

Stage 1 Planning

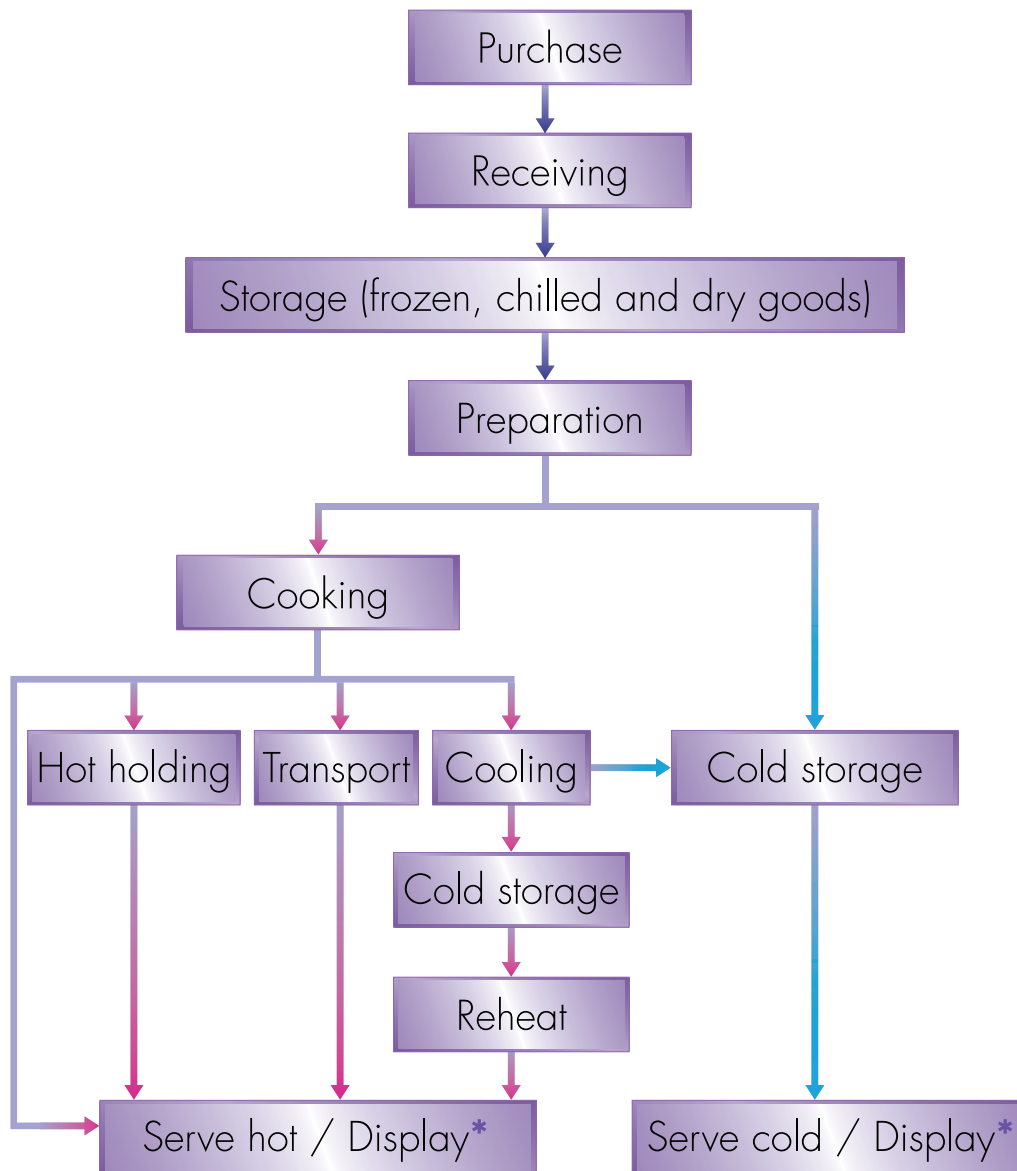
Preliminary planning and preparation will be essential before developing your FSP. A coordinator for developing an FSP should be appointed and adequate authorities and resources should also be provided. The coordinator must have basic knowledge of food safety and must be familiar with the properties of food as well as its processing procedures.

Staff should be made aware of the changes and benefits that will result from the introduction of the FSP. The FSP will only work if each staff member knows their role in the plan, and is committed to making it work. To reduce the anxiety of staff, the FSP should be introduced in phases over a period of time. For example, the FSP could be introduced initially for just the first step of the catering operation (i.e. purchase of raw materials), making sure that the first step is working properly before moving onto the next step.



