Hygiene and Food Safety

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Introduction

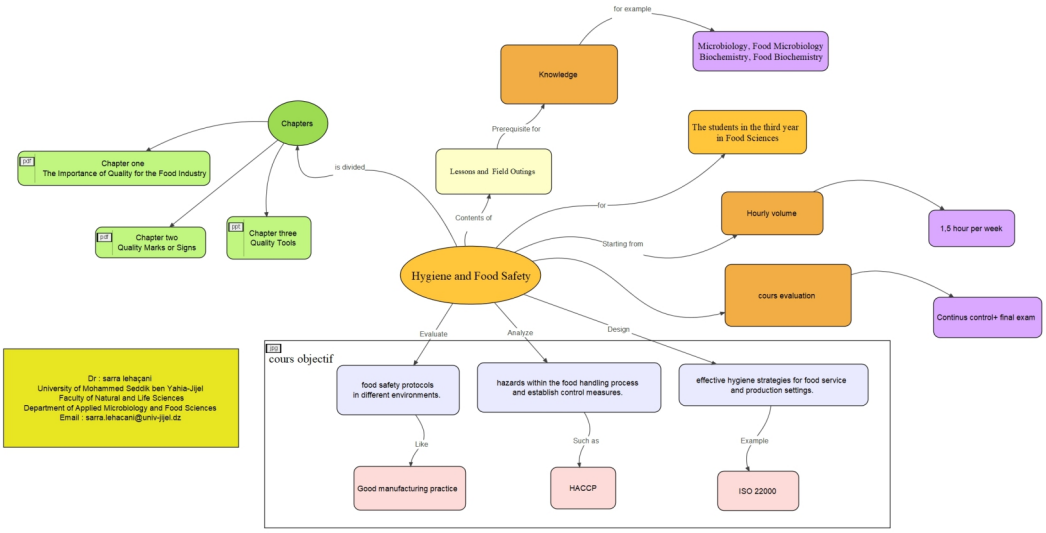
Hygiene and food safety are essential aspects of our daily lives. They are essential to ensure the safety and quality of the food we eat. This is because improper handling or preparation of food can lead to foodborne illnesses and endanger our health. That's why it's important to understand and apply good hygiene and food safety practices. This course, explores the fundamentals of food hygiene and the preventive measures needed to preserve the health of all consumers.

Food hygiene and safety are essential aspects of our daily lives.

Indeed, we are all likely to consume food at various times during the whether at home, at work or in a restaurant. This is why it is essential to ensure that these foods are prepared and handled under sanitary conditions in order to avoid any risk to our health.

Food hygiene encompasses various aspects such as the cleanliness of the premises, the equipment used (kitchen utensils) and manipulators' hands, as well as compliance with the standards of

preparation, preservation and transport of food. Food security, on the other hand, aims to prevent the risk of contamination of food by the different types of hazards in implementing control measures and complying with the regulations in force.



chapter 4 Implementation of Good Hygiene Practices (GMPs)"

I

The development, implementation, and maintenance of GHPs provide the conditions and activities that are necessary to support the production of safe and suitable food at all stages of the food chain from primary production through to handling of the final product. Applied generally, they assist in controlling hazards in food products.

Knowledge of the food and its production process is essential for the effective implementation of GHPs. This section provides guidance for effective implementation of GHPs, including appropriate location, layout, design, construction and maintenance of premises and facilities, and should be applied in conjunction with sector and product-specific codes.

GHPs manage many sources of food hazards which could contaminate food products, e.g. persons who handle food at harvest, during manufacturing, and during preparation; raw materials and other ingredients purchased from suppliers; cleaning and maintaining the work environment; storage and display.

1. Good Hygiene Practices (GMPs)"

Définition

Implementation of Good Hygiene Practices (GMPs), This term is often used in the context of ensuring and maintaining hygiene standards in various settings, such as food preparation, healthcare, and other industries where cleanliness and safety are crucial.

Complément

In the context of food safety, for example, it refers to the set of practices and measures put in place to ensure that food is handled, prepared, and served in a way that minimizes the risk of contamination and ensures the safety of consumers. This can include proper handwashing, cleaning and sanitizing surfaces, using safe ingredients, and following recommended procedures for food handling and storage.

In healthcare settings, it may involve protocols for hand hygiene, sterilization of equipment, and other measures to prevent the spread of infections.

