TOPIC 2

FOOD SAFETY

Upon completion this chapter, student should be able to :

- explain the Farm to Table concept
- explain basic elements of safe food production
- describe food safety program

“Farm to Table”

The Farm-to-Table concept, also known as Farm-to-Fork or Farm-to-Plate, is a food production and distribution approach that emphasizes the direct sourcing of fresh, locally produced food from farmers and producers to consumers.

The goal of this concept is to reduce the distance and intermediaries between the point of food production and its consumption, promoting a more sustainable food system.

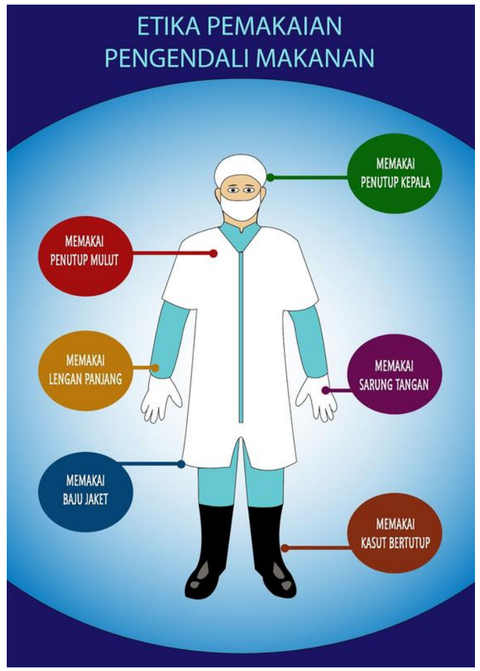
Elements of safe production

Safe food production involves a combination of practices, procedures, and standards to ensure that the food produced is free from contaminants and safe for consumption.

- Personnel
- Premise
- Raw materials, ingredients and additives
- Tools, utensils and equipment
- Cleaning and sanitation
- Traceability

Personnel

- **Training and enforcing strict personal hygiene practices among food handlers.**
- **Regular handwashing, proper use of protective clothing (such as gloves and hairnets), and avoiding work when individuals are sick to prevent the spread of diseases.**
- **Educate employees the proper handling PPE during production**



PERSONAL HYGIENE STANDARDS FOR FOOD HANDLERS :

◕keep hands and fingernails clean, and ensure any sores or cuts are disinfected, cleaned and covered with a waterproof dressing and/or wear surgical gloves when handling food.
◕clean, well fitting shoes should be maintained and used for work only
◕wash your hands thoroughly with soap and hot water,and dry your hands with a paper towel or air dryer
◕do not smoke where food is stored, prepared or served (workplaces usually have a designated smoking area outside the building).
◕avoid wearing jewellery or watches during production

Premises

- A safe food premise involves considering various elements that address hygiene, sanitation, workflow efficiency, and compliance with health and safety regulations.
- Premises where food is processed, manufactured, or handled plays a crucial role in ensuring food safety, quality, and compliance with regulatory standards for GMP and HACCP.

- Location that facilitates must be efficient for transportation and minimizes the time between receiving raw materials and distributing finished products.

- Design the facility layout must be efficient to optimize the flow of materials and personnel, reducing the risk of cross-contamination.
- Use materials for construction that are food-grade, easy to clean, and resistant to corrosion or degradation.

- Environmental factors for premises location such as air quality, water sources, and potential contamination risks need to be aware for safe food production.

Raw materials, ingredients and additives

Ensuring the safety of raw materials and additives is safe for food production.

Supplier Approval and Verification:

- **Establish a supplier approval process.**
- **Verify that suppliers meet safety and quality standards.**
- **Regularly audit and monitor supplier facilities.**

Ingredient Specifications:

- **Define and communicate clear specifications for each raw material and additive.**
- **Specify acceptable levels for contaminants, such as pesticides, heavy metals, and allergens**

Testing and Analysis:

- **Conduct regular testing of raw materials and additives.**
- **Use validated testing methods to check for contaminants, microbiological safety, and overall quality.**

Traceability:

- **Implement a effective traceability system.**
- **Ensure that each batch of raw materials and additives can be traced throughout the production process.**

Packaging and Transportation:

- **Ensure that packaging materials are safe and suitable for the intended purpose.**
- **Monitor transportation conditions to prevent contamination or deterioration during transit.**

Allergen Management:

- **Clearly label ingredients that may cause allergic reactions.**
- **Implement procedures to prevent cross-contamination of allergens during handling and processing.**

that help produce a

Raw Materials are Primary Materials

Final Product

Example

Cocoa Beans

+

Sugar

+

Milk

=

Chocolate Bars

Raw Materials

Final Product

EDUCBA

Tools, utensils and equipment

Equipment and Utensils

Equipment Maintenance:

Regular Inspection: Conduct regular inspections of all kitchen equipment to identify and address issues promptly.
Calibration: Calibrate equipment such as oven or balance regularly to maintain accuracy.

