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# Introduction of Food Contamination

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# Definition of **Food**: Republic Indonesia Law 18/2012

*Pangan adalah segala sesuatu yang berasal dari sumber hayati produk pertanian, perkebunan, kehutanan, perikanan, peternakan, perairan, dan air, baik yang diolah maupun tidak diolah yang diperuntukkan sebagai makanan atau minuman bagi konsumsi manusia, termasuk bahan tambahan Pangan, bahan baku Pangan, dan bahan lainnya yang digunakan dalam proses penyiapan, pengolahan, dan/atau pembuatan makanan atau minuman*

## **Key Points:**

- Comes from biological sources whether processed or not
- Intended for human consumption as food additives, food raw materials and other



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# Definition of **Food Safety**: Republic Indonesia Law 18/2012

*Keamanan Pangan adalah kondisi dan upaya yang diperlukan untuk mencegah Pangan dari kemungkinan cemaran biologis, kimia, dan benda lain yang dapat mengganggu, merugikan, dan membahayakan kesehatan manusia serta tidak bertentangan dengan agama, keyakinan, dan budaya masyarakat sehingga aman untuk dikonsumsi.*

## **Key Points:**

- A condition and effort needed to prevent food from possible biological, chemical and other contaminants that can disturb, harm and endanger human health
- Prevent food that is contradicting with religion, beliefs and culture of the community



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# Biological Hazards in Food

Dangerous microorganisms and parasites causing food-borne diseases:

## Bacteria

- Escherichia coli
- Shigella spp.
- Vibrio cholerae

## Moulds

Lead to mycotoxin contamination caused by:

- Aspergillus spp.
- Fusarium spp.
- Penicillium spp.

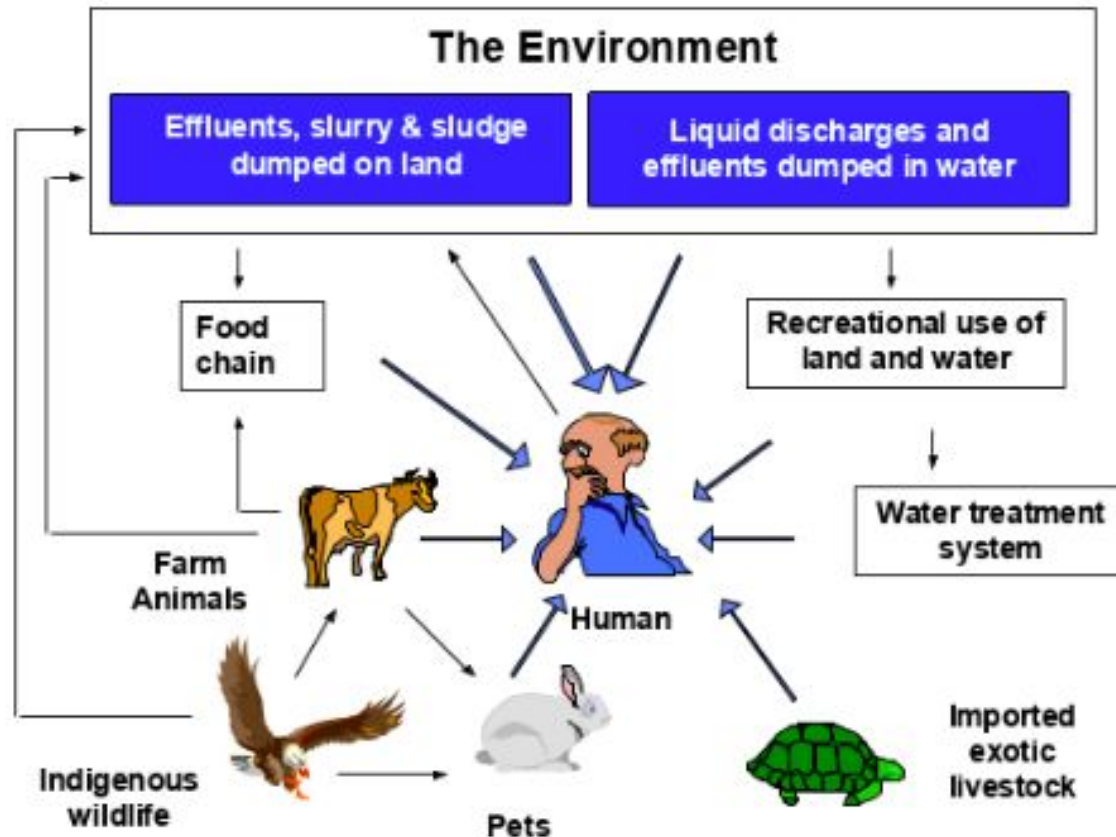
## Viruses

- Hepatitis A and E viruses
- Rotavirus
- Polio virus

## Parasites

- Protozoa: such as Toxoplasma gondii
- Helminth: such as Ascaris lumbricoides

# Examples of Transmission of Cryptosporidium (Parasite)



# Chemical Hazards in Food

Industrial and environmental  
contaminants

Contaminants produced during  
processing

Improperly used  
agrochemicals

Improperly used additives



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# Physical Hazards in Food

Potential physical hazards:

