



SNS COLLEGE OF TECHNOLOGY
COIMBATORE-35
DEPARTMENT OF FOOD TECHNOLOGY



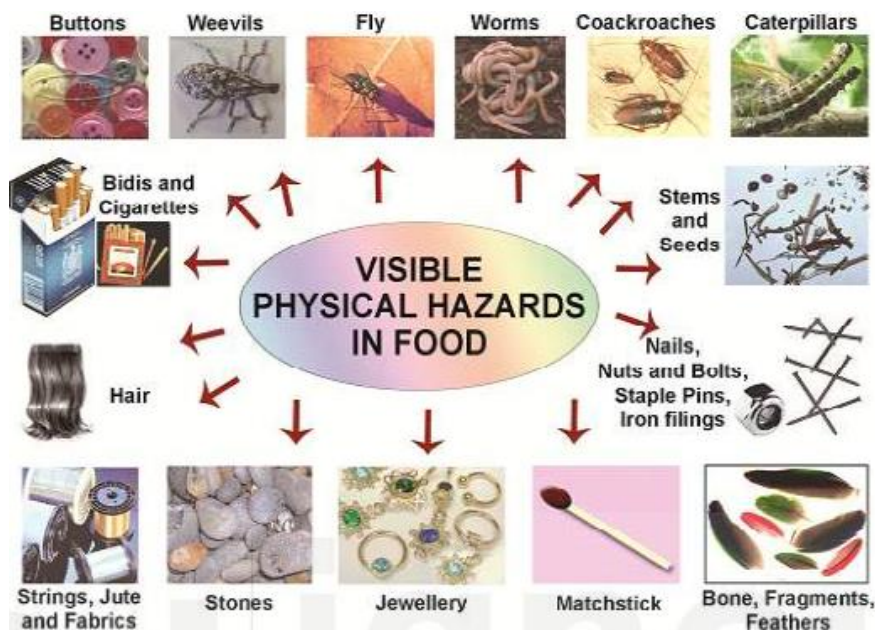
Unit 1: FOOD SAFETY

Topic 1: Characterization of food Hazards - physical, chemical and biological

Physical	Biological	Chemical		Allergens
		Natural occurring poisons of biological origin	Chemicals or deleterious substances	
Glass Hair Metal Stones Plastic Parts of pests Insulation material Bone Fruit pits	Microbiological Pathogenic Bacteria • Spore-forming • Non spore-forming Parasites and protozoa Viruses	Mycotoxins, Algal toxins	Veterinary residues, Antibiotics Growth stimulants Plasticisers and packaging material Chemical Residues Pesticides Cleaning fluids, Allergens Toxic metals, Lead and cadmium, Food chemicals preservatives, processing aids, polychlorinated biphenyls (PCBs), printing inks, prohibited	Cereals containing gluten; i.e wheat, barely, oats etc. Crustaceans and product of these Eggs and egg products fish and fish products Peanuts,soyabean and products of these; Milk and milk products.

Physical Hazards

Physical hazards include a variety of materials often referred to as extraneous materials. It may be defined as any foreign material not normally found in a food, which may cause illness or injury to the individuals consuming/using the product. They may cause injury, illness and others may never be noticed.



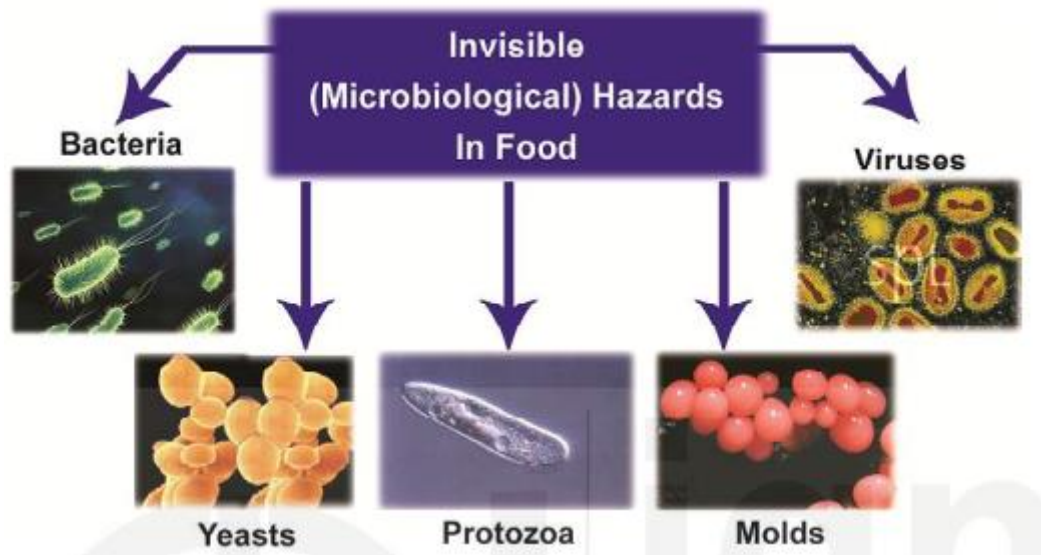
the use of electronic metal detector in many food processing operations can help in detecting and screening harmful metallic pieces. In spite of availability of various mechanisms and technologies to prevent the risks caused due to physical contaminants, foreign / extraneous objects still represent one of the largest categories of complaints by consumers.