Utensil Cleaning:

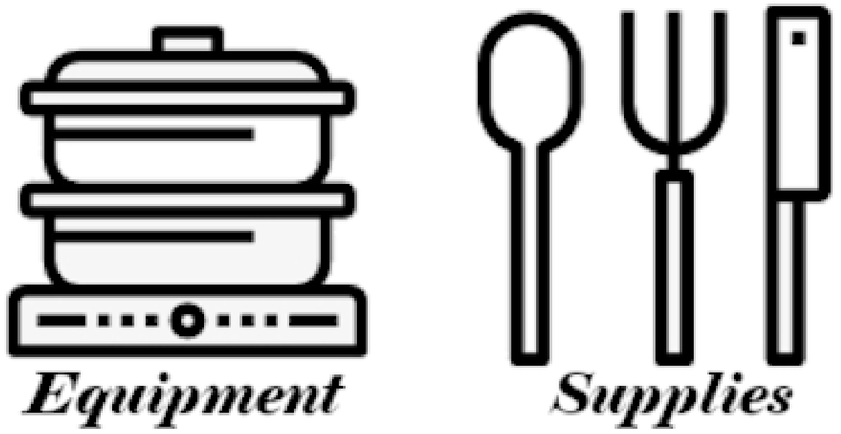
Dishwashing Stations: Have dedicated areas for washing and sanitizing utensils.
Proper Drying: Ensure utensils are thoroughly dried before storage or use for production.

Color-Coding:

Color-Coded Utensils: Implement a color-coding system for utensils such as cutting board to prevent cross-contamination.

Stainless Steel Equipment:

Choose stainless steel equipment for its durability, resistance to corrosion, and ease of cleaning.
Ensure equipment is easily movable for cleaning underneath.



Cleaning and sanitation

Cleaning and sanitation are critical components of safe food production.

Proper practices in these areas help to prevent cross-contamination, reduce the risk of foodborne illnesses, and ensure the production of safe and high-quality food products.

- **General cleaning practices such as daily cleaning routine for all zone areas in production and cleaning tools and equipment.**
- **Food contact surfaces such as utensils, cutting boards, cooking equipment and food processing equipment.**
- **Environmental cleaning such as floors, drains and ventilation systems.**
- **Personal hygiene and protective gear: handwashing stations, aprons, glove and shoes.**
- **Waste management which is waste disposal storage areas must be clean and well-maintained.**

BASIC STEPS IN CLEANING DISHES, UTENSILS AND EQUIPMENT

- **Put away food before starting to clean floors and walls.**
- **Rinse by pre-soaking, sweeping and wiping down a surface.**
- **Wash utensils in clean hot water(an about 60oC), using a suitable detergents and brushes.**
- **Rinse in very hot water (at least 82oC) or use a chemical sanitizer.**
- **Air dry.**
- **Dismantle equipment and wash the parts in a sink, wipe down fixed parts with a clean cloth.**

Traceability

- **Traceability is a critical aspect of safe food production, allowing for the identification and tracking of products and ingredients at various stages of the supply chain.**
- **It is an essential tool in managing and responding to food safety issues, ensuring quick and effective recalls, and maintaining overall product integrity.**
- **Implementing traceability systems to track the origin and processing of food products.**
- **Quick identification and removal of products in the event of a safety concern or recall.**

Elements and practices related to traceability for safe production:

1. **Batch and Lot Identification**
2. **Recordkeeping**
3. **Supplier traceability**
4. **Barcoding and RFID technology**

Food Safety Programs

Definition

Food safety is a scientific discipline describing handling, preparation and storage of food in ways that can prevent food borne illness.

The principles of food safety aim to prevent food from becoming contaminated and causing food poisoning. This is achieved through a variety of different avenues, some of which are:

1. Properly cleaning and sanitizing all surfaces, equipment and utensils.
2. Maintaining a high level of personal hygiene, especially hand washing.
3. Storing, chilling and heating food correctly with regards to temperature, environment and equipment.
4. Implementing effective pest control.

Food Safety Programs

ISO 22000

HACCP

GMP

GHP

MeSTI

MeSTI
Introduction

MeSTI or named it as “Makanan Selamat Tanggungjawab Industri (MeSTI)” was formerly named as Skim Keselamatan Makanan 1 Malaysia (SK1M).

