- b) The product must be marked with the date of production or date of consumption.
- c) The refrigerator must be fitted with a thermometer and chart recording apparatus to ensure consistent food storage conditions. Records must be kept for at least one month. An alarm must also be fitted to warn of extreme temperature fluctuation.
- d) A strict system of stock control must be undertaken and any food with an expired date must be considered unsuitable for consumption and discarded.
- e) The refrigerator must be specifically designed for the purpose, having regard to access for trolleys and adequate capacity for food.
- f) The refrigerator must only be used for storage of the final product as temperature fluctuations will occur if the door is constantly opened for small items of raw materials i.e. milk, butter etc.

2.7 Temperature Monitoring

2.7.1 At the following stages in the production process, food must be probed :-

- a) Immediately after cooking to ensure a core temperature of 70°C is attained.
- b) Immediately after chilling to ensure a core temperature between 0°C and 3°C is attained.
- c) At the end of cold portioning (if required) to ensure a core temperature between 0°C and 3°C is maintained.

- d) At dispatch from chill-store to satellite unit, to ensure a core temperature of between 0°C and 3°C is maintained.
- e) On receipt at end level following distribution from holding store, to ensure core a temperature of between 0°C and 3°C is maintained.
- f) At end level following generation, a temperature of 70°C must be maintained.

2.7.2 Using a Digital Probe

- a) Switch on digital probe and ensure display registers a temperature reading. This will be the room temperature.
- b) After sterilising as per instructions insert digital probe into the CENTRE of the dish.
- c) DO NOT allow the probe to touch the container sides as this will produce an inaccurate food temperature.
- d) Temperature probe each dish to ensure food regenerated, reaches a centre temperature of 70°C.

2.7.3 Cleaning Probes

- a) Food probes to be kept in a clean area.
- b) Daily cleansing of case and probes should be undertaken.
- c) Staffing using probe during regeneration of meals **MUST**
 - i. Clean probe with a sterile wipe before using.
 - ii. Clean probe with a sterile wipe after each individual test.

Note : Spare batteries must be always be available. If any failure is found in temperature probe, please contact catering supervisor or person-in-charge.

2.8 The Life of Cook-Chilled Food

- a) It can last for a maximum of five days, including the date of production and the date of reheating, if the product is stored between 0°C and 3°C.
- b) If the temperature rises to 5°C, the food must be used within 12 hours.
- c) If the temperature rises above 5°C, the food must be discarded.

2.9 Distribution to Satellite Units

There are various options depending on the type and scale of the operation being undertaken

- a) For long distance transportation refrigerated vehicles must be used.
- b) For short duration journeys insulated containers can be used.
- c) For very short distances, insulated containers are adequate.
- d) Whichever method of transport is used the temperature must never rise above 3°C.
- e) Adequate protection from risk of contamination, ensuring that containers are lidded and firmly secured in the vehicle on trolleys or in boxes is essential.
- f) The vehicle trolleys and boxes for the containers must be easily cleaned and facilities must be provided at the production unit for thorough cleaning.
- g) Transfer from production unit to vehicle and from vehicle to and user must be done quickly to avoid temperature rise. Efforts must be made to provide close parking of vehicles to the end user.
- h) All personnel involved in delivery of chilled meals must wear at all times, suitable clean protective clothing and be trained in good food hygiene practices.

2.10 Chilled storage during transition period

- a) The temperature of all food items delivered must be checked upon arrival using a sterile probe thermometer. The temperature readings must be recorded and kept for at least one month.
- b) The food must be transferred into the holding refrigerator immediately upon arrival and kept at between 0°C and 3°C until it is required for use.
- c) The refrigerator must be fitted with a maximum-minimum thermometer and a chart recording thermometer, with a suitable and audible alarm. The thermometer should be checked daily and the temperature recorded should be kept for at least three months. If the food temperature rises within the refrigerator for any reason then the action outlined in the End User Guideline below must be taken.
- d) The holding refrigerator should be used solely for cook-chill products to avoid frequent door opening and subsequent temperature fluctuations.

2.11 Regeneration

- a) For reasons of safety and palatability the food must be reheated immediately on removal from the chiller and consumed immediately thereafter.
- b) Foods not intended for reheating should only be removed 30 minutes prior to service and container lids must remain in place to avoid contamination.
- c) The reheating process must be adequate for the purposes of both safety and palatability and a temperature of 70°C at the centre of the food must be reached. This should be checked with a sterile probe thermometer.
- d) Suitable types of reheating apparatus include, infra red units, microwaves and forced air ovens. Traditional ovens are not suitable as they tend to take longer and dehydrate the food.
- e) It is essential that any meal not consumed during the service be discarded and not reheated or returned to storage or used to make up other dishes.

2.12 Guidelines for End Users of Cook-Chill Foods (Flight Attendant)

- a) On arrival at the establishment, all food temperatures must be checked, using a sterile probe thermometer.
- b) All temperature readings must be recorded and records kept for at least one month.
- c) Sterilised wipes must be used to sanitise the probe thermometer before each reading. Probe thermometer should be regularly calibrated in accordance with the manufacturer's instructions.
- d) Depending on the temperature of the food, appropriate action must be taken.
 - (i) 0°C to 3°C is acceptable – continue with process.
 - (ii) 5°C – to use food within 12 hours. Contact Catering Manager or person-in-charge immediately.
 - (iii) Above 5°C – REJECT DO NOT USE. Contact Catering Manager or person-in-charge immediately.
- e) All personnel must receive specialized training in cook-chill food regeneration.

2.13 The Cold Chain

- a) It is important that from central production to regeneration at the end user, the temperature remains constant between 0°C and 3°C. Potential danger points where temperature is likely to rise are :
- (i) Where insufficient time is given in the blast chiller to achieve the required temperature.
 - (ii) During addition of any extras to food products after blast chilling or additional processes eg the addition of pastry lids to meat products.
 - (iii) If there is any delay between production, blast chilling, batching and transfer to the holding refrigerator.
 - (iv) From breakdown of holding refrigerator.
 - (v) During transfer to the vehicle from loading bays.
 - (vi) From breakdown of the refrigerated vehicle.
 - (vii) From unloading and transportation through streets.
 - (viii) Through not closing the doors of the delivery vehicle whilst a delivery is in progress.
 - (ix) Through breakdown of the holding refrigerator at the end user.
 - (x) Whilst awaiting regeneration.
- b) In any case when the food temperature rises to 5°C the food must be used within twelve hours.
- c) In any case where the food temperature rises above 5°C the food must be discarded.