Biological Hazards

Among the biological hazards the major concern is from microorganisms.

Biological hazards, include bacterial, fungal, viral and parasitic organisms (protozoa and worms) and/or their toxins. There are many microorganisms, which are pathogenic to humans, but relatively few are associated with foods. These microorganisms that cause diseases are termed as 'food-borne pathogens'. There are three types of food-borne disease from microbial pathogens: infections, intoxications and toxic infections.

Infections result from the ingestion of live pathogenic organisms which multiply within the body and produce disease. While intoxications occur when toxins produced by pathogens are ingested.



S.No	Organisms	Foods Implicated
1.	<i>Clostridium botulinum</i> types A, B, E, and F	Meat, fish, low or medium acid canned foods, home canned products
2.	<i>Salmonella</i> spp. (<i>Salmonella typhi</i> : <i>Salmonella paratyphi</i>)	Eggs, meat and meat products, bakery products, dairy products (esp. ice-cream)
3.	<i>Shigella</i> spp.	Shellfish, fruits and vegetables, chicken salad
4.	<i>Clostridium perfringenes</i>	Raw meat, poultry and their products
5.	<i>Staphylococcus aureus</i>	Custard, cream, bakery foods, poultry, ham, dairy products(especially. khoa)
6.	<i>Bacillus cereus</i>	Cereal dishes, puddings, mashed potatoes, sauces, soups
7.	<i>Vibrio cholerae</i> 01, non-01 <i>Vibro vulnificus</i> <i>Vibrio parahaemolyticus</i> <i>Listeria monocytogenes</i>	Water, potatoes, eggs, asparagus, salads, seafood (shrimps, oysters, clams, crabs, lobsters and related shellfish), finfish, milk and milk products, raw meat and poultry products, fruit and vegetables, salads, seafood
8.	Enterovirulent <i>Escherichia coli</i> (EEC)	Cream pie, mashed potatoes, meat, poultry, dairy products like cheese
9.	<i>Campylobacter jejuni</i>	Dressed chicken, meat dishes, raw milk, raw poultry
10.	<i>Yersinia enterocolitica</i>	Dairy products, egg products, raw meat and poultry, raw vegetables
11.	<i>Brucella abortis</i> ; <i>B suis</i>	Milk and milk products, raw meat
12.	Viruses (<i>Hepatitis A and E</i> , <i>Rotavirus</i> , <i>Norwalk virus group</i>)	Shellfish, raw fruits and vegetables, salads sandwiches, potatoes, lettuce, coleslaw
13.	<i>Entamoeba histolytica</i>	Water, raw fruits and vegetables
14.	<i>Diphyllobothrium latum</i>	Fish
15.	<i>Cryptosporidium parvum</i>	Raw fruits and vegetables, salads
16.	<i>Giardia lambea</i>	Water, lettuce, raw fruits and vegetables
17.	<i>Taenia saginata</i> , <i>Taenia solium</i>	Meat (beef and pork)
18.	<i>Trichinella spiralis</i>	Raw pork, meat products

Chemical Hazards

A chemical hazard is any chemical contaminant introduced in food system which may cause illness or injury to the individuals using the product. Few of the chemical hazards includes pesticides and residues, veterinary residues, colours, cleaning chemicals, adulterants etc. Chemicals which cause a harmful response when consumed by animals or humans are said to be toxic.

