



# Food Safety and HACCP

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# What is Food Hygiene and Food Safety

- ***Food hygiene*** - all conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.
- ***Food safety*** - assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use.

**World Health Organization**

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# What makes food unsafe

- Biological hazards
  - Chemical hazards
  - Physical hazards
  - Allergens
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# Biological Hazards

- Pathogenic bacteria – E coli in raw milk
  - Viruses – hepatitis A (ill people)
  - Moulds – aflatoxin in peanuts
  - Protozoa - Cryptosporidium
  - Parasites – cysts leading to tape worm in man
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# Chemical Hazards

- Toxic elements – heavy metals, lead
  - Lubricants – oil, grease
  - Cleaning chemicals – caustic soda
  - Antibiotics – meat
  - Pesticides, herbicides
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# Physical Hazards

- Building equipment – glass, wood, metal
  - Food handlers – jewellery, cigarette ends
  - Packaging – plastic, glass, staples, paper
  - Visitors - jewellery, cigarette ends, hair
  - Maintenance – wire, nuts and bolts
  - Sabotage – glass, needles
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# Allergens

- Barley, wheat
  - Crustaceans, shellfish
  - Eggs
  - Fish
  - Legumes, peas, peanuts, **soybeans**
  - Milk
  - Tree nuts
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# Look at the definition of Food Hygiene

All

**conditions and measures**

necessary to ensure the safety and suitability of  
food at all stages of the food chain

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# What are these conditions and measures

- Proper construction and layout of premises
  - Cleaning and sanitation
  - Pest control
  - Hygiene of personnel
  - Storage, distribution and transportation
  - Waste management
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# Look at the definition of Food Safety

## **Assurance**

that food will not cause harm to the consumer  
when it is prepared and/or eaten  
according to its intended use

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# How are you going assure food safety

- Food safety does not happen by accident
- Certain steps and procedures must be followed throughout the entire food chain
- The most effective way of doing this is to operate within a framework of a structured food safety management system

## THE HACCP SYSTEM

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# What is HACCP ?

**H** - Hazard

**A** - Analysis

**C** - Critical

**C** - Control

**P** - Points

Food Safety Management System

- preventative

- systematic

- structured

Safety through Hazard Identification & Control

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# Developments in HACCP

- International acceptance
    - ICMSF
      - 1988 produced the first international publication
      - Covered microbiological hazards only
    - NACMCF and Codex Alimentarius (WHO)
      - Published approaches based on seven principles
      - Codex Alimentarius accepted as international standard
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# National Developments

- SANS 10049 (SABS 049: 2001)
  - Regulation 918 of 1999
  - Regulation 908 of 2003
  - SANS 10330 : 2006
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# The Codex Principles

- 1. Identify hazards and preventative measures
  - 2. Identify Critical Control Points (CCP's)
  - 3. Establish Critical Limit
  - 4. Establish a CCP monitoring system
  - 5. Establish corrective action procedures
  - 6. Establish verification procedures
  - 7. Establish documentation and records
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# Why use HACCP

- Management of product safety
  - Prevention of product safety incidents
  - Limitations of traditional quality control
  - External pressures
  - Many benefits
  - Effective product management
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# Benefits of HACCP