2.14 Microbiological Codes of Practice

Aim

To ensure that food prepared by the cook-chill method meets acceptable microbiological standards based on recognized criteria, by the routine testing of batches of chilled foods.

2.14.1 Sampling Criteria

- (i) Samples to be tested on the 5th day which includes day of production.
- (ii) Size of sample to be not less than 50 g, in weight.
- (iii) A sample of each item of the meal to be tested which has been subjected to the chilling process. Depending on the receipt of regular satisfactory results on food samples sent, advice will be given by the Microbiologist / Analyst as to the type of food samples that will be required to be sent in future.

2.14.2 Microbiological Guidelines

- (i) *Salmonella* should not be detected in 25 grams.
- (ii) *E.coli* – should not be detected in 25 grams.
- (iii) *Staphylococcus aureus* should not be detected in 25 grams.
- (iv) *Clostridium perfringens* should not be detected in 25 grams.
- (v) Total aerobic colony count to be done after incubation of agar plates for 48 hours.
- (vi) Total aerobic colony count, done after incubation of agar plates for 48 hours at 37°C, to be less than 100,000 per gram.
- (vii) All samples to be sent in laboratory sterile containers supplied by Accredited Laboratories.

2.14.3 Handling Procedures

- (i) Personnel to wash hands before commencing the sampling process. Avoid all possible personal contact with the samples after the chilling process.
- (ii) Use sterile utensils to convey samples to laboratory containers. This practice to be completed as quickly as possible and avoid placing lid with sterile container on any non-sterile surface during the transfer of the food sample.
- (iii) Identify each sample by production day and time taken.
- (iv) Store at 3°C until just before dispatch and transfer to a suitably chilled insulated container for transport to the Accredited Laboratories.

CHAPTER 3

3 GENERAL REQUIREMENT

3.1 Storage of Food

- a) These are the three golden rules of food storage, which are essential for the hygienic operation of food catering. Raw materials and partially prepared or even prepared food are open to the risk of decomposition, infestation and contamination.
 - i. Keep it CLEAN
 - ii. Keep it COOL
 - iii. Keep it COVERED
- b) Remove all the outer packing of goods away from the food preparation area to avoid exposing open foods to risk of contamination.
- c) “First in – First out” (FIFO) or “First Expired – First Out” (FEFO). Stock has to be rotated properly so that the older stock is used first.
- d) All canned and packed food should have expiry date. After opening, the goods should be stored in impervious mobile containers with tight-fitting lids. Record the use-by date sequence
- e) Check labeling on canned meat for storage recommendation. It must be stored according to the instructions on the label.
- f) Canned goods passed their expiry date, and dented must be disposed.
- g) Canned foods, once opened should be utilized or the balance should be kept in containers with lids and under suitable temperature.
- h) Do not over stock the store as this hinders cleaning, and make stock rotation more difficult and can encourage pests.
- i) Store all goods off the ground on shelves. The shelves should be of an impervious material.
- j) After opening, the goods should be stored in impervious mobile containers with tight-fitting lids.
- k) The containers should be cleaned and dried each time they are emptied.
- l) Ensure the storage area is dry, cool, clean, well ventilated and proofed as far as practicable against pests.
- m) Cling film or other plastic wrapping should be removed from vegetables and fruits to reduce mould growth and condensation.

3.2 Storage in chiller / chiller room

3.2.1 Correct Use of chiller/chiller rooms

- a) Never place hot food into a chiller/chiller room or freezer.
- b) Blast chillers must be used when available to cool cooked foods before chilling within ½ hour. (Where cook-chill catering is in operation maximum time 30 minutes).
- c) Chiller/chiller rooms must not be overstocked. Food should not be put in front of cooling elements or tightly packed as cool air must circulate.
- d) Food under chilled condition must be checked DAILY to ensure that the quality is maintained and stock is rotated efficiently.
- e) Food should be covered. Use food grade materials for wrapping or packaging.
- f) Temperatures must be checked DAILY by the Head of Department/ Unit and/or Supervisor.
- g) During use, the doors of the chiller/chiller room must be opened for as short a time as possible.
- h) Where a chiller/chiller room is fitted with an alarm system to indicate a temperature rise or opened door, the alarm must be maintained and acted upon accordingly. On no account should an alarm be disconnected or rendered inoperative.
- i) Defrost and thoroughly clean and maintain chiller/chiller rooms regularly.
- j) The door of chiller/chiller rooms must be completely sealed.
- k) Each chiller/chiller room must be provided with a thermometer and maintained regularly.
- l) Each chiller/chiller room must be labeled with its intended use. Cooked and raw foods must be stored separately.

3.3 Recommended Chiller Temperatures

Except where a manufacturer makes a specific storage temperature recommendation, storage within the following ranges of temperature is recommended. The following are some examples.

PRODUCT	TEMPERATURE RANGE
(a) Raw meat Raw poultry Raw offal Raw sausage meat, sausages Minced cold meats Cooked cold meats Cooked cold poultry Fresh and smoked fish and shellfish	 0°C to 4°C
(b) Coconut milk Milk, cream, yoghurts Soft cheese, mayonnaise Prepared salads, coleslaw Goods with natural or artificial cream / custard Raw pastry / dough, pizzas.	 0°C to 4°C
(Products for a cook-chill system should be maintained below 4°C)	
(c) Fully cooked meat and fish pies Pastry and sausage rolls Cooked and uncooked cured meat and cured sausages Butter, margarine and fat Hard cheese Some salad vegetable and some fruits	 0°C to 4°C

3.4 Thawing of Food

- a) Unlike some frozen products large pieces of meat or large poultry carcasses must be thawed thoroughly before cooking.
- b) Thawing should be performed in one of the following places :
 - i. An area maintained at temperature below 10°C.
 - ii. A microwave oven.
 - iii. A purpose-built thawing cabinet.
 - iv. Running water (refer to procedure for thawing in running water)
- c) The liquid from thawing meat, especially poultry, may contain large numbers of food poisoning bacteria. Therefore great care must be taken when thawing, to prevent the liquid contaminating work surfaces or other food.
- d) The procedure for thawing is as follows :-
 - i. Remove from freezer 24 hours before use into the chiller. Then ensure complete thawing and remove packaging.
 - ii. Keep it separate from other foods, work surfaces or equipment. Never allow the thawing liquid to contaminate any food or work surfaces.
 - iii. Thaw thoroughly until the meat/carcass are flexible and the ice crystals in the body cavity have melted.
 - iv. Once thawed, place into the chiller or use immediately.
 - v. Never refreeze food once it has thawed.