Stage 2 Draw a flow diagram

A flow diagram should be drawn showing each step in the operation, from purchase of raw materials to serving food to consumers. The flow diagram shown here is a generic example for a catering operation which should be tailored to each individual operation. Each of the steps of the operation can be considered a control point to prevent food safety problems.



* Note: "Display" is applicable to businesses providing buffets.

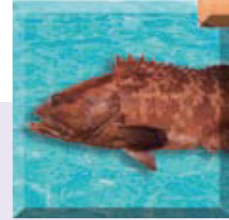
Stage 3 Develop a Food Safety Plan

Step 1 List hazards

A hazard is anything that may cause a food to be unsafe for human consumption (Appendix 2). Use your flow diagram to identify all the hazards (food safety problems) associated with each step.

Examples of problems:

- I. Raw materials contain harmful micro-organisms (e.g. raw oysters contaminated with Norovirus and raw eggs contaminated with *Salmonella*)
- II. Harmful micro-organisms grow and produce toxin during processing
- III. Harmful micro-organisms or toxins survive after heating
- IV. Food contains harmful chemicals (e.g. ciguatoxin in coral reef fish)
- V. Food contains extraneous physical objects (e.g. metal, glass fragments)



Of these, harmful micro-organisms as well as toxins produced by them are likely to be the most important problems that cause foodborne illnesses.

Step 2 Identify preventive measures and their control limits

List the measures and control limits that can be used to address the identified problems (i.e. those identified at step 1) at each step of the catering operation. A control limit is a value or measurement (such as temperature or acidity) that must be met to ensure safety of the product.

Examples of preventive measures and their control limits are:

Preventive measures	Control limits
I. Using reputable suppliers	Products bought from approved/licensed and reputable suppliers
II. Adequate freezing or chilling	Frozen/chilled foods should be stored at $-18^{\circ}\text{C}/4^{\circ}\text{C}$ or below
III. Using proper ways to thaw frozen foods	Frozen foods should be thawed under/in <ul style="list-style-type: none"> ➤ refrigeration at 4°C or below ➤ cool running water in waterproof package ➤ a microwave oven
IV. Cooking thoroughly	During cooking the core food temperature should reach 75°C or above for at least 30 seconds
V. Proper cooling	Cooked foods should be cooled from 60°C to 20°C in two hours and then to 4°C or below in the next four hours

Step 3 Establish monitoring procedures

The monitoring of control limits will ensure that any loss of control (i.e. deviation from control limits) can be identified so that corrective actions can be taken before the product becomes unsafe. The methods used should be kept as simple as possible.

Examples of monitoring procedures include:

- I. Cooking temperature and time measurements
- II. Visual observation of “use by” date and stock rotation
- III. Visual observation of cleanliness of equipment and work surface
- IV. Visual inspection of incoming food ingredients

Simple and clear work instructions for the control and monitoring procedures should be developed for staff to refer to:



- I. What is to be checked? (e.g. the cooking temperature)
- II. How is it checked? (e.g. use thermometer to measure temperature)
- III. When is it checked? (e.g. measure once every half hour)
- IV. Who does the check? (e.g. chef assistants)

Step 4 Establish corrective actions

If monitoring procedures reveal loss of control, corrective actions must be taken immediately.

Examples of corrective actions:

- I. Reheat the food until its core temperature reaches 75°C or above for at least 30 seconds if the cooking temperature is inadequate.
- II. Adjust or repair the chiller if its temperature is higher than 4°C.
- III. Clean the equipment again if it is dirty.

Step 5 Keep records

Maintenance of monitoring records (e.g. temperature records of the freezer) helps evaluate whether preventive measures are adequate and efficient. You can make reference to the record sheets shown in *Appendices 3 to 17* and choose the ones that are suitable for you to record the monitoring results.



Step 6 Check and review

In order to ensure that your FSP works properly, you should perform a systematic check periodically (e.g. once a week). An example of an FSP checklist is provided in *Appendix 18* to assist you to develop your own inspection checklist. The checklist may help you determine areas in your operation requiring attention and improvement. In addition, you should also review your FSP at least once a year because your operation or products may change.

Chapter 3 How to implement a Food Safety Plan?