- Preventative system
  - Systematic
  - Increases confidence
  - Cost effective control system
  - Effective use of resources
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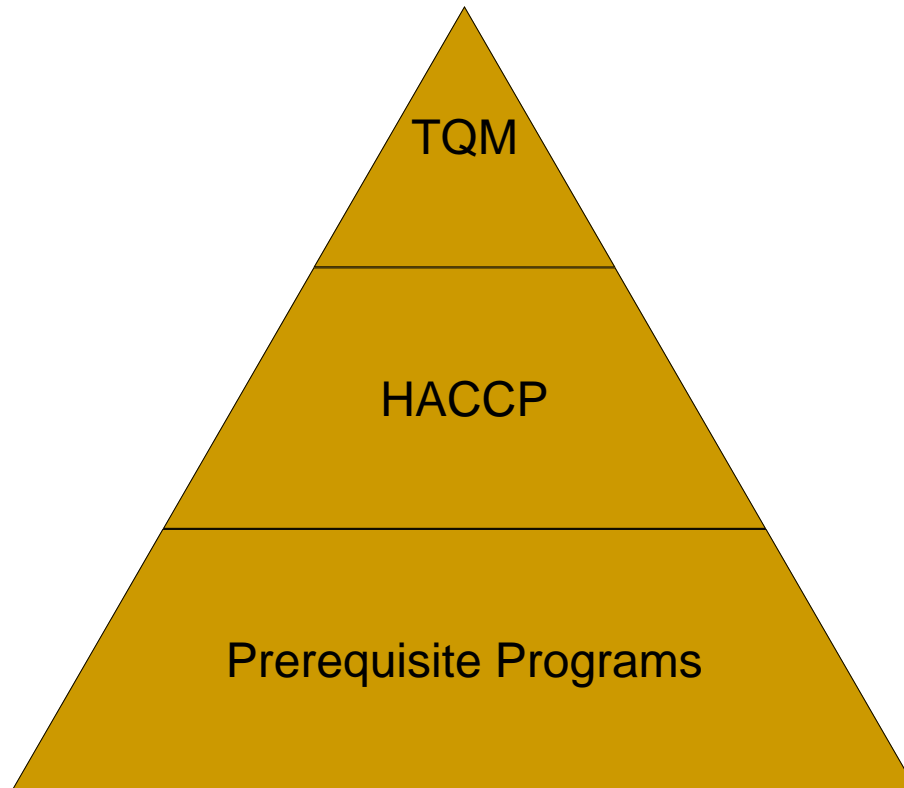
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# Benefits of HACCP

- Internationally accepted
  - Strengthens quality management systems
  - Facilitates regulatory inspection / external audit
  - Demonstrates management commitment
  - Helps demonstrate “due diligence”
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# HACCP is not a stand alone system



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# PREREQUISITE PROGRAMMES

- The production of safe food requires the HACCP system to be built on a solid foundation of prerequisite programs
  - Alternative terms for PRPs are used:
    - Good Manufacturing Practice (GMP)
    - Good Agriculture Practice (GAP)
    - Good Hygiene Practice (GHP)
    - Standard Operating Procedures (SOP)
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# Some aspects PRP's must address

- Premises and facilities
  - Control of suppliers
  - Delivery and storage
  - Personal hygiene and staff training
  - Sanitation and pest control
  - Maintenance and calibration
  - Product recall and traceability
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# Good Agricultural Practices (GAP'S)

- Water
  - Organic and inorganic fertilizers
  - Animal exclusion
  - Pest control
  - Worker health and safety
  - Harvesting
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# Preliminary steps before developing a HACCP plan

## Step 1: Assemble the HACCP Team

- Must have knowledge and expertise
  - Must be multi-disciplined
  - Must consist of a team leader and team members
  - Shall accept, in writing, his assignment and commitment to the HACCP team
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## Step 2: Describe the product

Should include:

- Product name(s)
  - Important product characteristics
  - How is it to be used
  - Packaging
  - Shelf life
  - Where is it to be sold
  - Labeling instructions
  - Special distribution control
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## Step 3: Identify the intended use of the product

- Who will use the product after it has left the control of the food handling organization shall be described.
  - Attention shall be focused on:
    - the vulnerability of the consumer
    - instructions for use
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## Step 4: Construct a process flow diagram

- Clear simple outline of the process steps

### Purpose:

- To highlight the important process steps
  - To ensure that the process is thorough and consistent
  - To avoid a situation where a significant hazard is not addressed
- In terms of SANS 10330, a floor plan indicating routes, placement of equipment and services must be developed
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## Step 5: Validate the process flow diagram

- Verified for accuracy and completeness
  - On-site review
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# Step 6: Identify hazards and preventative measures

## Principle 1

(1) Incoming material	(2) Potential hazard	(3) Significance of the hazard	(4) Justify decision in column 3	(5) Preventative measures	(6) Is this step a CCP
(1) Process Step	(2) Potential hazard	(3) Significance of the hazard	(4) Justify decision in column 3	(5) Preventative measures	(6) Is this step a CCP

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# Step 7: Identification of CCP's

## Principle 2

- **What is a Critical Control Point?**
  - **How do we find them?**
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# What is a CCP?

