



HACCP and its role in EU Food Legislation

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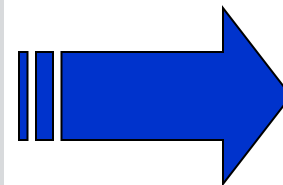
- What is HACCP?
- HACCP history
- The 7 principles of HACCP
- HACCP in the EU Food Legislation
- Hazards, control measures and CCPs
- Use of Microbiological Criteria in HACCP

What is HACCP?

- First of all HACCP is an abbreviation
- HACCP stands for a science-based system for identification, evaluation and control of hazards involved in food production
- The HACCP system is meant to ensure that food products are not a risk to human health
- In practice, HACCP takes place as a daily monitoring of CCPs and a periodic control of the system

Hazard Analysis and Critical Control Points (HACCP) is a tool to assess hazards and establish control systems that focus on prevention rather than relying mainly on end-point testing.

(HACCP Guidance document, EU)



**HACCP
plan**



HACCP history

1960s	NASA developed and used the approach for production of safe foods for manned space flights
1980s	A further development into a system was released by ICMSF in 1988
1990s	EEC Directive on Food Hygiene (Dir. 93/43 EEC, 1995) places full responsibility for safety of food on the producers who have to implement a control system based on the principles of HACCP
2000s	Harmonization of the use of HACCP Integration of HACCP into ISO management standards, ISO 22000 available from 2005
2010s	Further development of ISO 22000 into FSSC Revision of HACCP guidelines (Codex, ISO, EU)



HACCP principles

1. Conduct a **hazard analysis**
2. Determine the **Critical Control Points (CCP)**
3. Establish **critical limit(s)**
4. Establish a system to **monitor** control of the CCP
5. Establish the **corrective action** to be taken when monitoring indicates that a particular CCP is not under control
6. Establish procedures for **verification** to confirm that the HACCP system is working effectively
7. Establish **documentation** concerning all procedures and records appropriate to these principles and their application

(from Codex Alimentarius, 2003)



HACCP in the EU Food Legislation

- Regulation no. 178/2002 – the General Food Law
- Reg. no. 882/2004 – on official control
- Reg. no 852/2004 – on hygiene of foodstuffs

