

**What is Hazard**

Biological, Chemical or Physical agent in food with potential to cause an adverse health effect (3.22; ISO 22000-2018). Hazard as a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect (Codex definition)

The Food Act 2014 basis; hazard as a biological, chemical or physical agent that,

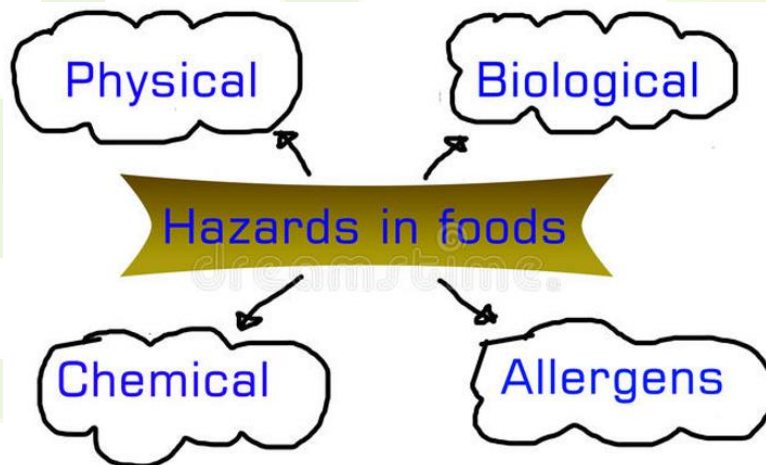
- Is in food or has the potential to be in food, or is a condition of food, or has the potential to affect the condition of food; and
- Cause or could cause an adverse or injuries effect on human life or public health

There are 03 types of hazards...

01. Biological Hazard
02. Chemical Hazard
03. Physical Hazard

For the present situation, do not forget about...

- Cross Contamination (i.e., Microbiological, Allergen etc.)
- Bioterrorism & Vandalism



Biological	Chemical	Physical
Bacteria Viruses Fungi Algae Parasites	Cleaning chemicals Pesticides Solvent and lubrications Food additives Animal antibiotics Heavy metal Naturally occurring chemicals	Glass Pests Manmade Vegetables and minerals Plastic Others

**Biological Hazards**

- Biological Hazard can cause illness and include:
- Bacteria – E. coli, Salmonella, Listeria, Campylobacter, Shigella etc.
- Viruses – Cold Viruses, Hepatitis A, Norwalk Virus etc.
- Parasites – Giardia, Cryptosporidium, Trichinella, Tape Worms etc. Yeasts and Molds
- Any Toxin – Produced by microbiological organisms is also a biological hazard.

Other biological possible hazard and contamination source...

- Insects
- Rodents
- Other vermin's
- Form Jewellery



## Seven Principles of HACCP

### Principle I - Conduct Hazard Analysis

#### Biological Hazards

**Biological hazards can cause illness and include:**

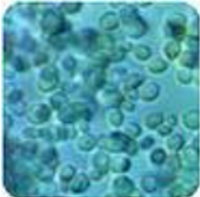
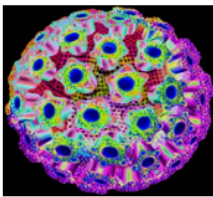
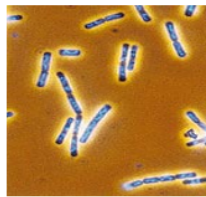
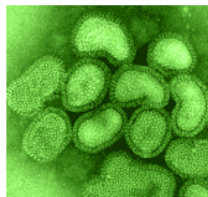
**Bacteria:** *E.coli, Salmonella, Listeria, Campylobacter, Shigella*

**Viruses:** cold viruses, Hepatitis A, Norwalk virus

**Parasites:** *Giardia, Cryptosporidium, Trichinella*, tapeworms

**Yeasts and moulds:** *Saccharomyces, Aspergillus, Penicillium etc.*

**Any toxin** - produced by microbiological organisms is also a biological hazard



[Ameera Consultancy] (<https://ameeraconsultancy.com/>)

Figure: Biological Hazard

Category of micro-organisms that are in food hazard list...

- Normal microflora
- Coliform
- Spoilage microbes
- Pathogenic microbes
- Biotxin & Bio-terrorism risk

**Chemical Hazards**

Chemical Hazard can cause injury or poisoning and include:

- **Naturally occurring substances** – e.g., Allergens, Plant specific toxins etc.
  - Aflatoxin, Mycotoxin
  - Hemagglutinin in red kidney bean
  - Poisonous mushrooms
  - Japanese Fugu fish
  
- **Excessive, intentionally added chemicals** - which might cause hazards for the consumers due to overdoses or reactions with other materials – Antibiotics, Pesticides, Herbicides, Fungicides, Nitrates etc.
  - Antibiotics
  - Pesticides, Fungicides
  - Herbicides
  - Sodium nitrite as curing agent
  - Coloring agent
  - Animal drugs
  - Preservatives
  
- **Accidentally added chemicals/Technical faults** – during cultivation, harvesting, transportation, processing might contaminate the food.
  - Cleaning chemicals,
  - Paints, coatings
  - Lubricants
  - Pest control chemicals
  - Maintenance materials etc.

