

Food Safety - Introduction



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Introduction

Contaminants in food:

- Worldwide public health concern.
- Leading cause of trade problems internationally.
- Contamination may occur through air pollution, water and soil.



How is our food contaminated?



Pesticides & fertilizers



**Livestock
(Treatment /
Prevent diseases)**



Processing & preparation

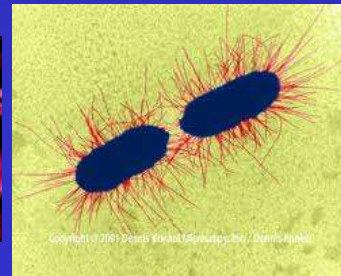
Types of hazardous substances



Chemical



Physical



Biological

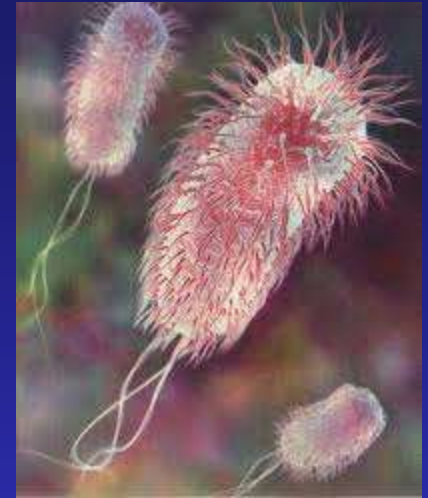
Physical contaminants in food

- Hair
- Dirt
- Metal items
- Fingernails
- Bandages
- Insects



Biological contaminants in food

- Bacteria – *Salmonella*, *E.Coli*
- Virus – *Hepatitis A*, *Norfolk virus*
- Parasites – *Toxoplasma*, *Giardia spp.*
- Fungus



Chemical contaminants in food

- Antibiotics/Hormones
- Pesticides
- Fertilizer
- Coloring agents
- Preservatives
- Plastics



Pesticides and fertilizers

Pesticides are used to protect food from pests such as insects, rodents, weeds, and mold.

- Insecticides – To control insects
- Rodenticides – To control rodents
- Herbicides - To control weeds
- Fungicides – To control mold and fungi



Health risks of chemicals

- Birth defects
- Nerve damage
- Cancer
- Unique health risks to children

These effects depend on **how toxic** the pesticide is and **how much** of it is consumed..

**How does
antibiotics/hormone
residues enter into
the food chain?**

Antibiotics/Hormones



Treatment / growth promotion



Food of
animal
origin



Trade
Implications



Antibiotic
resistance

Allergies
Toxic effects
Carcinogenicity
mutagenicity



Chemicals used in production/processing of food

Food additives:

Any substance that become part of a food product.

Intentional additives: To improve the quality of food product.

Unintentional additives:

Insecticides, fungicides
herbicides
plant growth regulators
hormones.



Chemicals used in production/processing of food contd.

Intentional additives:

Food industry uses about 3000 food additives.

- Preservatives
prevent growth of spoilage organisms
- Emulsifiers/Stabilizers
prevent mixed food from separation



Chemicals used in production/processing of food contd.

Intentional additives:

- Antioxidants
 - Prevent fat and oils from spoiling
- Colors
 - Improve color of processed food
- Sweeteners/Flavor enhancers
 - Bring out the taste of food
- Enrichment – restore lost nutrients to food
- Fortification – Increase nutritional value of food



Chemicals used in production/processing of food contd.

- Chemical cleaners, food sprays and fungicides used during shipping and storage
- Chemicals absorbed into our food from the way we cook
Non stick pans, pots, bake-ware contains Teflon, which is made from perflurinated compounds (linked to cancer and reproductive problems)



Chemicals used in production/processing of food contd.

- Plastic containers, food wrappers
Chemicals can be leached in to the food from the plastic containers and wrappers.

BPA:

- Estrogenic compound- Interfere with body hormones.
- More susceptible groups are infants and pregnant women.
- Linked with early puberty, cancer risk, nerve diseases.
- In EU and Canada, BPA is banned in infant feeding bottles.



Prevention of chemical residues in food

- At farm level
- By regulatory activities
- By laboratory analysis with surveillance
- Educating the public and younger generation

How to minimize exposure to pesticides

Sensible food practices:

Washing



Peeling and trimming



Selecting a variety of foods



- Organically grown food

How to minimize exposure to chemicals from plastics

Sensible food practices:








- When possible it is best to avoid plastics especially for children's food.
- Select plastics which does not contain BPA .
- Find glass versions of baby bottles.
- Avoid use of plastic containers to heat food in microwaves. Ceramic, glass, and other microwaveable dishware are good alternatives.



Chemicals used in production/processing of food contd.

Understanding Plastic Recycling Codes

A handy guide to safe plastic use

Code	Name	Common Use	Recycle Rate	Recommendation
	PET Polyethylene Terephthalate	Plastic bottles (soft drink, single-use water bottles, sport drinks), food jars, cosmetic containers.	23%	Be careful with products labeled No. 1. Designed for single use only. Extended use increases risk of leaching and bacterial growth.
	HDPE High density polyethylene	Grocery Bags, detergent bottles, milk and juice jugs.	27%	Appears to be Safe
	PVC Polyvinyl chloride	Garden hose, cable sheathing, window frames, blister packs, blood bags, meat wrap.	< 1%	Avoid Nicknamed the Poison Plastic, contains many dangerous toxins.
	LDPE Low density Polyethylene	Heavy duty bags, drycleaning bags, bread bags, squeezable bottles, plastic food wrap.	< 1%	Appears to be Safe
	PP Polypropylene	Medicine bottles, cereal liners, packing tape, straws, potato chip bags.	3 %	Appears to be Safe
	PS Polystyrene	CD and video cases, plastic cutlery, foam packaging, egg cartons.	< 1%	Avoid May leach styrene, a possible human carcinogen. May be a hormone disruptor.
	Other PC Polycarbonate	Baby bottles, water cooler bottles, car parts	< 1%	Caution Concern with leaching of Bisphenol A which appears to cause chromosomal damage.

Useful Tips:

- Store food and water in glass or stainless steel containers whenever possible
- Minimize or eliminate exposure to plastics with code 1, 3, 6, or 7
- Do not use products (especially Baby Bottles) identified with No. 7

www.PlasticFreeBottles.com

Your source for alternatives to plastic bottles

Summary

- Contaminants enter the food chain through water, soil, air, during processing or treating farm animals.
- Contaminants in food can cause health risks to human consumers, due to careless food practices and improper usage of chemicals in food industry.

Summary

- These effects depend on **how toxic** the chemical is and **how much** of it is consumed and **how long** a person exposed to it.
- We can prevent unnecessary contamination of food through sensible food practices.



<http://www.youtube.com/watch?v=cmHS1Ze-Fdk&feature=related>

[http://www.youtube.com/watch?v=IEvl_Pln9HU&feature=endscreen
&NR=1](http://www.youtube.com/watch?v=IEvl_Pln9HU&feature=endscreen&NR=1)

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<http://www.youtube.com/watch?v=iMzXMICSNkw&feature=related>

<http://www.youtube.com/watch?v=hD5NchP-B8I&feature=fvsr>

Videos

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