1. Glass
2. Metal
3. Bone
4. Plastic
5. Stones and rocks
6. Wood
7. Paper
8. Human and animal hair



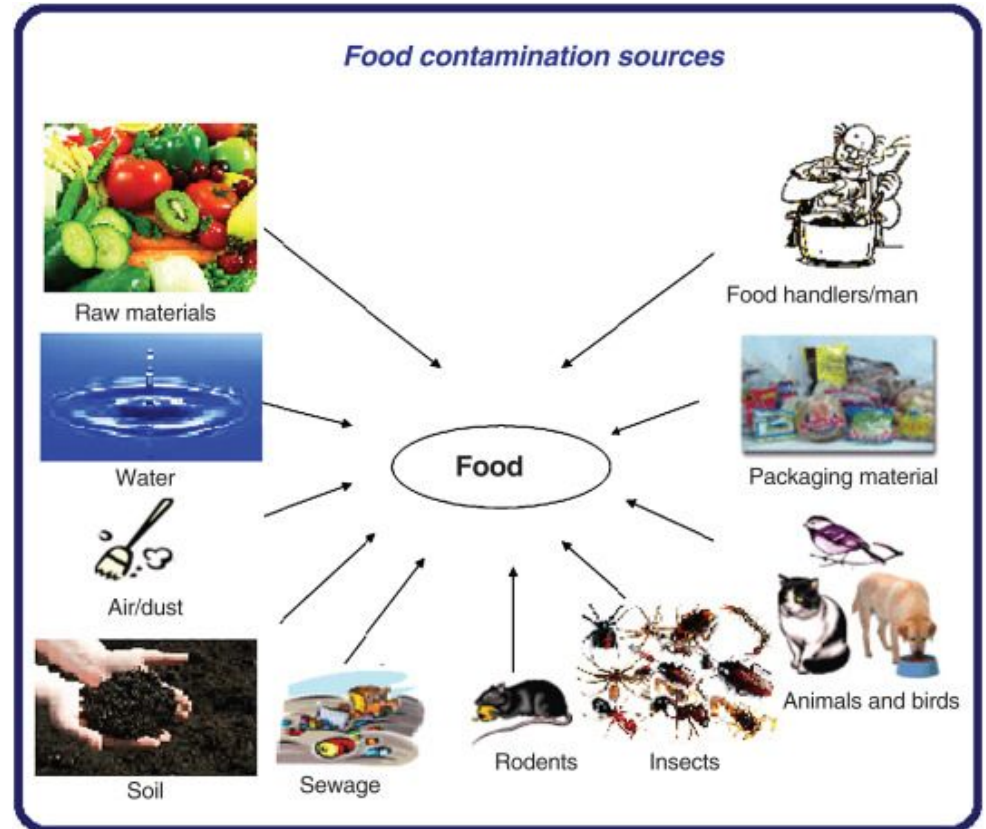


# Factors Contributing to Foodborne Illness

Contamination

Survival

Growth





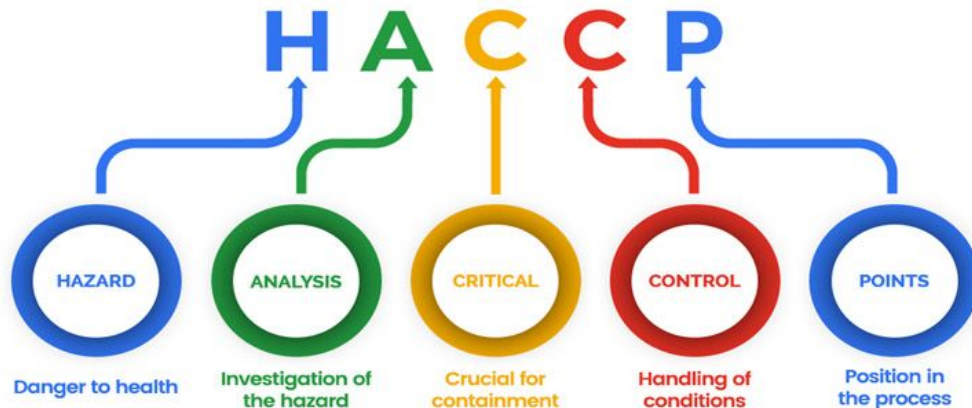


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# Hazard Analysis Critical Control Point (HACCP)

HACCP or Hazard analysis critical control point is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product





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# HACCP Principles

1

Analyze  
hazards

3

Establish  
critical  
limits

5

Establish  
corrective  
actions

7

Document  
ation &  
records

2

Identify  
CCP

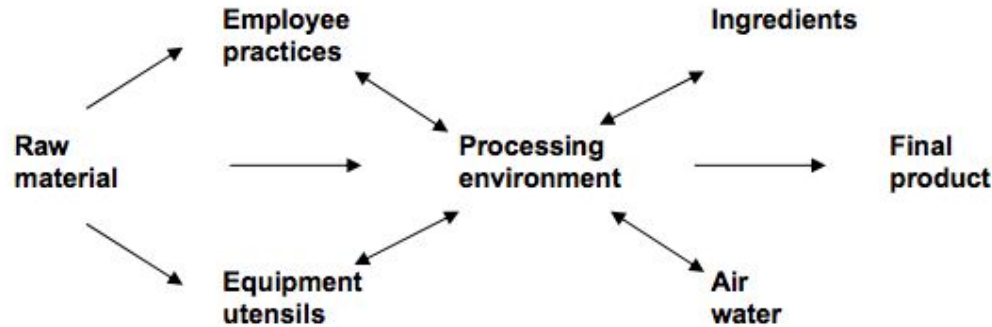
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Establish  
monitoring  
procedures

6

Establish  
verification  
procedures

# Implementation of Food Hygiene and Sanitation



The main preventive measures to avoid cross-contamination are:

- A clear and effective separation of raw material and cooked
- Proper employee hygiene, clothing and handling practices
- Restricted and controlled traffic or movement about the plant
- Food handling and processing areas and equipment adequately cleaned and disinfected
- Use of potable water



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# Personnel Hygiene

Use clean  
protective  
clothing

Nail varnish, false  
nails, watches  
and jewelry  
shouldn't be worn

Eating food,  
chewing gums,  
consuming tobacco  
shouldn't occur

An effective  
hand washing  
program should  
be implemented

