CHAPTER 1: Introduction to Food Safety

Food safety definition

- Sometimes food safety term is used interchangeably with food sanitation
- Sanitary : Latin word sanitas (healthy) and sanus (healthy)

- **Food sanitation**: is an applied science that incorporates the preceding principle into the hygienic and healthful handling of foods
  - usually for the purpose of eliminating or reducing the levels of disease causing microorganisms.

- Food safety is a broader umbrella since it compasses sanitation and other sciences and preventive measures

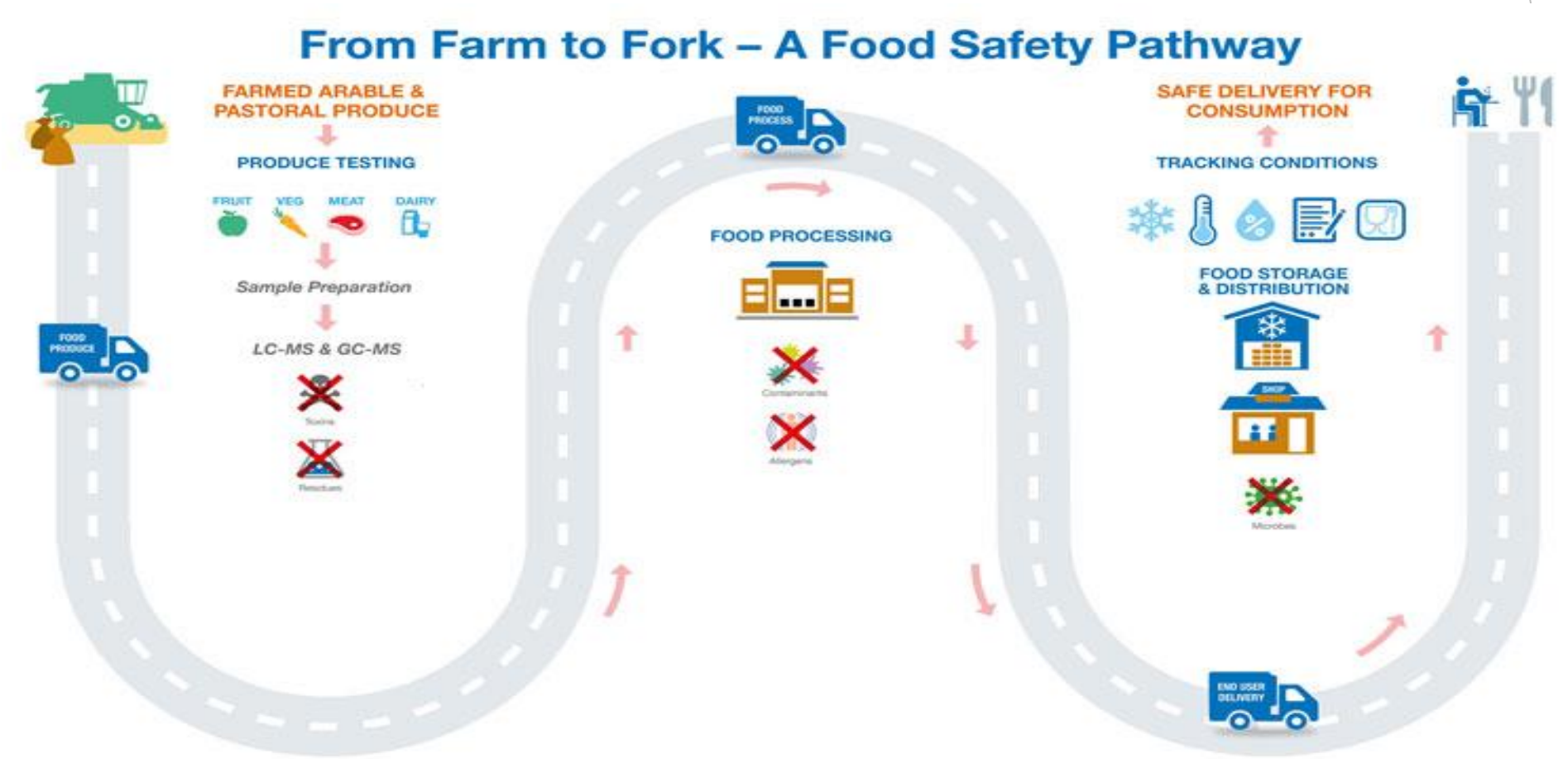
Food safety definition

- Is the state of acceptable and tolerable risks of illness, diseases or injury from the consumption of foods