3.5 Food Preparation

3.5.1 Preparation

- a) Keep raw food away from cooked food ready to be served without further heat treatment.
- b) Use separate utensils for raw and for cooked food or, if this is not possible, be sure to clean them thoroughly between each use. In particular, all utensils and services used to prepare raw meat and poultry should be cleaned and disinfected before using with high-risk food.

- c) Thoroughly clean all slicing and mincing machines after each use to avoid cross-contamination. Cooked meat must never be processed on the same machine without dismantling and cleaning it between operations.
- d) Keep all preparation surfaces clean and dry at all times.
- e) Use one surface for one purpose only, whenever possible. For example: food needing no further cooking, such as cooked meats, sandwiches and pastry, should not be prepared on surfaces previously used for raw meat, fish, poultry or vegetables.
- f) In small units with limited work space, it may be necessary to use worktops for more than one purpose. In these cases, the working surfaces will need to be changed.
- g) Ensure that all food wastes are disposed accordingly in food operated dust bin with lids.
- h) Use tongs, when handling prepared and cooked food.
- i) Take particular care when making sandwiches: use suitable equipment for handling meat fillings.
- j) Keep food covered until it is needed – and do not leave it lying around, but in correct storage conditions.
- k) Wrapped food should be fresh and packed in clean surroundings with minimum handling.
- l) Wash all fresh fruits, vegetables, salad item and dried fruit (including pre-washed produce) under running water before use.

3.6 The Avoidance of Cross Contamination

- a) Separate knives should be provided for the preparation of cooked and raw foods.
- b) They must be colour coded or labeled and stored on magnetic knife racks adjacent to the appropriate preparation area.
 - i. Separate slicing machines must be provided for the preparation of raw and cooked meats. They must be located in the raw and cooked meat preparation area respectively and labeled accordingly.
 - ii. Separate areas must be provided for the preparation and thawing of raw and cooked food. Each should be labeled with its intended use. Thawing trays must never be used for any other purposes.
 - iii. Food trolleys for cooked or raw foods should be labeled with their intended use.
 - iv. Different refrigerators should be used for storing cooked or raw foods and must be labeled with their intended use.

- c) If a refrigerator has to be used for both types of food, raw food must be stored entirely segregated from cooked foods.
- d) In a walk-in chiller or freezer one side may be used for raw foods and the other for cooked. The sides must be labeled accordingly with extra instructions on the door. All food must be covered or wrapped.
- e) Small domestic sized refrigerators are too small to ensure separation of cooked and raw foods and therefore should not be used for mixed storage. Raw meat and vegetables must be stored below cooked or high risk foods in this case. All food must be covered or wrapped. Thawing trays must never be used for any other purpose.
 - i. Disposal towels must be used in raw and cooked food preparation areas.
 - ii. Food handlers must wash their hands after handling raw food.
 - iii. Whenever possible food preparation staff should either prepare raw or cooked foods and not both.

3.7 Cooking

3.7.1 Rules for Safe Cooking

- a) Be sure to cook or reheat food to a core temperature above 60°C. Some bacteria are heat-resistant and can withstand temperatures above this. In order to ensure adequate cooking of meat and poultry joints the temperature of 60°C should be achieved at the centre of the joints.
- b) Provide a probe thermometer to make sure that the food has reached the right temperature. Record all temperatures for future reference. And remember to disinfect the probes between uses to prevent contamination.
- c) Hold all cooked foods at temperatures below 10°C or above 60°C to prevent bacterial growth.
- d) Use a clean spoon for testing food and wash it after use. Make sure that fingers are never used.
- e) It is recommended that samples of food (prepared or cooked ready for serving) be kept for the purpose of microbiological analysis in case there is an occurrence of food contamination.

3.7.2 Cooking Meat and Poultry for Hot or Cold Meals

- a) If frozen carcasses or joints of meat are to be cooked they must be thawed thoroughly.
- b) Stuffing must be cooked separately.
- c) Cook thoroughly and ensure that the centre temperature of the joint reaches at least 60°C. Use a probe thermometer to check this. This is especially important with rolled joints.
- d) Once cooked – serve immediately if possible or maintain temperature above 60°C until required.
- e) Provide a probe thermometer to make sure that the food has reached the right temperature. Record all temperatures for future reference. Remember to disinfect the probes between uses to prevent contamination.
- f) Hold all cooked foods at temperatures below 10°C or above 60°C to minimize prevent bacterial growth.
- g) Use a clean spoon for tasting food and wash it after use. Make sure that fingers are never used.
- h) If the meat is required to be served cold, cool rapidly and place under refrigeration. Meat and poultry must be cooled to below 10°C within 1.5 hours of removal from oven and then stored at between 1°C to 4°C. Cooled meat must be used within 72 hours.
- i) To cool efficiently, a blast chiller should be used if available. Place the meat into the blast chiller immediately upon its removal from the oven; once cooled place into the refrigerator.
- j) Never place cooked meat into a raw food area to cool. Care must be taken to ensure that cooling food is protected from risk of contamination.
- k) Meat should never be reheated unless as part of a properly controlled method.
- l) Cooked food should be kept below 5°C throughout its storage life, which must not exceed three days. (These do not apply to cook-chill systems).

3.7.3 Stews, Gravies, etc

- a) When cooking gravies, curries etc, do not heat volumes greater than 25 liter (5.5 gallons) unless using specialized equipment.
- b) Stir frequently to distribute heat. Stir at least every 10 minutes.
- c) Keep lids on pans to retain heat and ensure pans are not exposed to cold air or draughts.
- d) Use wide pans in preference to high pans to ensure that the heat source covers the whole of the base of the pan.

- e) When the cooking process is completed, serve immediately, or maintain above 60°C in a food trolley, etc and serve as soon as possible.
- f) Do not reheat gravies, curries unless as part of a properly controlled process in which case they must be cooled rapidly after cooking and placed into a refrigerator within 1.5 hours.

3.7.4 Holding

a. Hot Holding

Proper holding temperature prevents the growth of harmful microorganisms.

- a) All hot holding facilities or equipment shall be pre-heated for at least 1 hour before use at 80°C and above
- b) All food that have been cooked and are intend to be held hot (not cold) store shall be maintained at 60°C and above.
- c) Take the internal temperature of food before placing it in a hot holding unit and at least 2 hours thereafter.
- d) Never use hot holding facilities to reheat cooked food.
- e) Containers shall not be “topped up” between service periods, but quantities on display shall be kept to a practical minimum. Used containers shall be replaced with fresh, refilled containers.
- f) Keep covers on food containers to retain heat.

b. Cold Holding

- a) Verify that the air/ water temperature of any unit is at 10°C or below before use.
- b) All cold potentially hazardous food shall be 10°C or below before placing the food out for display or service.
- c) The internal temperature of the food before placing it onto any salad bar, display cooler or cold serving line and at least every 2 hours and thereafter.
- d) Corrective action – rapidly chill the food using an appropriate cooling method if the temperature is found to be above 10°C and the last temperature measurement was 10°C or higher and taken the last 2 hours. Discard the food if the duration at which the food temperature had been above 10°C cannot be determined.