Examples of application of Food Safety Plan

Following are examples of possible problems and their controls for each step in the food service operation:

Step: Purchase

Hazards	Control Limits	Monitoring Procedures*				Corrective Actions	Records
		What	How	When	Who		
Raw materials contaminated with ➤ Food poisoning bacteria ➤ Toxins ➤ Chemicals such as pesticides ➤ Glass, metal, etc.	Raw materials obtained from approved/licensed and reputable suppliers	Evidence showing that suppliers follow good manufacturing practices	Inspect suppliers' premises and check their monitoring records	Once a year and before renewing contracts with suppliers	Purchasing manager	Avoid unqualified suppliers	Record of approved and unqualified suppliers (<i>Appendices 5 and 6</i>)
		Suppliers' records on customer complaints	Check records	Before renewing contracts with suppliers	Purchasing manager	Avoid unqualified suppliers	
	Establish products' safety and quality specifications with suppliers (including delivery temperature of perishable foods)	Requirements mentioned in product specification	Check product specification	Before purchasing	Purchasing manager	Avoid ordering substandard foods	Purchasing record form (<i>Appendix 7</i>) and product specification

* Monitoring procedures (e.g. frequency of monitoring) should be tailor-made to suit your own operation.

Chapter 3 How to implement a Food Safety Plan?

Step: Receiving

Raw materials or ingredients must be checked against the specifications on deliveries. Depending upon the degree of risk they present, some food or raw ingredients will need to be checked more frequently.

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Damaged packaging and contamination with foreign matter (including food poisoning bacteria)	Packaging is intact and has no visible foreign matter	Integrity of packaging and signs of contamination	Visual checking	Receiving raw materials	Receiver	Reject raw materials and inform suppliers	Records of incoming food and supplies (Appendices 8, 9 and 10)
	Delivery vehicles are clean and hygienic and are not used for the transport of chemicals	Hygienic condition of vehicles and evidence of the vehicle being used to transport chemicals	Visual checking	Receiving raw materials	Receiver	Reject raw materials and inform suppliers	
Presence and growth of food poisoning bacteria during delivery	No sign of deterioration of raw materials (e.g. appearance and odour, etc.)	General conditions of raw materials	Check the appearance of raw materials (i.e. colour, smell, texture, etc.)	Receiving raw materials	Receiver	Reject raw materials and inform suppliers	
	Not exceeding the expiry date of raw materials ("use by" or "best before" date)	Expiry date of raw materials	Check the labels	Receiving raw materials	Receiver	Reject raw materials and inform suppliers	
	Temperature of raw materials on arrival: 4°C or below (chilled foods) / entirely frozen (frozen foods)	Temperature of raw materials / Appearance of food	Use thermometer and check the appearance of food	Receiving raw materials	Receiver	Reject raw materials and inform suppliers	
	Store chilled / frozen foods at 4°C/−18°C or below immediately after receiving (e.g. within 10 minutes)	Procedures for receiving and storing food	Visual checking	Receiving raw materials	Store keeper	<ul style="list-style-type: none"> Review the procedures for receiving food to ensure that food should be stored within specified time Discard chilled/frozen foods if placing at ambient temperature for too long (e.g. chilled foods have been placed at ambient temperature for more than four hours) 	

Chapter 3 How to implement a Food Safety Plan?

Step: Dry storage

Dry storage includes the storage of some kinds of fruits and vegetables, dried foods (e.g. cereals and seasonings) and canned or bottled foods.

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Cross-contamination	Group and store food according to their properties and store food in appropriate containers	Storage conditions	Visual checking	Storing / taking food ingredients	Store keeper	<ul style="list-style-type: none"> • Store food in appropriate containers and reorganise layout to separate different food types • Discard contaminated food 	
	Packaging is intact and has no visible foreign matter	General condition of food	Visual checking	Storing / taking food ingredients	Store keeper	<ul style="list-style-type: none"> • Re-wrap the food • Discard contaminated food 	
	Keep storage area dry and clean	Hygienic condition of storage area	Visual checking	Before off-duty	Assistant manager	Clean the storage area immediately	
		Cleaning records	Check records	Before off-duty	Assistant manager	Remind staff to clean storage area according to the schedule	Cleaning records (<i>Appendix 13</i>)
	Storage area is not infested with pests	Signs of pests	Visual checking	Weekly	Assistant manager	Use proper methods (e.g. rodent traps) to capture and kill pests where there are signs of pests or employ a pest control company	Pest control monitoring and inspection records (<i>Appendices 14 and 15</i>)
Growth of food poisoning bacteria	Use first-in-first-out (FIFO) rotation (Use date codes or marks to show the time sequence of food storage)	Date codes / marks (e.g. expiry date / receiving date)	Check date codes / marks	Daily	Store keeper	Discard food if its expiry date is passed or it has no date codes / marks	Stock records

Chapter 3 How to implement a Food Safety Plan?