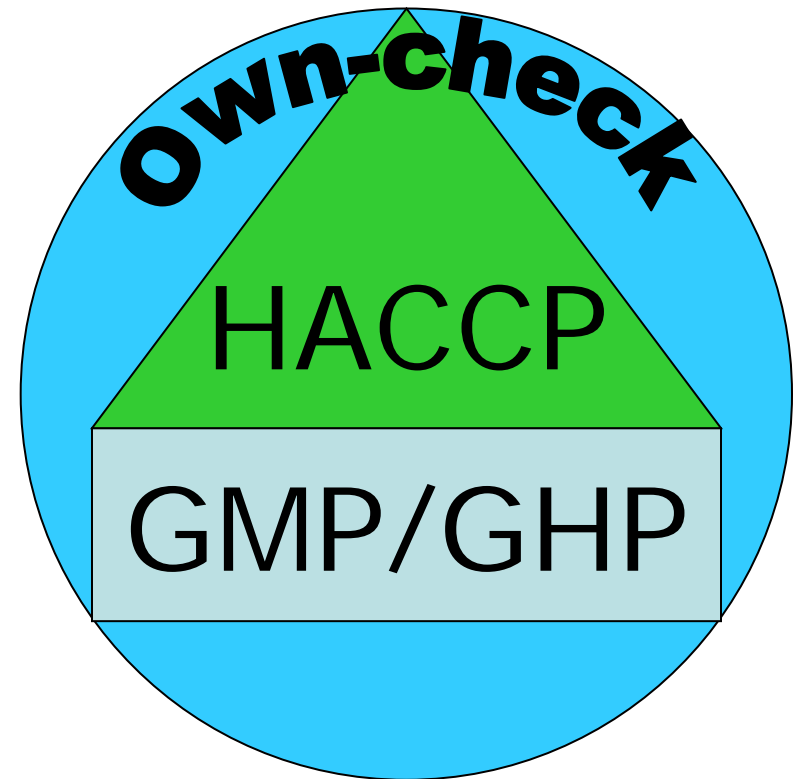


HACCP in EU Food Legislation

- The EU food law places full responsibility for safe food on the food business operators
- In accordance with EU law all food businesses are, therefore, obliged to implement own-check systems (FSMS)
- This own-check system must build on the principles of **HACCP**
- The authorities should through public control systems make regular audits of the food businesses to ensure that own-check systems are running in accordance with regulations

What are own-check systems (FSMS)?

- The systematic actions food business operators take to ensure that:
 - They follow the regulations in the Food Law
 - Food products do not pose a risk to humans
- Daily routine procedures and monitoring system





HACCP – EU Guidance document



**EUROPEAN COMMISSION
HEALTH & CONSUMER PROTECTION DIRECTORATE-GENERAL**

Brussels, 16 November 2005

Guidance document

on the implementation of procedures based on the HACCP principles, and

**on the facilitation of the implementation of the HACCP principles in certain food
businesses**

NEW VERSION



HACCP – EU Guidance document



Brussels, ~~XXX~~
SANTE/12155/2015 Rev. 2 CIS
(POOL/G4/2015/12155/12155) ~~EN~~
CIS.doc)
[...] (2016) ~~XXX~~ draft

COMMISSION NOTICE

on

Guidance document on the implementation of food safety management systems covering prerequisite programs (PRPs) and procedures based on the HACCP principles, including the facilitation/flexibility of the implementation in certain food businesses



HACCP based procedures - steps

INITIATE

1. Management decision
2. Assemble HACCP team

PLAN

3. Describe product
4. List raw materials and contact materials
5. Construct and confirm flow diagram (FD)
6. List all potential hazards, conduct hazard analysis, identify control measures
7. Select CCPs on FD
8. Plan critical limits for CCPs
- * 9. Plan monitoring
10. Plan corrective actions
11. Plan verification procedures
12. Plan documentation and record keeping



Validation



HACCP plan

IMPLEMENT

13. Write operating procedures
14. Run trial test and evaluate
15. Run trial verification

OPERATE

16. Start use of system
17. Conduct verification *

* Use of tests

What is a (foodborne) hazard?

HAZARD

*A biological, chemical, or physical **agent** in, or condition of, food with the potential to cause an adverse health effect*

Hazards - examples

Chemical hazards

- Environmental pollutions (*e.g.* lead, mercury)
- Production aids (*e.g.* pesticides, nitrate, cleaning materials)
- Compounds formed during cooking (*e.g.* acrylamide, mutagens)
- Naturally occurring toxins in food (*e.g.* lectin and solanine)
- Migration from plastic utensils and packaging material
- Allergens

Physical hazards

- Pieces from utensils or humans (*e.g.* nails, jewelleryes)
- Pieces from broken ???????

Biological hazards

- Bacteria
- Moulds, yeasts and algae
- Viruses
- Parasites



What is hazard analysis?

Aim:

To assess whether a certain hazard is of such a nature that its elimination or reduction to acceptable level is essential to the production of a safe product.

Questions to consider:

- 1) Likely occurrence of hazards and severity of their adverse health effects
- 2) Evaluation of the significance of hazards
- 3) Survival or growth of microbial hazards and formation of chemical hazards
- 4) Possible toxin production and persistence
- 5) Contamination or recontamination

- A. Hazard identification
- B. Hazard significance
- C. Control measures

What are control measures?