Complément

To ensure consumer safety, inspectors from the Ministry of Agriculture, Fisheries, and Food in Algeria must assess each food establishment using a health risk-based method.

This method can also help in memorizing good hygiene and sanitation practices. It focuses on a set of points (principles) to master that are related to one of the following five elements:

- MATERIAL Food safety, required storage conditions, labeling, and origin.
- METHOD Various steps of food handling, such as cooking, thawing, cooling, reheating, cleaning, and sanitation.
- MANPOWER Dress code, handwashing, health status, etc.
- EQUIPMENT Everything related to the cleanliness and condition of the equipment used during food handling.
- ENVIRONMENT The surroundings, such as areas used for food preparation, storage, and transportation, and the supply of drinking water.

Définition : Other :TEMPERATURE MONITORING

1. The internal temperature of food is a determining factor for the growth of microorganisms. It is essential to adhere to specific standards for storage temperature.
2. Regularly check the temperature of food storage equipment using a reliable and calibrated thermometer.
3. The operator is responsible for maintaining records of temperatures recorded daily on their devices and installations. They should also have measures in place in case of non-compliance.
4. If necessary, check the internal temperature of food. If using a probe thermometer, ensure it is cleaned and sanitized between each use.
5. It is recommended to regularly check the reliability of thermometers and record the data in a register.

Définition : DANGER ZONE

- The "danger zone," which is between 4°C and 60°C, should be avoided as bacteria multiply rapidly in this range, its between 35°C and 45°C, their numbers can double every 15 minutes. That's why potentially hazardous foods kept at room temperature for some time should be prepared as quickly as possible.
- Only take out the quantities needed for preparation and refrigerate the food as soon as you finish handling it.

Définition : MAINTAINING THE COLD CHAIN

Maintaining the cold chain refers to all operations aimed at keeping refrigerated foods (4°C or below) or frozen foods (-18°C or below) at a safe internal temperature at all stages, from handling to storage and service. Adhering to the cold chain helps ensure food safety and preserves quality, as any increase in temperature accelerates the growth of microorganisms and reduces the food's shelf life. This can make the food harmful to consumer health. This principle also applies to foods that should be served hot by keeping them at a temperature above 60°C, for example, using a chafing dish. Additionally, after cooking or reheating, foods must be maintained at a temperature above 60°C at all times until delivery or service to consumers.

Définition : ORIGIN

The origin of foods can compromise their safety and, consequently, consumer health. Therefore, precautions must be taken regarding the origin of products. Here are some examples:

1. Meats must come from an animal slaughtered in a provincial or federal slaughterhouse under permanent inspection.
2. Eggs must be previously graded (classified).
3. Dairy products must come from a legally recognized dairy factory.
4. Marine bivalve mollusks (mussels, clams, oysters, scallops, razor clams, and mactra) must be clearly identified at the time of receipt: species, date, and harvesting zone. Remember to keep records of suppliers and retain purchase invoices.

Complément

The label of food products must include the following information:

- The name;
- The composition, i.e., the list of ingredients, with the indication of allergens present in the food;
- The net quantity;
- The name and address of the authority responsible for the product (manufacturer, preparer, packager, packer, supplier, or distributor);
- The origin;
- The use;
- The product's condition: thawed foods must be labeled "thawed product";
- Any other particularity of the product.

Other important information may also appear on labels:

- The storage method (e.g., the mention "Keep refrigerated after opening");
- The expiration date (mandatory for foods with a shelf life of less than 90 days);
- Nutritional information;
- Lot number.

2. Types of Food Contamination

There is some dispute regarding how many different types of food contamination there are, with some saying there are three and others declaring four. Both cover the multiple incidences that could occur. The three types of contamination are chemical contamination, physical contamination, microbial contamination, and allergen contamination.

Direct Contamination: Direct contamination occurs when food comes into direct contact with a recognized source of pathogens (e.g., feces, sewage, raw meat or meat juice, soil, animals, or insects), with a chemical contaminant, including allergens, or a foreign body.

Indirect Contamination: Occurs when hazardous substances transfer indirectly, such as through contact with surfaces or utensils.

Cross-Contamination: Cross-contamination happens when pathogens or contaminants are transferred from one surface or substance to another, leading to the contamination of previously uncontaminated food items. This can occur through various means, such as contaminated hands, utensils, cutting boards, or surfaces.

Exemple : Examples of Cross-Contamination

Examples of cross-contamination include:

Food touching contaminated surfaces during transport or packaging.