CHAPTER 4

4 DESPATCH AND DISTRIBUTION

4.1 Acceptance of Food Deliveries

- a) Deliveries of food items must only be accepted by an authorized member of staff who will check for:
 - i. All vehicles used for chilled foods must be refrigerated between 0°C to 10°C.
 - ii. Temperature (chilled: 0°C to 10°C and frozen goods: minus 18°C and below.)
 - iii. General quality of food in accordance with specifications.
 - iv. Shelf life, if packaged item (e.g. Use by/Expiry date).
 - v. Pest damage and infestation.
 - vi. Delivery vehicle and personnel to meet good hygiene practice requirement.
- b) Platform trolley should be provided
- c) Food containers should not be placed directly on the floor.
- d) Discard all potential physical contamination during acceptance such as rubber band, string, newspaper, etc.
- e) Goods must only be received if the above criteria are fully met; if goods are substandard the person-in-charge must be informed immediately.
- f) Delivered food more than 4°C for chilled food must not be accepted.
- g) Chilled foods must be checked on delivery to ensure that temperature is maintained. Once accepted the goods must be date coded where necessary to enable efficient stock rotation.
- h) Inspect cans regularly to ensure that those which are blown, dented, seam-damaged or rusty are not used. Report to the supplier and Local Health Office (Refer to Ministry of Health Guidelines on Canned Food).
- i) All deliveries of food not required for immediate consumption should be date marked before being placed in storage.
- j) Products must be properly packed to provide adequate protection and prevent cross contamination. Unwrapped product should not be left exposed to risk of contamination at any stage of delivery or storage.
- k) Scales should be thoroughly cleaned between the weighing of different food, particularly raw meat. Weighing scales should be calibrated.

- l) Deliveries of frozen food should be transferred to the freezer as soon as possible.

4.2 Distribution and Service

4.2.1 Dispatching food from the kitchen

All food leaving the kitchen should be checked for quality and temperature by a responsible person.

4.2.2 Transportation of food

- a) All staff who serve and transport food must comply with the Food Hygiene Regulations 2009.
- b) Make sure that all food containers, trolleys and vehicles used for distribution are kept clean and proper facilities provided for their hygienic storage.
- c) Food carried within the hospital should be in clean closed containers. Make sure all vehicles are suitably designed, kept clean and in a good state of repair.
- d) Never carry food in a vehicle used for non food purposes.
- e) Use food distribution trolleys that can maintain hot foods above 60°C and chilled foods below 8°C. Ice cream must be served frozen.
- f) Check chilled and heated food trolleys regularly to make sure they maintain the right temperatures.
- g) Heated and refrigerated distribution trolleys must be checked monthly to ensure that they maintain the recommended temperatures.
- h) Keep food in trolleys for the shortest time possible. Load the trolleys just before transporting them. If heated, they should be pre-heated before loading so that the food is maintained above 60°C. Plug in on arrival at the delivery point and serve as soon as possible.
- i) All cold food items should be transported in insulated or refrigerated containers.
- j) Keep food covered except when being served. Wrap or cover cold-plated meals and provide suitable lids for covering hot-plated meals.

4.3 Serving of Food

- a) Keep to a minimum the amount of time food is held after cooking and before serving.
- b) Pre-heat hot cupboards and service containers to a temperature that will keep food above 60°C. Check the temperature periodically with a probe thermometer (disinfecting after use) and check it is above 60°C at the centre. Stir soups, sauces and vegetables occasionally to make sure there are no cold spots.
- c) Maintain cold foods below 10°C both before and during service. This should include sandwiches as the filling may include a high-risk food such as cold meat, mayonnaise etc.
- d) Ice cream: Store below minus 18°C, serve frozen and never refreeze if unused. Ensure all containers are able to maintain the frozen temperature during transportation – e.g. on a food trolley to a ward. Keep lids on polythene containers. Rinse scoops and other serving utensils under clean running water after each use – and wipe dry with disposable paper towels. After service they must be cleaned and disinfected.
- e) All personnel involved in food handling must wear suitable clean protective clothing

CHAPTER 5

5 WASTE MANAGEMENT AND DISPOSAL

5.1 Refuse

- a) Kitchen refuse containers must be provided with foot- operated lids.
- b) Refuse containers must be emptied regularly and always at the end of the working day.
- c) Refuse containers must be kept clean. Special attention must be given to the lid.
- d) Food service staff must wash their hands immediately after handling refuse or refuse containers.
- e) Plastic bags must be tied when full to prevent insect problems.
- f) A purpose built refuse storage area must be provided with an adequate water supply for washing. The floor must be impervious and well drained.
- g) The refuse store should be made of a material that is easily cleaned.
- h) Refuse containers provided for refuse must always be closed after each use to prevent insect and rodent infestations.
- i) All waste is to be eliminated in a hygienic and environmentally friendly in accordance with current local legislation applicable to that effect and is not to constitute a direct or indirect source of contamination.

5.2 Swill

- a) Where practicable, swill must be disposed off via a suitable waste disposal unit.
- b) Where the above is not possible swill should be placed in separate plastic bags, tied and promptly removed to designated container well away from any food preparation area.
- c) The ultimate policy is to discontinue the practice of storing swill for sale.
- d) Swill must be removed from the kitchen after each meal.
- e) Swill from serving area/outside must not be brought back into the kitchen preparation areas.

5.3 Waste and Effluent Management

5.3.1 Effluent management

Effluent must be discharged in such a manner to exclude contamination from raw materials to finished products and potable water.

- a) All plumbing and effluent disposal lines, sewerage system must be of sufficient capacity to carry peak loads,
- b) All lines must be watertight with adequate traps and vents,
- c) Sump or solids matter traps included in the drainage system must be emptied frequently and at the end of every working day.

5.3.2 Waste management

- a) Waste must be disposed in such a manner to prevent contamination from raw materials to finished products, potable water and should not give rise to any nuisance to the environment.
- b) Suitable provisions must be made for removal and storage of waste. Waste must not be allowed to accumulate in food handling, food storage, and others working areas and the joining environment.
- c) Waste receptacles and waste accumulation area must be kept appropriately clean and disinfected in an orderly manner.