• It aims to ensure your company to fulfil Food Hygiene Regulations 2009 requirements.

• It is also essential before applying for JAKIM Halal certification.

• In MESTI certification, a company has to comply with a full spectrum of basic hygiene requirement which focuses on operation control, hygiene & maintenance, traceability and record-keeping

Core Elements of MeSTI

1. **Design and facilities**
2. **Personnel**
3. **Training**
4. **Maintenance, cleaning and sanitation**
5. **Raw ingredient control**
6. **Process control**
7. **Packaging control**
8. **Storage control**
9. **Transportation and distribution control**
10. **Traceability**

GHP
GOOD HYGIENE PRACTICE

GHP compliance covers the minimum sanitary and hygiene practices for food processors, such as hotels, restaurant and food factory to ensure that food is safe and suitable for human consumption.

This is the reason that the handling of food requires care to prevent the hazards. Good Hygiene Practices are the set of requirements to prevent contamination of food in order to provide safe food to the consumers.

GHP

Food borne illnesses can result from contamination due to improper practices like when there is

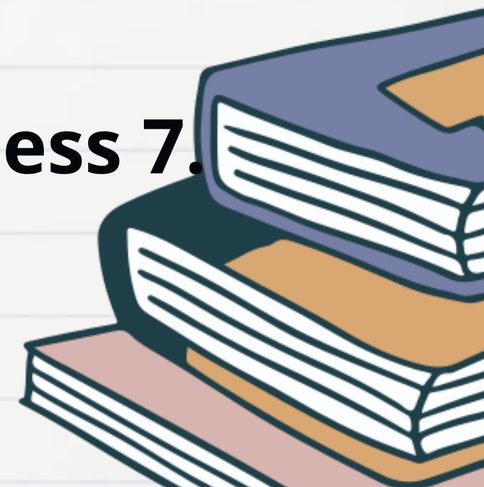
1. lack of environmental hygiene and poor sanitation
2. Mixed and inappropriate transportation
3. Poor storage
4. Poor personal hygiene
5. Unsafe source of food

Objectives of GHP

- To identify essential principles of food hygiene – throughout the food chain
- Recommend a HACCP – based approach to enhance food safety
- Indicate how to implement those principles
- Provide guidance for specific codes which may needed for; sectors of the food chain, processes, or commodities, to amplify the hygiene requirements.

Core Elements of GHP

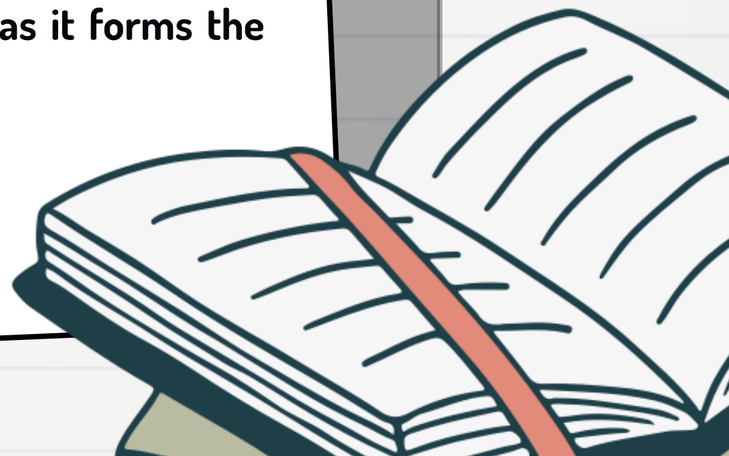
1. **Primary Production**
2. **Handling storage**
3. **Maintenance and sanitation**
4. **Personal Hygiene**
5. **Transportation**
6. **Product information and consumer awareness 7. Training**



GMP

GOOD MANUFACTURING PRACTICE

- Good Manufacturing Practice, or also known as GMP identifies the essential principles of food hygiene and safety applicable within food processing to ensure that food is processed under hygienic environment and the quality is suitable for human consumption.
- In Malaysia, MS 1514:2009 GMP is the requirement standards defined by Ministry of Health Section of Food Safety & Quality Division which aim to elevate the level of standards of domestic food manufacturer in producing safer food, cosmetics and health supplement as well as traditional medicine.
- The Good Manufacturing Practice guidelines cover the manufacturing activities from receiving of incoming raw materials till the delivery of goods to customers. GMP food is important as it forms the foundation of all major food safety management systems such as HACCP and ISO 22000.