Damage to food packaging leading to exposure to contaminants.

Contamination from clothing worn in food handling areas.

Poor housekeeping practices.

Improper rubbish disposal.

Inadequate food storage.

To prevent cross-contamination:

- Separate raw and cooked foods: Keep raw meats, poultry, seafood, and their juices separate from ready-t eat foods to prevent cross-contamination.
- Use separate cutting boards: Have separate cutting boards for raw meats and ready-to-eat foods, or thoroughly clean and sanitize the cutting board between uses.
- Store food properly: Store raw meats in containers or sealed plastic bags at the bottom of the refrigerator to prevent juices from dripping onto other foods.
- Clean and sanitize utensils: Wash utensils, knives, and cutting boards with hot, soapy water after each use and sanitize them regularly.
- Practice proper hand hygiene: Wash hands thoroughly with soap and water before and after handling raw foods, after using the bathroom, and after handling any contaminants.
- Avoid touching your face, hair, or body: Minimize touching your face, hair, or body while handling food to prevent the transfer of contaminants.
- Use separate cloths for cleaning and drying: Use separate cloths or paper towels for cleaning surfaces and drying hands to prevent cross-contamination.
- Be cautious with serving utensils: Provide separate serving utensils for each dish, especially at buffets, to prevent cross-contamination between different foods.
- Use appropriate storage containers: Store food in sealed containers to prevent contamination from airborne particles and pests.

During Storage and Display:

1. Maintain proper refrigeration: Keep perishable foods refrigerated at the recommended temperatures to slow down the growth of bacteria.
2. By following these guidelines and maintaining high standards of hygiene, you can significantly reduce the risk of food contamination in various food-handling scenarios.
3. Group Products by Nature and State: Group products according to their nature and state. Ensure that raw meats, poultry, and fish will never come into contact with cooked or ready-to-eat products.
4. Pay Attention to Allergens: Store foods containing allergens below those that are allergen-free.
5. Use Covered Containers for Raw Meats: Store raw meats, poultry, and fish in covered containers and packaging, placing them below ready-to-eat foods to prevent juices from dripping.
6. Use Storage Racks: Use storage racks so that containers or items are never placed directly on the floor. The racks should be at a minimum height of 10 cm for fixed supports and 8 cm for removable supports.
7. Protect Unpackaged Products: Except for fresh fruits and vegetables, keep unpackaged products protected from public handling. Sneeze guards can be useful for this purpose (e.g., buffets, fish counters, and salad counters).

Définition : Safe Thawing Methods:

Never thaw food at room temperature.

Safe thawing methods include:

- In the refrigerator.
- In the microwave, just before cooking.
- In a conventional oven, combining thawing and cooking.
- In a container under potable water maintained at a temperature of 21°C or below, ensuring the food is completely submerged.