CHAPTER 6

6 WATER, ICE AND STEAM

- a) Only potable water as specified in the Food Regulations 1985 should be used for food processing and for making ice. Only steam produced from potable water should be used for food processing and food contact surfaces.
- b) Sampling of water shall be done on a regular basis. Results of sampling shall be kept for reference.
- c) Water supply shall be from the main supply. Every sink and equipment washing area shall be equipped with hot water supply.
- d) Ice for consumption, processing and contact with food should be properly handled and stored to protect them from contamination.
- e) If storage tank is used, steps shall be taken to ensure no contamination occurs.

CHAPTER 7

7 PERSONNEL MANAGEMENT

7.1 Training

7.1.1 Awareness and Responsibilities

All food service staff shall undergo training by Food Handlers Training institutions recognized by the Ministry of Health, Malaysia. All personnel should be aware of their role and responsibility in protecting food from contamination or deterioration.

Those who handle strong cleaning chemicals or other potential hazardous chemicals should be instructed on safe handling techniques.

- a) The Head of Department/ Unit or person-in-charge must attend a food hygiene course. The most suitable are the Advanced and Intermediate Food Hygiene courses. However, all management staff must attend a basic Food Hygiene Course before attempting a more advanced course.
- b) Supervisors, cooks, catering assistants and all personnel involved in food preparation, storage or serving, including relevant delivery porters, must undergo food hygiene training.
- c) All members of staff involved in cook-chill catering must attend or receive a planned cook-chill training package suitable to their needs.
- d) Catering Management must ensure that training is given within the kitchen to all new staff on:-
 - i. Basic Hygiene Practice.
 - ii. Food preparation systems within their own kitchen in relation to work
 - iii. flow and avoidance of cross contamination.
 - iv. Refrigerator/freezer/thawing and blast chiller usage.
 - v. Use of cook-chill equipment and systems where appropriate.
 - vi. Stock rotation and storage systems.
 - vii. Cleaning and maintenance procedures.
 - viii. Use of dangerous equipment.
 - ix. Chemical handling.

7.2 Personal hygiene

7.2.1 Health Status

- a) All food service staff must be medically examined yearly by a registered medical practitioner and vaccinated (as required by any regulations/by laws
- b) All newly recruited food service staff must signed an agreement to report any infection to the Head of Department/ Unit or person-in-charge.

7.2.2 Conditions which pose a risk to Food Safety

- a) Food service staff suffering from diarrhoea or vomiting, skin rashes, boils, any other skin lesions, discharge from the ear, eye, nose or any other site must report IMMEDIATELY TO THE HEAD OF DEPARTMENT/ UNIT or person-in-charge.
- b) The Head of Department/ Unit will refer the person suffering from any of the above condition to the Medical Officer. If this is not possible the Head of Department/ Unit will send the person to seek medical advice. The person may not return to the Department/ Unit until medical clearance is obtained.
- c) If the person is suffering from food poisoning symptoms, he or she must submit a faecal specimen for analysis. If the sample proves negative for pathogenic organisms, he or she may return to work after the symptoms have disappeared.
- d) If the sample proves positive for pathogenic organisms, the person must not return to work until medical clearance is given. This will be when there is no vomiting for 48 hours once treatment has ceased and bowel habit has returned to normal for 48 hours either spontaneously or following cessation of treatment with anti-diarrheal drugs.
- e) Staff with small cuts must cover these with water proof dressings.
- f) Skin lesions, boils, rashes, cuts and discharge from any site are hazardous and can contaminate food with pathogenic bacteria. Food service staff with diarrhoea or vomiting may also contaminate food with pathogenic organisms. It is vital that the Head of Department/ Unit ensures that the food service staff understands this and their compliance are needed to prevent contamination from occurring.

7.2.3 Food Service Staff Suffering from Infectious Conditions during Non-Working Hours:

- a) Food service staff must report to the Head of Department/ Unit.
 - i. On returning to work after an illness involving diarrhea or vomiting.
 - ii. After returning from a vacation during which an attack of diarrhea or vomiting lasting for 2 days or more was experienced.
 - iii. If any member of his or her household is suffering from diarrhea or vomiting.
- b) If there is any doubt about these circumstances or other diseases, the Head of Department/ Unit should refer the food service staff to the Management.

7.2.4 Personal Cleanliness

The highest standards of personal cleanliness must be maintained at all times by all food service staff. In particular the following standards must be maintained:

a) Cuts and Abrasions

Small cuts or abrasions must be covered with clean, waterproof dressing.

b) Hand Washing

- i. Food service staff must wash their hands using antibacterial soap and nails should be scrubbed under clean running water. Hands should be dried with a disposable paper towel or under hand-dryer.
- ii. Nail varnish must not be worn. Nails must be kept short and scrupulously clean. Hands must be washed:
 - on entering the kitchen and before and after handling food or equipment.
 - before and after handling raw meat, poultry, fish or vegetables;
 - after visiting the toilet;
 - after sneezing and coughing; and

- After each interval of handling refuse, swill, or delivery of food and non food products.

c) Hair

Long hair must be tied up and must be covered completely.

d) Uniform

Food service staffs that are provided with uniform should ensure their uniform is clean, suitable and proper clothing which shall not contribute to any contamination of food. Uniform should be light-colored outer overall or a light- colored apron, head cover and footwear.

e) Protective Clothing

Clean protective clothing must be worn by personnel in all food areas. This includes visitors. Suitable, clean light-coloured outer overall or a light-coloured apron and head cover should be used. Protective clothing must be changed daily and must not be worn in other Departments. Disposable apron is encouraged.

f) Footwear

Wearing of slippers is not allowed. Footwear worn outside should not be used in the food preparation area. Proper footwear should be worn (non-skid, water, oil and heat-resistant).

g) Jewellery

Food service staff must not wear any jewellery such as rings, brooches, watches or bracelets. Jewellery worn related to wedding religious or medical purposes shall be covered and protected against contamination.

h) Perfume and Aftershave

Perfumes and aftershaves may taint food. These should not be used in food areas.

i) Personal Belongings

Personal belongings must not be brought into any food preparation area and must be stored in the lockers provided. Such articles must also not come into contact with any clean protective clothing.

j) Mask/Glove

Disposable face mask and gloves must be used during preparation and serving of (ready-to-eat food).

