Principles and concepts of food hygiene and safety

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Food Safety is the set of practices one must observe for the food to be free from hazards. It ensures that the food we eat is fit for consumption. It encompasses all aspects of ensuring the food's condition. Food safety starts from ensuring the cleanliness of food up to its quality and how suppliers market the product.

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

Occurrence of two or more cases of a similar illnesses resulting from the ingestion of a common food is known as a food-borne disease outbreak.

Food hygiene are the conditions and measures necessary to ensure the **safety of food** from production to consumption (**Food Chain Sequence**). Handling, preparing and storing food or drink in a way that best reduces the risk of consumers becoming sick from the food-borne disease.

Food hygiene falls under the umbrella term 'food safety'. Food hygiene itself does not include all the other key areas of food safety.

Food safety refers to an entire system of managing risks. Meanwhile, food hygiene refers to an individual set of practices for controlling only one aspect.

- **Food safety will help to -**

•Prevent, detect and manage foodborne risks.

•Contributing to food security, human health, economic prosperity, agriculture, market access, tourism and sustainable development.

Under the umbrella of "The Future of Food Safety". WHO, in collaboration with the Food and Agriculture Organization(FAO) of the United Nations **In 2018, the United Nations General Assembly declared June 7 as the World Food Safety Day. June 7, 2019, marks the first anniversary of World Food Safety Day and the theme for World Food Safety Day 2020 was 'Food Safety, everyone's business".**

The United Nations (UN) has assigned two of its agencies, the Food and Agriculture Organization (FAO) and the World Health Organisation (WHO) to lead efforts in promoting food safety around the world.

The World Food Safety Day is celebrated every year on June 7 to draw global attention to the health consequences of contaminated food and water.

World Food Day is an international **day** celebrated every year around the **world** on 16 October in honor of the date of the founding of the **Food** and Agriculture Organization of the United Nations in 1945.

People from around the **world** come together to declare their commitment to eradicate worldwide hunger from our lifetime.

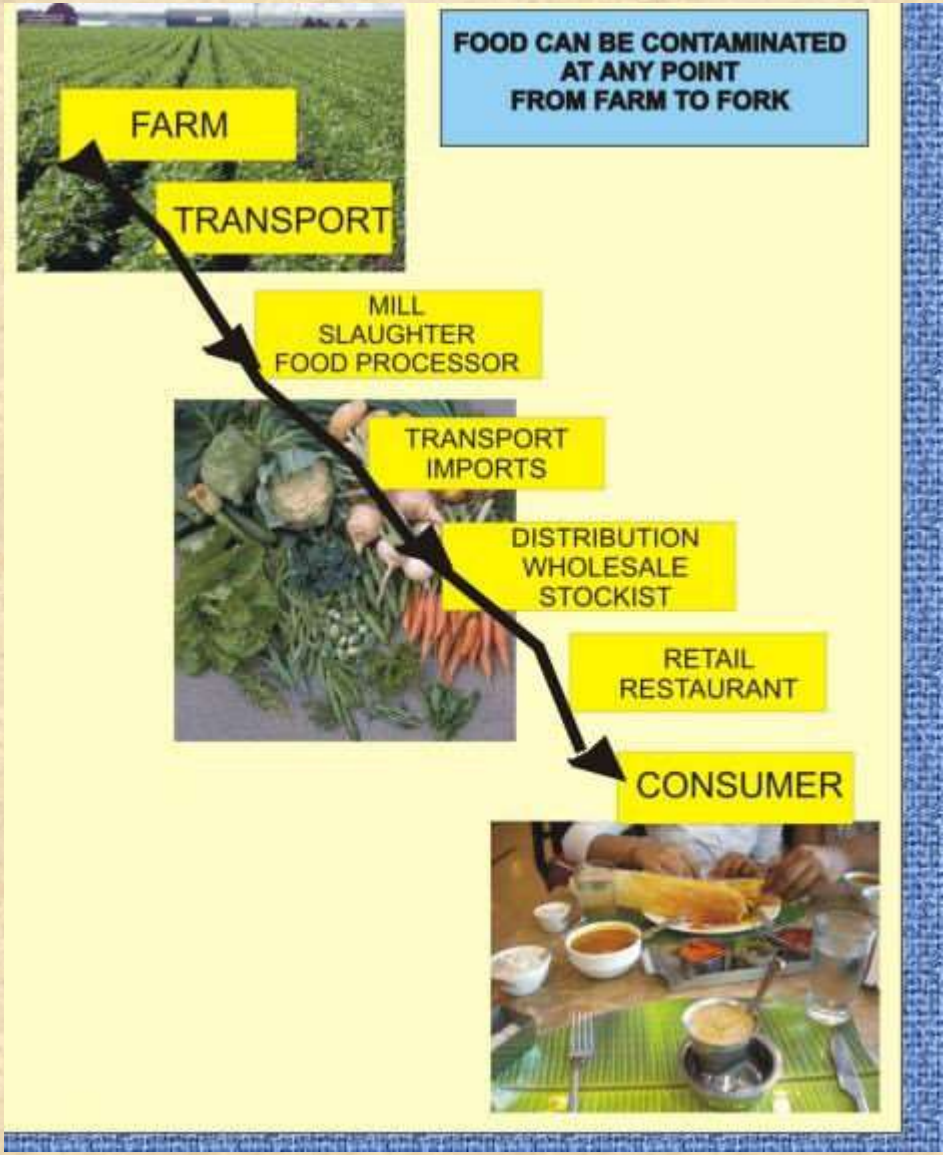
The **per capita** availability of **milk in India** during 2017-18 was 375 gm/day to average world per capita availability of 229 gram/day.