- It is achieved through:
  - Policies
  - Regulations
  - Standards
  - Research
  - Engineering designs and technology
  - Surveillance and monitoring
  - And other applicable measures to reduce the risks or control hazards in the food supply chain

Food safety definition

- All through the "farm to fork continuum"



Significance of food safety

- In the past, many foods were processed at home.
- Now , variety in processed foods due to :
  - Advancement in technology and processing
  - higher per capita incomes
  - better purchasing power
  - increased consumer demand

Significance of food safety

- With fast changing lifestyles and eating habits, more people are eating outside their homes
- In commercial settings, foods are prepared in bulk handled by many persons, thus there are more chances of food getting contaminated
- food items are prepared many hours in advance, and may spoil if not stored appropriately
- There are many processed and packaged foods

Significance of food safety

- Logistics governing transport of bulk food is complex and there is a long gap between processing and consumption.
- Microbial adaptations, antibiotic resistance, altered human susceptibility and international traveling have all contributed to increasing incidence of food-borne microbial diseases
- Pollution in atmosphere, soil and water, including use of pesticides in agriculture, bring their share of contaminants. Also use of additives such as preservatives, colorants, flavoring agents and other substances such as stabilizers makes the analysis of food for various components — both nutrients and contaminants—imperative

Why that fuss on food safety ?????!!!

Foodborne illness happens !!!

Foodborne Illness

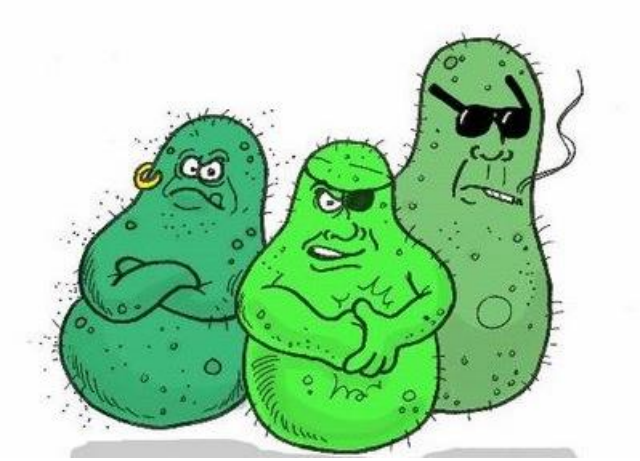
The sickness that some people experience when they eat contaminated foods.

- **CDC estimates 48 million people get sick, 128,000 are hospitalized, and 3,000 die from foodborne diseases each year in the United States.**

- **WHO: An estimated 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food and 420 000 die every year, resulting in the loss of 33 million healthy life years (DALYs).**

Contamination

Presence of substances or conditions in the food that can be harmful to humans

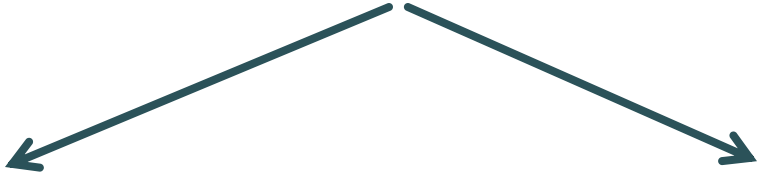


Bacteria and viruses (the greatest challenges)

Foodborne illness Outbreak

- As defined by CDC: two or more people suffering the “same illness from the same contaminated food or drink”
- Mostly occurred within **retail food establishments** where foods are prepared and served to the public