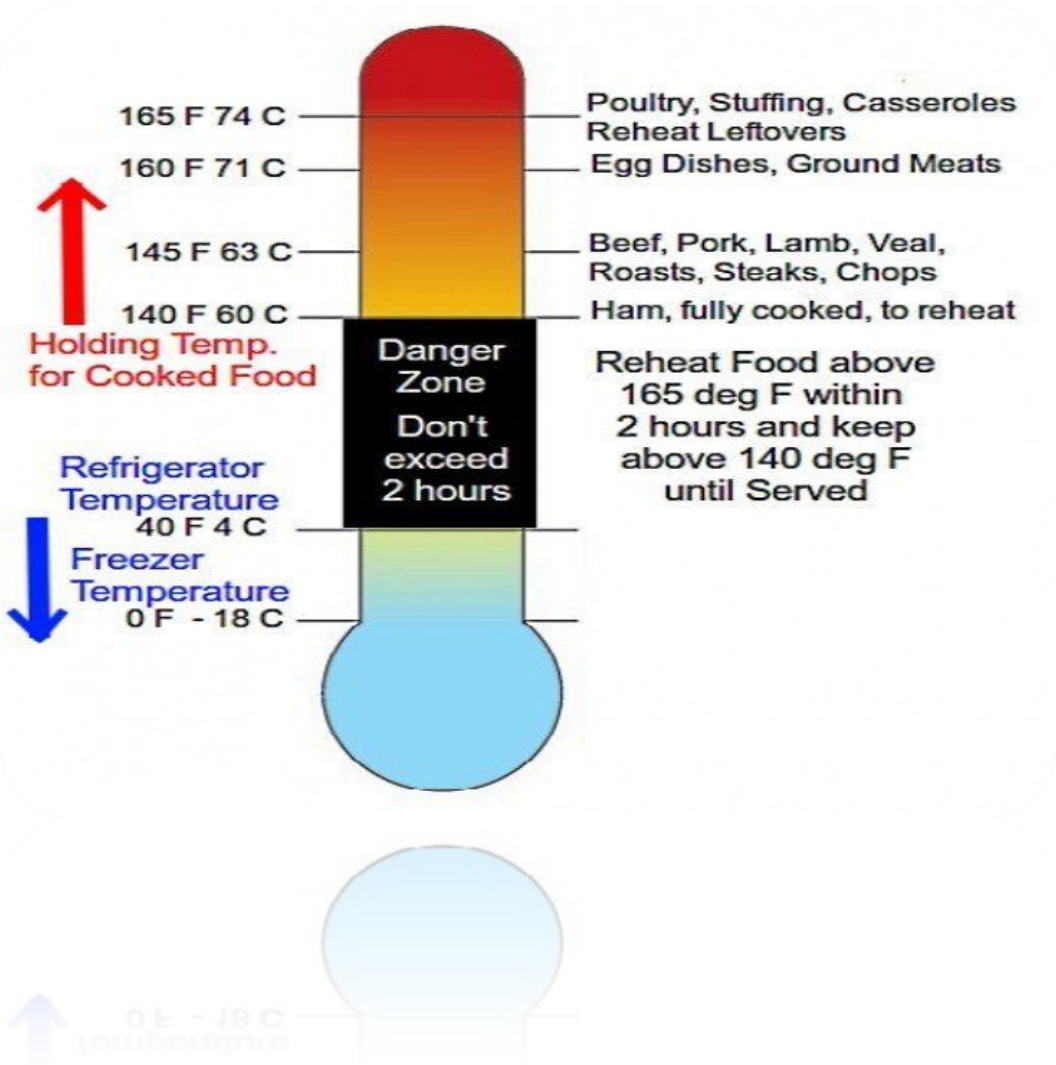
For thawing vacuum-packed smoked fish, it is important to open or remove the packaging before placing the food in the refrigerator to thaw.

Définition : Cooking

Proper cooking aims to destroy pathogenic microorganisms, ensuring the safety of the food. Therefore, it is essential to cook foods thoroughly and avoid interrupting the cooking process.

To achieve a safe internal cooking temperature, adhere to the recommended temperature and cooking time in the table on the following page. Using a reliable and calibrated thermometer is necessary. Insert it into the center of the food, ensuring not to touch bone or fat layer if it is meat.

Remember that adequate cooking is crucial for food safety, as it helps destroy harmful microorganisms that may be present in the food.



Définition : Cooling

It is crucial to cool potentially hazardous foods as quickly as possible to reach a temperature between 0°C and 4° C. The internal temperature of the food must transition from 60°C to 4°C in less than 6 hours. However, within this timeframe, the internal temperature should decrease from 60°C to 21°C in less than 2 hours.

Additionally, in refrigeration appliances or equipment, it is important to promote free air circulation between the food items.

Proper cooling is essential to prevent the proliferation of harmful microorganisms and ensure food safety.

Définition : Reheating

When reheating potentially hazardous foods that have been cooked and refrigerated to keep them hot, it is essential to ensure that all parts of the food reach a temperature of at least 63°C for 3 minutes or 74°C for 15 seconds.

Equipment designed for maintaining heat, such as a warming tray in a service counter or a soup warmer, should not be used for reheating, as it typically does not meet these criteria. Moreover, this reheating process must be completed within 2 hours.

Cleaning

Cleaning* It includes:

Pre-rinsing: This is the initial step to remove large food particles from surfaces.

Washing with Appropriate Detergent: Use a detergent suitable for the type of residues that need to be removed. This step involves scrubbing or using brushes to ensure thorough cleaning.

Rinsing: After washing, surfaces must be rinsed to remove any remaining detergent or cleaning agents.

Visual Inspection: A visual check of surfaces after cleaning stages can identify inadequate cleaning. If surfaces still appear dirty, the cleaning process should be repeated.