7.2.5 Personal Behaviour

a) Handling

All food handling where practical and especially for immediate consumption should be undertaken using tongs or utensils and not fingers. Disposable gloves are encouraged.

b) Food Consumption

Food and drink must not be consumed in any food preparation, cooking or distribution area.

c) Personal Food Storage

Staff should not be allowed to store personal food in patients catering facilities. Use of cook-chill facilities for personal storage is strictly prohibited.

d) Removal of Overall/ Head Cover/ Apron/Foot Wear

Overall or head cover or apron, foot wear must be removed before visiting the toilets.

e) Bad Habits

Spitting, licking of fingers, scratching of body, blowing of nose, smoking or chewing of tobacco, betel nut or bubble gum must be avoided. Food service staff must cover his mouth when coughing or sneezing.

f) Sitting etc. on Work Tops

Staff must never sit, walk, stand or lie on work tops of food preparation areas.

g) Smoking

Smoking is strictly forbidden in any kitchen area.

7.3 Visitors

- a) Unauthorized personnel must be discouraged from entering the catering area
- b) Visitors must declare their health status before entering catering area. A notice must be displayed at all entrances into the kitchen instructing visitors to wear protective clothing.
- c) All visitors must wear clean protective coats and head covers and foot wears on entering the catering area.
- d) Clean protective coats and head covers must be provided at every entrance into the catering area. These coats must be checked and sent for laundry after each use.
- e) All visitors must not carry their personal belongings into food preparation
- f) areas (e.g. handbags)

7.4 First Aid Kit

- a) First Aid Kit shall be made available in the kitchen. The first aid kit shall be clearly marked and readily accessible.

CHAPTER 8

8 PRODUCT INFORMATION

8.1 Batch or Lot Identification

Batch or lot identification is essential in product recall and also helps effective stock rotation. Each batch or lot of processed food should be identified by specific coding.

- a) Records of pertinent processing and production details must be kept concerning each batch or lot.
- b) These records must be retained for a period that exceeds the shelf life of the product.
- c) Records of the initial distribution of the batch or lot should also be kept (cross-reference to delivery docket, invoice number etc)

8.2 Product Information

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

CHAPTER 9

9 MAINTENANCE AND CLEANING

9.1 Maintenance

Establishments and equipment should be kept in appropriate condition to:

- (a) Facilitate all sanitation procedures
- (b) Function as intended, particularly at critical steps to avoid hazards.
- (c) Prevent contamination of food e.g.: from metal shards, flaking plaster, debris and chemicals.

9.2 Cleaning

Cleaning should remove food residues and dirt which may be a source of contamination. The necessary cleaning method and material will depend on the nature of the food business. Disinfections may be necessary after cleaning.

9.2.1 Cleaning Procedure and method

Cleaning can be carried out by a single or a combination of several physical methods such as heat, scrubbing, turbulent flow, vacuum cleaning or other methods without the use of water, and chemical methods using alkaline or acidic detergents. Cleaning procedure will involve where appropriate:

- a) Removing cross debris from surfaces.
- b) Applying detergent, solution to loosen soil and bacterial film and hold them in solution or suspension.
- c) Rinsing with water which complies with;
 - i. The water supply shall be sufficient and derived from a safe source for the operation intended. Potable water shall be provided in all areas where required for the processing of food, for the cleaning of equipment and utensils, food packaging materials and for employees sanitary facilities.
 - ii. If non-potable water is used, it shall be clearly identified and shall not connect with, or allowed to back flow into potable water systems to remove loosened soil and residues of detergent.

- d) Dry cleaning or other appropriate methods of removing and collecting residues and debris; and
- (e) Where necessary, disinfections with subsequent rinsing unless the manufacturer's instructions indicate on scientific basis that rinsing is not required.
- (f) All equipment that comes into contact with food should be well maintained, cleaned, and sanitized at appropriate intervals.
- (g) Cleaning solvent and lubricants should be properly applied on equipment/ machineries so as not to contaminate food.

9.2.2 Cleaning Equipment and Materials

- a) Cleaning equipment, chemicals and materials must be stored in a purpose built cleaner's room, or cupboard, within or adjacent to the catering area.
- b) A cleaner's room must be provided with a sluice-sink, mop drying racks and hot and cold water services.
- c) If scrubbing machines and wet vacuum cleaners are used, equipment must also be provided to reach corners, floor/ wall junctions and areas around equipment legs and stands.
- d) Mops should be fitted with detachable heads which are sent to the laundry regularly.
- e) Mops must be washed, wrung out after every use and stored in the mop drying rack with their heads uppermost. Mops must never be stored with their heads soaking in water or disinfectant solutions.
- f) Mop buckets must be emptied, cleaned and inverted to drain after every use.
- g) Water from cleaning must be obtained from direct tap. It must never be obtained from food preparation or equipment washing sinks.
- h) Cleaning equipment must be returned to the cleaner's room or cupboard immediately after use. It must not be stored in kitchen preparation, storage or serving areas.
- i) Cleaning materials can be poisonous and must never be stored in food or equipment stores.
- j) All food surfaces, food and equipment must be covered whenever large scale cleaning takes place. Preparation surfaces must be cleaned after washing the floors using a pressure hose to remove any air-borne contamination.

9.2.3 Wiping/Drying Towels

Cross contamination may occur if food surfaces and non-food surfaces are cleaned with the same towel. To reduce the risk of contamination the following shall apply:

- a) Disposable paper towels should be used for cleaning either food or non-food surfaces.
- b) All washed trays, pots plates and cutlery to be air dried. However, disposable paper towels or cloth may be used where appropriate.
- c) TOWELS MUST ONLY BE USED ONCE ON EACH INDIVIDUAL PREPARATION AREA IRRESPECTIVE OF TYPE AND THEN DISPOSED.
- d) Scrubbing pads may be used on heavily soiled equipment e.g. ovens but must be promptly disposed off when worn.

9.2.4 Mechanical Washing Up (1) Small Static Machine and Automatic Pan Washers

- a) The washing machines require maintenance by a specialized engineer.
- b) The sprays/jets, moveable parts and surfaces should be cleaned DAILY.
- c) Use detergent solution according to the manufacturer's instructions.

9.2.4.1 Method

- a) Articles should be washed as soon as possible after becoming soiled.
- b) Excess food must be removed by scraping into a waste disposal unit or bin and the article is rinsed/ sprayed with cold water. Heavily soiled articles may need to be soaked and washed by hand before placing into the machine.
- c) Articles should be placed carefully into the racks so that they do not overlap, the racks are then placed in the machine and the wash cycle started.
- d) The correct operating temperature of the machine must be checked during the wash and rinse cycles to ensure that the temperature indicated on the machine is being achieved.
- e) At the end of the cycle the racks are removed and the articles allowed to air dry. If necessary, disposable paper towels may be used.

- f) Articles should be visually clean.
- g) Articles should be stacked in a clean protected area when dry. Wet or damp plates should not be stacked.