CONTROL MEASURE

*Any **action and activity** that can be used to prevent or eliminate a food safety hazard or reduce its impact or occurrence to an acceptable level*



CCPs



oPRPs

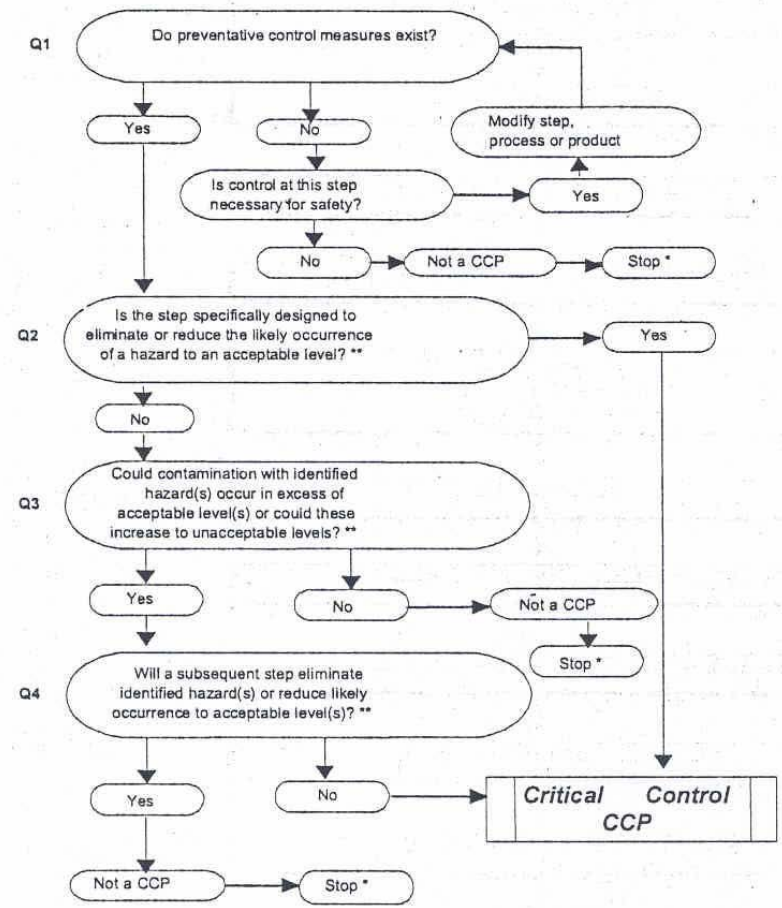
What is a CCP/oPRP?

CRITICAL CONTROL POINT – CCP

*A **step** at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level*

HACCP – determine CCPs/oPRPs

- Logical and transparent approach
- Decision tree
- Applied for each hazard
- An example from the old guidance document
- Two new examples added in the revised document
- Training needed!