Définition : Sanitization

Sanitization is the process of reducing microorganisms on surfaces to a safe level. There are two methods of sanitization:

Thermal Sanitization:

Involves destroying microorganisms by exposing them to hot water.

The water temperature should be at least 82 °C, for example, during automatic sanitization with a dishwasher, or at least 77 °C for a minimum of 30 seconds during manual sanitization.

This method is effective only when maintaining the appropriate temperature and contact time is possible.

Chemical Sanitization:

Involves destroying microorganisms by exposing them to a chemical sanitizing agent.

It's crucial to follow the manufacturer's instructions, including:

The concentration of the sanitizing agent.

The method of using the sanitizing agent.

Water temperature requirements.

Contact time with the chemical.

Whether rinsing the surface or equipment is necessary.

Définition : PERSONNEL

The behaviors of personnel involved in food preparation, cleaning, and sanitizing equipment that comes into contact with food have significant implications for food safety. Hands, in particular, are a crucial vector for the transmission of pathogenic microorganisms that can cause foodborne illnesses.

Hand Hygiene:

- Individuals in contact with food, equipment, or utensils that touch food must wash their hands and forearms before starting work and whenever there is a risk of contaminating products.
- Handwashing should be performed with hot water and liquid or powdered soap provided by a dispenser.
- Hands should be washed after using tobacco, visiting restrooms, or handling raw food.
- It's essential to emphasize that work clothing is not to be used for drying hands, as they could become a new source of contamination for hands, surfaces, and the food being handled.

Définition : Handwashing Facilities:

Handwashing facilities must be provided in sufficient numbers and located in appropriate places.

They should be supplied with potable hot and cold running water and equipped with a sink, a mixer tap (cold-hot), a soap dispenser, and single-use towels.

The facilities should have a system for wastewater recovery or disposal.

Personal Hygiene:

The behavior of personnel involved in food preparation, cleaning, and sanitizing equipment has a significant impact on food safety.

Hands are a particularly important vector for the transmission of pathogenic microorganisms causing foodborne illnesses.

Work attire must be impeccable, meaning:

1. Wearing clean clothes designated exclusively for the specific work.
2. Wearing a cap or hairnet that fully covers the hair.
3. Removing watches, bracelets, rings, earrings, necklaces, jewelry, or any other object that could fall into the food before starting the work shift.
4. Ensuring that piercing ornaments on the nose or eyebrows, false nails, false eyelashes, etc., are not worn.

Equipment and Utensils:

Equipment and utensils used in food preparation must:

1. Be clean.
2. Be non-toxic and not in a state of decay.
3. Be disassemblable and accessible for cleaning, sanitizing, maintenance, and, if necessary, inspection.
4. Have smooth, non-absorbent, and impermeable surfaces that cannot be corroded and are free from pits, cracks, or crevices.

Définition : ENVIRENEMENT

Waste Management:

- Place waste in designated containers that are clean, sealed, waterproof, and inaccessible to insects and other animals. Regular waste removal is essential to prevent overflow.

- Handwashing facilities must be sufficient in number and appropriately arranged, supplied with potable hc and cold running water, a sink, a mixer tap, a soap dispenser, and single-use towels. Adequate wastewater recovery or disposal systems should be in place.
- Floors, walls, doors, and ceilings should be washable, smooth, free from cracks, not in a state of decay, and devoid of roughness or scales.
- Windows, screens, and vents must be adjusted to prevent the entry of animals, including insects and rodents.

Complément

- The premises should be free of contaminants,* pollutants, animals, including insects and rodents, and thei excrements.
- Storage or food preparation areas and other sanitary facilities must be kept clean.
- Premises should be well-ventilated, and ventilation devices must be installed to prevent potential food contamination.
- Lighting fixtures in food preparation or storage areas must be protected from breakage.
- Trash bins should be provided for temporary waste storage indoors. These waste containers must be watertight, non-absorbent, rigid, and equipped with a lid. They should be kept clean and sanitized once emptied.
- Maintaining cleanliness, waste management, and proper sanitation practices in the environment are crucia components of ensuring food safety. Proper infrastructure and regular maintenance contribute to a safe and hygienic food handling environment.

Définition : INSECTS, ANIMALS, AND THEIR EXCREMENTS:

Preventing the entry of insects and animals into facilities is crucial for maintaining a sanitary environment. If a problem arises, an extermination firm can implement preventive or corrective measures. The company conducts pest control every six months, systematically destroying rodents, insects, and other pests. Rodenticides, insecticides, or any other substances with potential toxicity are stored in locked cabinets.