9.2.5 Mechanical Washing Up (2) Conveyor or Flight Washers

- a) The machine should be correctly assembled and drain valves closed.
- b) Fill tanks and allow time for the washing temperatures to be reached (as indicated on the machine) in the detergent wash tank and the rinse tank.
- c) An adequate supply of detergent and rinse aid should be available.
- d) Used articles should be sorted out and leftover food discarded into the waste disposal unit or bin. Rinse/spray with cold water.
- e) Articles should not overlap in the racks.
- f) The racks should move through the prewash, detergent wash (power rinse) and final rinse before emerging at the other end.
- g) The racks should be checked and the articles allowed to air-dry. Use disposable paper towels if necessary.
- h) Stack or store articles in a clean protected area when dry. Do not stack wet plates.
- i) Check the level of detergent and rinse aid regularly.
- j) Empty and clean sieves and strainers after every major use – usually four times a day.

9.2.6 Washing Up By Hand-The Three Sink Method

- a) Three deep stainless steel sinks are required, the third sink containing a covered heating element.
- b) The first sink contains warm water for soaking; the second sink contains hot water between 50°C to 60°C and a measured amount of detergent. The third sink contains water at or above 82 °C.
- c) The operator will require gloves for washing up in the second sink and a rack or basket for handling articles in the sterilizing sink (third sink).
- d) The water in all sinks must be changed frequently.

9.2.6.1 Method

- i. Discard all leftover food into the waste disposal unit and rinse the article in cold water using a spray.
- ii. Place into the first sink for soaking. In the second sink, scrub or wipe until all dirt and grease are removed.

- iii. Place “clean” articles into the third sink to rinse and leave for two minutes or more to disinfect. Use a basket or rack to place articles into this sink.
- iv. Lift out the basket and place on a clean surface. The articles must air dry. Only use disposable paper towels if wiping is required. Never use linen tea towels.
- v. Stack or store articles in a clean protected area when dry. Do not stack wet or damp plates.
- vi. The temperature of the water in both sinks must be checked regularly.
- vii. Wash down and dry the sinks and drainers after use.

9.2.7 Cleaning a Slicing Machine

- a) No person under 18 years should clean a slicing machine.
- b) Only trained personnel may be allowed to clean a meat slicing machine.
- c) Slicing machines should be cleaned after each separate use. (Raw food must only be sliced using the raw food slicer and cooked food must only be sliced using the cooked food slicer).

9.2.7.1 Method

- i. Switch off the power and remove the plug.
- ii. Set the slice control to zero.
- iii. Dismantle the machine taking great care in handling the blade. The blade guard should be fitted before a movable blade is removed.
- iv. Wash and disinfect all removable parts either in a mechanical washer or by the three sink method.
- v. The rest of the machine must be thoroughly cleaned using hot water, detergent and a disposable towel.
- vi. Rinse with hot clean water.
- vii. Apply a suitable disinfectant, leave for as long as directed and rinse.
- viii. Reassemble with clean hands.
- ix. Reconnect power and test run to ensure that the machine is working safely. If not, disconnect the machine and make adjustments. Re-test.
- x. Switch off and unplug and cover with grease proof paper.

9.2.8 Cleaning a Work Surface

- a) Disposable cloths/ paper towels should be used to clean work surfaces.
- b) Remove all loose debris and waste from the work surface with detergent and hot water to remove all grease and stubborn particles.
- c) Rinse with clean hot water.

9.3 Cleaning Programme

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

Cleaning and cleaning programme should be continually and effectively monitored for their suitability and effectiveness and shall be documented. Where written cleaning programmes are used, they should specify:

- a) areas, items of equipment and utensils to be cleaned;
- b) responsibilities for particular task
- c) methods and frequency of cleaning
- d) monitoring arrangements.

Where appropriate, programmes should be drawn up in consultation with relevant specialists, experts and advisors.

9.4 Pest Control

9.4.1 General

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

Pests must be eradicated immediately as soon as they are detected. The presence of insects and rodents must never be accepted as a normal conditions in food area.

9.4.2 Proofing

- a) All food stores must be rodent-proofed with metal plates.
- b) All windows in food preparation and storage areas must be fitted with cleansable fly screens. The fly screens must be taken down and cleaned regularly.
- c) External doors leading into the kitchen areas must be kept closed or fitted with heavy duty plastic strips to prevent insects or birds coming in.
- d) Gaps around service pipes leading into the kitchen must be sealed to prevent pests.
- e) Manhole covers, gulley grates, rodding eyes, etc must be kept in good repair.
- f) The tops of drain ventilation pipes must be fitted with wire balloons to prevent pests.
- g) Ultra violet fly controller must be provided throughout the kitchen preparation, serving and storage areas and not placed directly above food preparation areas. They must be maintained regularly and the trays emptied frequently.
- h) The Head of Department/ Unit or person-in-charge must check the structure of the building periodically and ensure that defects in the pest proofed areas are remedied immediately.
- i) Any food suspected to be contaminated by insects or rodents must be discarded. Food equipment taken from long term storage must be checked and thoroughly cleaned before use.
- j) Signs to look for: Rodents
 - i. Gnaw marks on packaging, food containers, stored equipment and building fabric.
 - ii. Droppings.
 - iii. Smear marks from the grease in the animals. coat left on the building fabric along runs.
 - iv. Runs in adjacent undergrowth.
 - v. Holes and nesting sites.
 - vi. Foot prints, tail marks in dust.
 - vii. Damage to the food itself.
 - viii. The animals themselves.
 - ix. Offensive odours may indicate an infestation. (Ultra violet light is recommended to detect rodent urine).

9.4.3 Signs to look for: Insects

Insects – including Silverfish, Flies, Cockroaches, Ants, Moths, Weevils, Beetles, Wasps, Mites, Psocids (Booklice)

- a) Webbing on food packaging, in the food itself, on storage shelves or equipment.
- b) The adult insect, pupae or larvae – dead or alive.
- c) Small tunnels or hotels in some food or packaging
- d) Moulded skins, faecal pellets, eggs or egg pouches (Cockroaches).
- e) Offensive odours.
- f) Insect frass – these are small pieces of food debris produced by insect or larvae
- g) and are usually composed of chewed food particles.