Indian Council of Medical Research (**ICMR**) **recommends** an average daily intake of 300 gm per day of **milk** to deliver the requisite macro-micro nutrients, the national average of per-capita consumption is about 185 gm and 146 gm a day respectively in urban and rural **India**.

•Food safety is a shared responsibility between governments, producers and consumers. Everybody has a role to play from farm to table to ensure the food we consume is safe and will not cause damages to our health. Through the World Food Safety Day, WHO pursues its efforts to mainstream food safety in the public agenda and reduce the burden of foodborne diseases globally. 2020 theme "Food safety, everyone's business."

Definition of Food Chain

- Sequence of stages
- Operations involved in production, processing, distribution, storage & handling of a food & food ingredients from primary production to consumption.



Foundation of Food safety

IMPROVEMENT AND MAINTENANCE TRAINING

QUALITY RAW MATERIALS AND PRODUCTION PROCESS, STORAGE, PACKAGING AND DELIVERY

INFRASTRUCTURE AND HYGIENE

The key elements of food hygiene are

Personal hygiene. This includes handwashing, protective clothing, illness procedures, and other duties (such as avoiding smoking).

Preventing cross-contamination. This includes preventing bacterial, physical, chemical, and allergenic contamination, particularly by having appropriate equipment in place (such as separate cutting boards).

Cleaning procedures. Thorough cleaning of the kitchen, equipment, and kitchenware (including plates and cutlery) is vital.

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Allergen control. All businesses must clearly explain which foods are allergenic and must prevent allergens from cross-contaminating other food.

Safe storage of food. This includes storage locations and containers, a First-In First-Out **system,** labelling, and temperature control.

Cooking temperatures- must ensure cooking and holding of food at appropriate temperatures to prevent bacterial risks.

According to WHO five key **principles of food hygiene** are:

Prevent contaminating **food** with pathogens spreading from people, pets, and pests.

Separate raw and cooked foods to prevent contaminating the cooked foods.

Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.