Key Measures:

Pest Control Services:

Regular pest control services, including deratization and insect extermination, are essential.

Focus on areas such as food reserves, loading docks, storage zones, offices, production units, and ancillary spaces.

Complément

Toxic Substance Storage:

Store rodenticides, insecticides, and other potentially toxic substances in locked cabinets to prevent unauthorized access.

Lutte Against Rodents:

Implement measures specifically targeting rodents to ensure a pest-free environment.

Conduct treatments in various areas, including cafeterias, production units, offices, and exteriors.

Industrial Treatment:

Apply treatments in industrial settings, including power stations, production units, offices, and kitchens.

Wastewater Treatment:

Use waterproof blocks for treating wastewater and rainwater in different networks.

Définition : POTABLE WATER SUPPLY:

Use of Potable Water:

Water used in food preparation, cleaning, equipment sanitation, and ice production must be potable.

City Water Supply:

The company is supplied with potable water from the city, used for cleaning products, premises, and equipment.

Treatment with Sodium Hypochlorite:

In cases where potable water is unavailable, the company undergoes treatment with sodium hypochlorite (bleach).

The goal is to achieve a concentration of 1 to 2 mg/l of active chlorine in the treated water to make it potable.

Daily Verification of Active Chlorine Concentration:

The concentration of active chlorine in the treated water is checked at least daily to ensure potability.

3. Good Manufacturing Practices (GMPs)

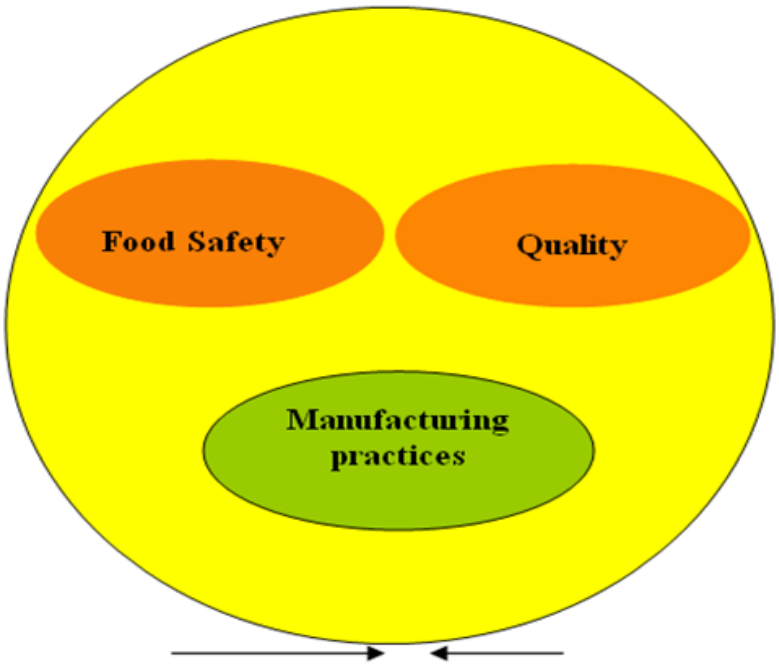
Définition

GMP is that part of Quality Assurance which ensures that products are consistently produced and controlled to the quality standard appropriate to their intended use and as required by the marketing authorization.

Good Manufacturing Practices (GMPs) are regulations that describe the methods, equipment, facilities, and controls required for producing:

- Human and veterinary products
- Medical devices
- Processed food

Good Manufacturing Practices (GMPs) lie at the Heart of Quality. GMPs are also known as current Good Manufacturing Practices (GMPs), are a series of manufacturing and administrative procedures aimed at ensuring that products are consistently made to meet specifications and customer expectations. In relation to food, GMP results in safe and quality food. The three elements of GMP are Food Safety, Good Practice and Quality



Définition : Benefits of GMP

1. Create awareness of food quality and safety among the staff
2. Increases confidence in product safety.
3. Provides a starting point for the HACCP program
4. Recognition internationally
5. Prevents expensive failures
6. Reduces customer complaints and recalls and Improve profits.

Glossaire

Cleaning:

The removal of soil, food residues, dirt, grease, or other objectionable matter.

Contaminants:

Any biological, chemical or physical agent, foreign matter or other substances not intentionally added to food that may compromise food safety or suitability.