9.4.4 Pest Control

- a) All dry goods should be checked at the time of delivery for pest infestation or damage before being placed into the storage area.
- b) All equipment being brought from storage, or new equipment, must be checked for pest infestation.
- c) Keep open dried foods in pest proof containers with close fitting lids. Ensure that the lids are replaced after use and especially overnight.
- d) Ensure that all stored goods are kept at least 20cm off the ground and 15cm clear of walls with adequate space between stock to enable regular inspection and cleaning.
- e) Clear up all spillages immediately to prevent food debris from accumulating.
- f) Never keep unused equipment, empty boxes, bottles and cans in the premise. Waste containers within the kitchen area must have close fitting lids. Refuse receptacles outside the kitchen must be on hard standing surfaces, away from vegetation and be fitted with close fitting pest proof lids.
- g) Any signs of pests or sittings of pests must be reported to the supervisor of the shift and recorded in the kitchen pest control book.
- h) The supervisor will then ensure that the officer-in-charge or The Head of Department/ Unit is informed and the pest control specialists called in if necessary.
- i) Ensure cleaning schedules are adequate and properly carried out. This should prevent the formation of residual deposits behind and beneath equipment. Clean conditions discourage pests.

- j) Remove refuse and food waste from the kitchen as quickly as possible. Never leave waste overnight in the kitchen or adjacent rooms as it may attract pests and become a breeding place.
- k) Discourage food service staff from feeding birds and stray animals particularly cats.
- l) Report any defect in the building fabric that could be conducive to infestation – and see that they are repaired.
- m) Check inspection traps regularly and notify supervisor or officer-in-charge of any build up of pests.

9.4.5 Pest Control Programme

- a) These are normally undertaken by either a support service company or by the management.
- b) The Head of Department/ Units or officer-in-charge should be aware of the contract terms and specifications and maintain liaison with the pest control coordinator within the unit.
- c) Successful pest control demands specialist knowledge of pests and pesticides. With the exception of approved aerosol insecticides, pesticides shall not be used by untrained personnel.

10 APPENDIX

10.1 Critical Control Points

10.1.1 CCP 1 Control at Food Receiving

10.1.2 CCP 2 Control of Cold Storage Temperature

10.1.3 CCP 3 Control of Food Cooking

10.1.4 CCP 4 Control of Food Chilling

CRITICAL CONTROL POINTS

CCP 1 Control at Food Receiving	
Standard	
The company must have a food temperature control system for safe receipt of potentially hazardous foods.	
Purpose	To verify safe food temperature control during transport from the supplier
Scope	Deliveries of refrigerated and frozen potentially hazardous food.
Guidelines	
Critical Limit	Refrigerated foods shall be delivered at a maximum of 8°C Frozen foods shall be hard frozen and without signs of previous thawing at time of delivery.
Monitoring	Food temperature to be monitored and recorded for each delivery of refrigerated potentially hazardous food. Note: Each delivery of refrigerated and frozen food must be controlled, but not necessarily each food of a given delivery
Corrective Action	Reject deliveries where temperatures do not meet the critical limit
Audit	Verify control and control documentation on possible deliveries taking place at the time of the audit. Select at random in refrigerators and freezers foods having been delivered and verify control of corresponding deliveries.

CCP 2 Control of Cold Storage Temperature	
Standard	
The company must have a food temperature control system for safe receipt of potentially hazardous foods.	
Purpose	To prevent growth of pathogenic micro-organisms to harmful levels during storage.
Scope	Refrigerators for food storage.
Guidelines	
Critical Limit	Critical limit product: 4°C.
Monitoring	Refrigerator gauges monitored and recorded at a frequency considered effective.
Corrective Action	Where refrigeration temperature rises above 8 °C check temperature of a representative sample of food items Where food temperature rises above 4 °C evaluate the appropriate corrective action to be taken and document it accordingly- allowance must be made for food which has been returned following recent handling at higher temperatures.
Audit	Check temperatures of randomly selected refrigerators. Check gauge temperatures during tour of unit. If significant deviations are noticed, verify over next 1-2 hours that corrective action is initiated. Where Electronic surveillance systems exist: Verify that a procedure/schedule for monitoring screen or print-outs is in place and / or that an alarm system is active. Verify completion of documentation for randomly selected refrigerators.

CCP 3 Control of Food Cooking	
Standard	
The company must have a food temperature control system for safe cooking of high risk foods	
Purpose	To ensure destruction/reduction to safe levels of pathogenic bacteria, viruses and parasites.
Scope	High-risk raw foods.
Guidelines	
Critical Limit	Minimum required core temperatures: Poultry, Meats ¹ 74°C Fish, Shell fish, Crustaceans 65°C Fish, shell fish, comminuted ² 70°C Un-pasteurized Eggs 74°C Un-pasteurized Dairy 72°C
Monitoring	Check and record food core temperature of each batch upon completion of cooking or surface color change where food has been seared.
Corrective Action	If critical limit is not met, continue cooking until limit is met.
Audit	Select at random some foods being cooked and verify compliance by end core temperature monitoring. Select at random some foods and verify control documentation.
Note: parasite destruction	Parasites are destroyed in meat and fish by recommended temperatures above. In the exceptional case that the customer wishes to serve raw fish, the alternative process to destroy possible parasites is by freezing according to the following standards: Minus 20°C for 7 days Minus 35°C until solid and stored at minus 20°C/ minus 4°F for 24 hours

¹include beef, lamb and other meats, which are not whole-muscle or comminuted.

² include ground, minced, re-formed, tumbled meats.

CCP 4 Control of Food Chilling	
Standard	
The company must have a control system for safe chilling of high risk foods after cooking	
Purpose	To prevent growth of vegetative pathogenic organisms during post-cook chilling process
Scope	Potentially Hazardous Foods, cooked in-house.
Guidelines	
Critical Limit	60°C to 10 °C within 4 hours Or 57°C to 21°C within 2 hours and from 21°C to 5°C in a further 4 hours.
Monitoring	Check and record time and food core temperature at the thickest part of the product at start and finish of process.
Corrective Action	Dispose of product.
Audit	Select at random some foods (preferably dense) being chilled and verify compliance. Select at random some foods in refrigerator having been cook/chilled within the past 24 hours and verify control documentation.

11 REFERENCES

1. Food Act 1983 & Food Regulations 1985, Malaysia.
2. Food Hygiene Regulation, 2009, Ministry Of Health.
3. Guidelines Mass Catering, 2001, Ministry Of Health.
4. Guidelines for Cook-Chill Catering, 1996, Ministry Of Health.
5. Guidelines for Hospital Catering, 2010, Ministry Of Health.
6. World Food Safety Guidelines for Airline Catering, 2010, International Flight Services Association.
7. World Health Organization(2009). Guide to hygiene and sanitation in aviation, 3rd ed. Geneva, World Health Organization (http://www.who.int/water_sanitation_health/hygiene/ships/guide_hygiene_sanitation_aviation_3_edition.pdf)

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