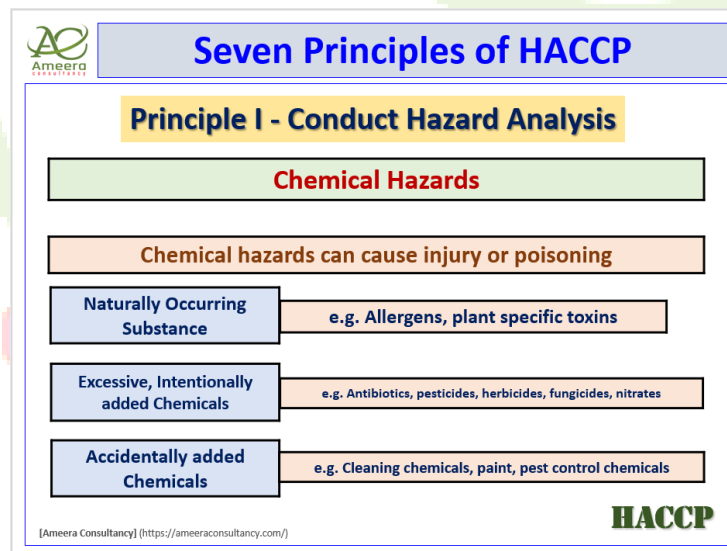


Figure: Chemical Hazard

Note: Strong smelling perfume, hand creams or aftershave are potential chemical hazards.

**Physical Hazards**

Physical hazards are physical components of a food that is unexpected and may cause illness or injury to the person who is consuming the food. Physical hazards are foreign objects that can cause injury. Like-

- Broken Glass Particles
- Metal grindings
- Nuts, Bolts
- Screws
- Stones, Pebbles
- Jewellery
- Needles
- Hard plastic
- Bones, Etc.

Physical hazards are on two basic categories...

- **Intrinsic physical hazards** – that are in the food by its own nature.
  - Bones in fish
  - Bones in meat
  - Fiber in juice
  - Seed or seed particles in fruits
- **Technical faults** – during cultivation, harvesting, transportation, processing etc. might cause the contamination with physical hazards material.
  - Faulty packaging
  - Foreign bodies – plastic, glass, metal etc.
  - Engineering defaults – bolts, nuts etc.

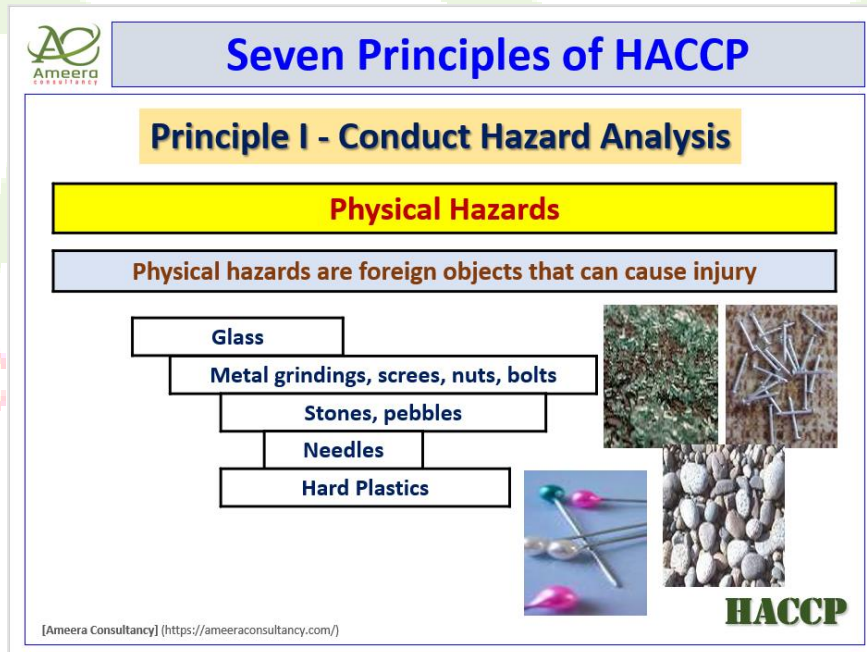


Figure: Physical Hazard