Five Keys to Safer Food

IMPLEMENTING A FOOD SAFETY PROGRAM

EIGHT PRINCIPLES OF PRE-REQUISITE PROGRAM

SIX PRELIMINARY STEPS OF HACCP

SEVEN PRINCIPLES OF HACCP

REVIEW HACCP PLANS

Eight Principals of Hygiene Throughout the food chain PRP – PRE-REQUISITE PROGRAM EIGHT GENERAL PRINCIPLES OF FOOD HYGIENE-GHP(GOOD HYGIENIC PRACTICES)

1. Primary production
2. Establishment Design and facilities
3. Control of operations
4. Maintenance and sanitation information and consumer awareness
5. Personnel Hygiene
6. Transportation
7. Product information
8. Training Throughout the food chain

1. **Primary production** – Environmental hygiene (where the environment/ surrounding poses a threat to food safety) – Hygienic production of Food **Sources** (Control contamination from air, soil, water, feed-stock, pesticides, veterinary drugs or any other agent used in primary production. Protect food sources from fecal and other contaminant)– Handling **storage and transport** (Use appropriate storage materials and equipment. Protect food and food **ingredients** from contamination by pests, chemicals, microbiological or physical or other objectionable substances during handling storage and transportation. Cross contamination.)

Cleaning maintenance and personal hygiene

2. **Establishment Design and Facilities Nature of operations, associated risks** – Premises and equipment and facilities to minimize risk and ensure food safety – Location (Potential sources of contamination from surroundings) – Internal design, structures and layout of the premises rooms and equipment (Should facilitate measures that prevent contamination, durable, movable capable of being disassembled to allow for maintenance, cleaning, disinfecting and monitoring) – Facilities (Directly or indirectly impact food safety : water quality, air quality, drainage and waste disposal, temperature control, personal hygiene, lighting, storage ensure effective protection from contamination during storage.) Especially temporary or mobile facilities

3.Control of Operations: – Control of food hazards through the use of HACCP system (Potential sources of contamination from surroundings, Time and Temperature). – Key aspects of hygiene control systems (Specific process steps, Microbiological and other specifications, microbial cross contamination, physical and chemical contamination).Incoming material requirements(specification to be identified and applied, where possible inspected and sorted before processing).

Packaging (Design and materials used). – Water (in contact with food and used as an ingredient Special care for Ice and steam). – Management and supervision (Size of the business nature of activity and type of food).

Documentation and records (period that exceeds shelf life).

Recall procedures. (complete recall, handling and communication).

4. Maintenance and Sanitation Cleaning methods and procedures. (Appropriate for the type of product and type of machine. Hidden residual food/pest infestation). Cleaning Programs (Method, frequency and monitored for their suitability and effectiveness). Pest Control Systems (Preventing access, preventing harborage and infestation, monitoring and detection, eradication measures). Waste Management (Method, frequency and effectiveness). Monitoring Effectiveness (Periodic Audit, microbial sampling)

5. **Personal Hygiene** – Health Status of Employees. – Illness and injuries (Communicable diseases and surface injuries to hands or parts that come in contact with food items.) – Personal cleanliness-Clothing, Personal cleanliness-Clothing – Personal Behavior (smoking, spitting, chewing and eating, sneezing , personal effects.) – Visitors (Rules and guidelines for entry and access and safety or protective covering).

6.**Transportation** – Design of conveyances and bulk containers. (Proper segregation to prevent cross contamination, Time, temperature and humidity controls available and monitored, Appropriate for type of packaging) Use and maintenance. (Mixed and prior usage, appropriate scheduling and corrective measures)

7.Product information and consumer awareness– Lot identification (Codex standard & FSSA rules) – Product information (Bear adequate information to enable the next person in the food chain to handle, display, store prepare and use the product safely and correctly.) – Labelling (Codex standards and FSSA rules) – Consumer education. (hygiene, nutrition, label instructions)

8.**Training** (most important) Cause of most food safety Hazards and incidents. – Awareness and responsibility – Training Programs • nature of food and its ability to sustain growth of harmful micro-organisms. • manner in which food is handled/packed . • extent/nature of processing or further preparation before final consumption. • conditions under which the food will be stored. • expected length of time before consumption. – Instructions and supervisions – Refresher Training

- HACCP **Hazard analysis and critical control points (HACCP) system**

- ISO (International Organization for Standardization) stepped in and brought out ISO 22000:2005.

- **Organisation for Animal Health OIE**

- **World Trade Organization (WTO) agreements**

- **Codex Alimentarius Commission**

Thankyou