Step: Refrigerated storage

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Cross-contamination (e.g. cooked food contaminated by raw food)	Cover/wrap all food and store cooked and raw foods separately	Storage condition	Visual checking	Storing / taking food ingredients	Store keeper	<ul style="list-style-type: none"> Cover/wrap the food Reorganise layout to separate different food types (e.g. store cooked and raw foods separately) 	
	Keep storage area clean	Hygienic condition of storage area	Visual checking	Storing / taking food ingredients	Store keeper	Clean the storage area immediately	
Growth of food poisoning bacteria and formation of toxins	Storage temperature at 4°C or below	Temperature of the chiller	Use thermometer	Three times a day (in the morning, at noon and before off-duty)	Store keeper	<ul style="list-style-type: none"> Adjust temperature or repair chiller where appropriate Discard affected food 	Temperature record sheet for chiller (<i>Appendix 9</i>)
	Storage area with good air circulation	Storage condition	Visual checking	Storing / taking food ingredients	Chef assistant	Reorganise layout	
	Use first-in-first-out (FIFO) rotation (Use date codes or marks to show the time sequence of food storage)	Date codes / marks (e.g. expiry date / receiving date)	Check date codes / marks	Daily	Chef assistant	Discard food if its expiry date is passed or it has no date codes / marks	Stock records

Step: Frozen storage

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Growth of food poisoning bacteria	Temperature of freezer at -18°C or below	Temperature of freezer	Use thermometer	Three times a day (in the morning, at noon and before off-duty)	Store keeper	Adjust temperature or repair freezer where appropriate	Temperature record sheet for freezer (<i>Appendix 11</i>)
	Storage area with good air circulation	Storage condition	Visual checking	Storing / taking food ingredients	Store keeper	Reorganise layout	

Chapter 3 How to implement a Food Safety Plan?

Step: Preparation

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Cross-contamination	Use appropriate methods (e.g. colour code) to distinguish the utensils and cutting boards for handling ready-to-eat foods from raw foods	Utensils and cutting boards	Visual checking	During working	Chef assistant	<ul style="list-style-type: none"> • Clean the utensils and put them back to the appropriate location • Retrain the staff 	Corrective action record sheet (if taken) (Appendix 12)
	Ready-to-eat fruits and vegetables are clean and hygienic	Procedures of washing fruits and vegetables	Visual checking	During working	Chef assistant	Discard contaminated ready-to-eat fruits and vegetables	
Growth of food poisoning bacteria and formation of toxin	Frozen foods to be thawed under/in <ul style="list-style-type: none"> ➤ refrigeration at 4°C or below ➤ cool running water in waterproof package ➤ a microwave oven 	Methods of thawing (e.g. thawing temperature, food is packed in waterproof package, water is cool and running while thawing)	Visual checking	During working	Chef	<ul style="list-style-type: none"> • Adjust the thawing temperature to 4°C or below • Discard contaminated food • Retrain the staff 	
	Frozen foods are adequately thawed (no hardening with ice) before cooking	Condition of the thawed foods	Touching and visual checking	Before cooking	Chef assistant	Thaw the food under suitable condition further	
	Maximum time for holding thawed foods and cold perishable foods at above 4°C is 4 hours	Length of time holding perishable foods at above 4°C in food preparation area	Visual checking	During working	Chef assistant	<ul style="list-style-type: none"> • Control the processing procedures so as to shorten the time in which perishable food is held above 4°C • Discard perishable foods that have been held above 4°C for more than four hours 	

Chapter 3 How to implement a Food Safety Plan?

Step: Cooking

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Survival of food poisoning bacteria and bacteria spores	Core food temperature reaches 75°C or above for at least 30 seconds	Core food temperature	Use thermometer	Each batch	Chef	Continue cooking food to required temperature and time	Temperature record sheet
	<ul style="list-style-type: none"> ➤ Minced meat is brown inside ➤ Poultry juices run clear ➤ Fish flakes with a fork 	Condition of food during and after cooking	Visual checking	Each batch	Chef	Continue cooking food until thoroughly cooked	

Step: Cooling

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Cross-contamination	Food is protected from contamination during cooling	Cooling environment (whether there is any source of contamination)	Visual checking	During working	Chef assistant	<ul style="list-style-type: none"> • Eliminate the possible sources of contamination • Discard contaminated food 	
	Containers are clean and hygienic	Cleanliness of containers	Visual checking	Before use	Chef assistant	Clean and sanitise the containers	
Growth of food poisoning bacteria and formation of toxin	Containers less than five cm/ two inches high	Height of containers	Visual checking	Before use	Chef assistant	Use shallow containers	
	Cool to 4°C or below in six hours (Cool from 60°C to 20°C in 2 hours and then to 4°C or below in the next 4 hours)	Cooling time and temperature of foods	Use timer and thermometer	Every hour	Chef assistant	<ul style="list-style-type: none"> • Cool food by – <ul style="list-style-type: none"> ➤ dividing into small portions ➤ placing containers in ice water bath ➤ stirring frequently • Discard product if temperature is still above 4°C after six hours of cooling 	Temperature record sheet

Chapter 3 How to implement a Food Safety Plan?