Core Elements of GMP

1. **Design and facilities**
2. **Control of operation**
3. **Maintenance, cleaning and sanitation**
4. **Personal hygiene**
5. **Transportation and distribution**
6. **Product information**
7. **Training**
8. **Internal inspection**
9. **Management review**
10. **Legal requirements**

HACCP
HAZARD ANALYSIS CRITICAL CONTROL POINT

HACCP predicts what could go wrong with the safety of food. It is a proactive system that aims to prevent, control and/or eliminate potential hazards.

HACCP program is a risk assessment tool to produce safe food in a systematic and scientific approach.

HACCP
HAZARD ANALYSIS CRITICAL CONTROL POINT

Proper safety standards and management system are crucial in HACCP training and identification of critical control point.

Therefore, HACCP acts proactively to determine food safety hazards along the food processing line and implement preventive measure to eliminate the likelihood of those identified hazards.

HACCP

HAZARD ANALYSIS CRITICAL CONTROL POINT

PURPOSE OF THE HACCP TEAM

The HACCP team has to develop the HACCP plans and to implement it into the operation.

WHO SHOULD BE ON THE HACCP TEAM

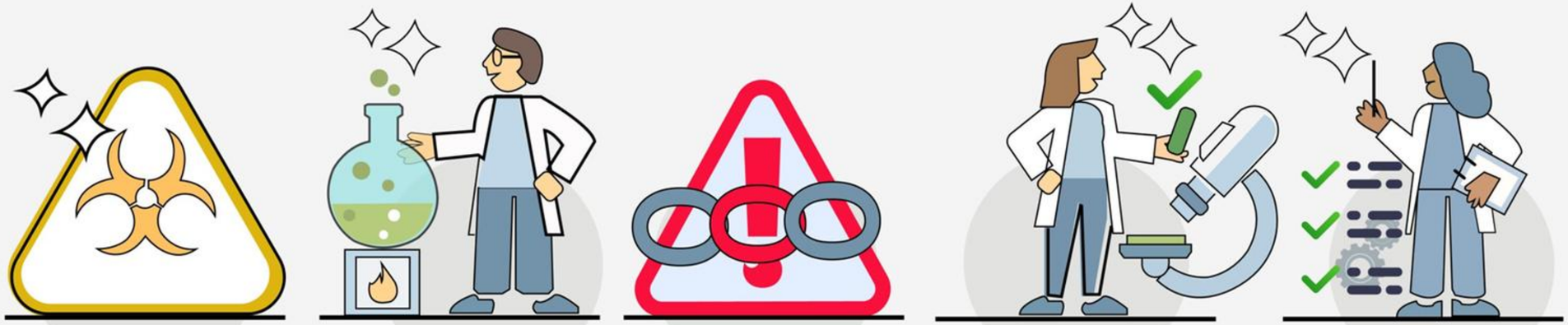
The team should be multi-disciplinary. Representatives from all areas of the business should be included on the HACCP team including production, cleaning, maintenance, management, packing, stores, customer service and supply management.

Benefits of HACCP

- Saves your business money in the long run
- Avoids you poisoning your customers
- Food safety standards increase
- Ensures you are compliant with the law

- Food quality standards increase
- Organises your process to produce safe food
- Organises your staff promoting teamwork and efficiency
- Due diligence defence in court.

HACCP



HAZARD ANALYSIS CRITICAL CONTROL POINTS

7 Principles of HACCP

1. Conduct a hazard analysis
2. Identify critical control points (CCPs)
3. Establish critical limits
4. Establish monitoring procedures
5. Establish corrective actions
6. Establish verification procedures
7. Establish record-keeping procedures

Core Elements of HACCP

1. **Pre-requisite programmes**
2. **HACCP system requirements**
3. **Other requirements**
4. **Operation of the HACCP system**
5. **Maintaining the HACCP system**
6. **Application of the HACCP system**

ISO 22000

ISO 22000 is an internationally recognized standard that addresses the aspects of food safety concerns. The standard specifies requirement for ANY organization in the food chain, which are directly or indirectly connected to the food supply chain to demonstrate its ability to control food safety hazards in order to ensure that food is safe at the time of human consumption.

Before implementing the ISO 22000, food business operator is required to implement the PRP HACCP & setting up management systems related to communication, verification & management review.

Core Elements of ISO 22000

1. **Food Safety Management System**
2. **Management responsibility**
3. **Resource management**
4. **Planning and realization of safe products**
5. **Validation, verification and improvement of the food safety management system**

Thank You