Foodborne illness

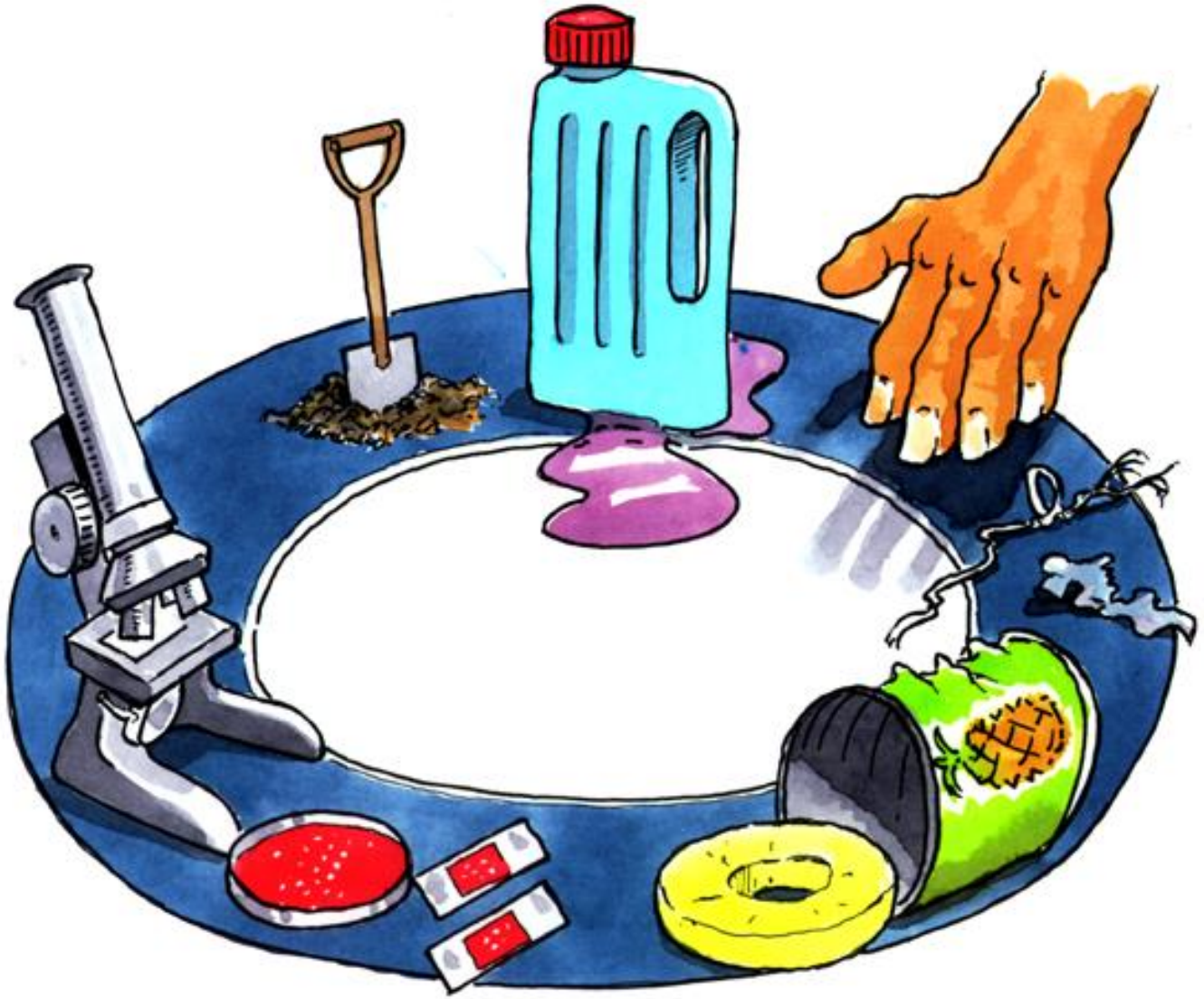


Health impact

Economic impact

- Medical expenses
- Reduced productivity by victims of illness
- Legal fees
- Punitive damages
- Food establishment might be closed !!

Hazards to food safety



Biological hazards

- Bacteria
- Viruses
- Parasites
- Naturally occurring chemicals in some fungi, plants, fish and shellfish
- Mycotoxins
- Food allergens

Chemical hazards

- Cleaning and sanitizing products
- Pesticides
- Unsuitable metal containers
- Excessive food additives

Physical hazards

- Broken glass, nuts and bolts
- Hair, fingernails, pens and dressings
- Stones and leaves
- Paper and packaging
- Pest bodies, eggs and nesting materials