Step: Reheating

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Survival of food poisoning bacteria	Heat food to a core temperature 75°C or above for at least 30 seconds	Core food temperature	Use thermometer	Each batch	Chef	Continue reheating food to required temperature and time	Temperature record sheet

Step: Hot holding

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Cross-contamination	Cover / wrap all food	Storage condition	Visual checking	During working	Chef assistant	<ul style="list-style-type: none"> Cover / wrap the food Discard contaminated food 	
Growth of food poisoning bacteria and formation of toxin	Keep food above 60°C	Temperature of food in holding containers	Use thermometer	Every two hours	Chef assistant	<ul style="list-style-type: none"> Adjust hot holding apparatus to keep food above 60°C Discard food if it is held at 60°C or below for more than four hours 	Temperature record sheet (<i>Appendix 11</i>)

Chapter 3 How to implement a Food Safety Plan?

Step: Display (applicable to businesses providing buffets)

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Cross-contamination	Display ready-to-eat foods* separately from non ready-to-eat foods (e.g. uncooked meat)	Condition during display	Visual checking	During display	Attendants#	Discard contaminated food and review the display layout	
	Use different sets of utensils to handle ready-to-eat foods* and non ready-to-eat foods	Utensils for handling food	Visual checking	During display	Attendants	Discard contaminated food and clean the contaminated utensils	
	Avoid topping up a displayed batch of foods with a fresh one	Handling of food	Visual checking	During buffet operation hours	Chef	Retrain the staff	
	Displayed leftovers are not kept for further use	Handling of leftovers	Visual checking	During and after display	Chef	Discard all leftovers	
Growth of food poisoning bacteria and formation of toxin	Keep food above 60°C	Temperature of food	Use thermometer	Every hour	Attendants	<ul style="list-style-type: none"> Adjust hot holding apparatus to keep food above 60°C Discard food if it is held at 60°C or below for more than 4 hours and review display procedures 	Temperature record sheet (Appendix 11)
	Keep cold foods (e.g. raw oysters, sashimi and salad) at 4°C or below	Condition during display	Visual checking	During display	Attendants	Discard food if it is held above 4°C for more than 4 hours and review display procedures	Temperature record sheet for chiller (Appendix 11)
		Temperature of chillers	Use thermometer	Every two hours	Attendants	Adjust storage temperature or repair the chiller where appropriate	
Keep displaying food in small portions	Condition during display	Visual checking	During display	Manager	Review the quantity of food for display to shorten display time and retrain the relevant staff to explain the procedures of display		

* Sashimi and raw oysters are classified as ready-to-eat foods.

Attendants should be present at buffet tables to monitor the hygienic condition of displayed food.

Chapter 3 How to implement a Food Safety Plan?

Step: Transport

Hazards	Control Limits	Monitoring Procedures				Corrective Actions	Records
		What	How	When	Who		
Cross-contamination	Delivery persons have good personal hygiene practices	Personal hygiene practices of staff	Visual checking	During delivery	Supervisor	Retrain delivery persons	
	Delivery vehicles are clean and hygienic and are not used for the transport of chemicals	Hygienic condition of vehicles and evidence of the vehicles being used to transport chemicals	Visual checking	During delivery	Supervisor	<ul style="list-style-type: none"> • Clean the delivery vehicle immediately or use an appropriate vehicle • Discard contaminated food where necessary 	Vehicle inspection sheet
Growth of food poisoning bacteria and formation of toxin	Keep hot foods above 60°C and cold foods at 4°C or below	Temperature of foods	Use thermometer	During delivery	Delivery person	<ul style="list-style-type: none"> • Adjust delivery system so that it can achieve acceptable temperatures • Discard food if hot food is kept at a temperature at 60°C or below for more than 4 hours • Discard food if cold food is kept at a temperature above 4°C for more than 4 hours 	Temperature record sheet (Appendix 11)