- A **(last)** point, step or procedure where control can be applied and a hazard can be prevented, eliminated or reduced to acceptable levels
  - Essential for safety
  - Kept to a minimum to ensure correct focus
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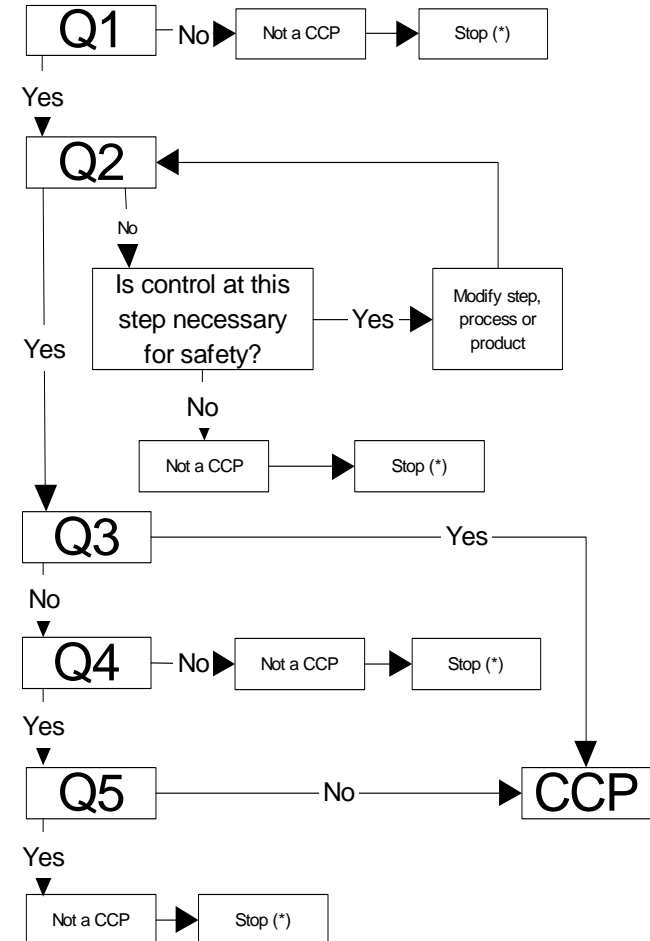
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# How are CCPs identified

- **Team expertise and judgment**
  - **CCP decision trees**
  - **Software**
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# CCP decision tree

Q1 What?	Is there a hazard at the process step?
Q2 Which?	Do control measures exist?
Q3 Why?	Is the step specifically designed to eliminate or reduce the likely occurrence of a hazard to an acceptable level?
Q4 Why?	Could contamination with identified hazard(s) occur in excess of acceptable level(s) or could it increase to unacceptable levels?
Q5 Where?	Will a subsequent step eliminate identified hazard(s) or reduce likely occurrence to an acceptable level?



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# Controlling CCPs

Involves the following:

Step 8: Principle 3: Establish critical limits and target levels

Step 9: Principle 4: Establish monitoring procedures

Step 10: Principle 5: Establish corrective action procedures

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# Step 8: Critical limits or Target Levels

## Principle 3

- Definition: A value which separates acceptable from unacceptable
  - Must be measurable
  - Criteria must be met for each preventative measure at a CCP
  - A target level is control criteria which is more stringent than Critical Limits
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# Step 9 : Establish monitoring procedures

## HACCP Principle 4

- Monitoring is the measurement or observation at a CCP that the process is operating within the critical limits (or target levels)
  - It must be able to detect loss of control
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# Step 10: Establish corrective action procedures

## HACCP Principle 5

- Corrective action is taken when monitoring indicates that there is a deviation from a critical limit
  - Correction following deviation
    - Adjust the process
    - Destroy non-complying product
    - Re-work
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# Step 11 : Establish verification procedures

## HACCP Principle 6

- To verify that the system is working
  - To determine compliance with the HACCP Plan
  - **Establish records and documentation procedures**
    - **Objective evidence of all actions and results**
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## Step 12 : Establish documentation and records and procedures Principle 7

### Objective evidence of all actions and results

- Proof of all 12 steps
  - The approved HACCP plan
  - All associated records must be on file at the food establishment.
  - PRP's procedures
  - Training records
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