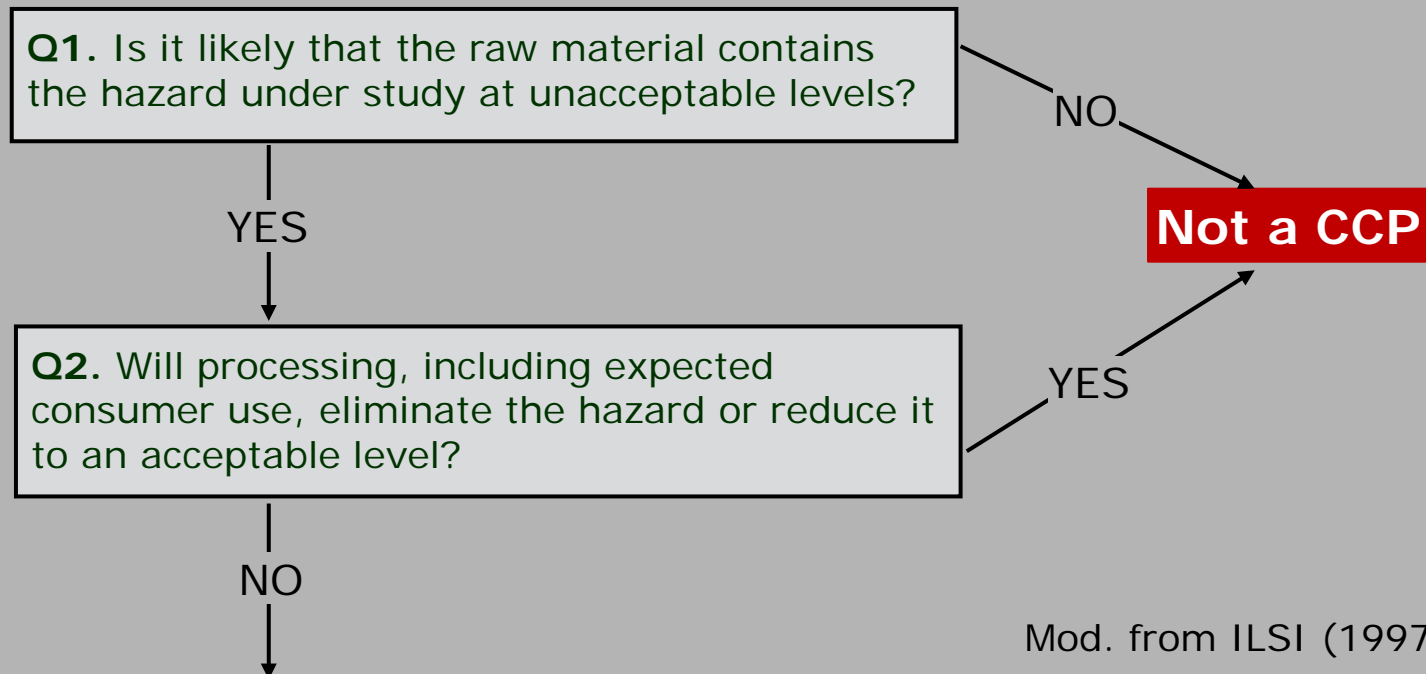


* Proceed to the next identified hazard in the described process

** Acceptable and unacceptable levels need to be determined within the overall objectives in identifying the CCPs of the HACCP plan

HACCP – example of CCP decision tree

Questions to be asked for each raw material and contact material



Raw material must be regarded as CCP/oPRP for this hazard

HACCP – example of CCP decision tree

Questions to be asked for each *process step*

Q3. Is the formulation/composition of the intermediate product/final product essential for preventing the hazard under study from increasing to unacceptable levels?

YES →

Formulation is a CCP for this hazard

Not a CCP ← NO

Q4. Is it likely that, at this step, a hazard will be introduced or an existing hazard will increase to unacceptable levels?

YES →

Q5. Will subsequent processing steps, including expected consumer use, guarantee removal of the hazard or reduction it to an acceptable level?

YES →

NO ↓

This process step must be regarded as a CCP for this hazard

YES ↑

NO

Q6. Is the process step intended to eliminate or reduce the hazard to an acceptable level?

NO →

Problem – fermented sausages

RAW MATERIALS

200 sausages

- Beef meat 76.2 kg
- Sodium chloride 2.4 kg
- Spices 1.2 kg
- Dextrose 300 g
- Starter culture

CONTACT MATERIALS

Plastic casings

PROCESSING STEPS

1. Chopping meat and mixing all ingredients (0-2°C)
2. Stuffing batter into casings (2-5°C)
3. Fermenting for 48 h at 16°C (final pH 4.8)
4. Drying for 8-10 d with gradually decreasing temperatures from 16 to 13°C (final aw 0.955)
5. Releasing for retail market (sausage weight 220 g)
6. Vacuum packaging and labelling
7. Distributing to retail (max. 5°C)
8. Displaying at retail (max. 5°C)

Work together.

Make a preliminary flow-chart giving an overview of the process steps and indications where hazards may enter the production line.

Use the decision diagrams for finding the CCPs or oPRPs.

Use of tests in HACCP

- *Monitoring of CCPs*
- *Validation of planned activities*
- *Verification of the HACCP based own-control*



Use of Microbiological Criteria (MC) in HACCP – monitoring

MONITORING

*The act of conducting a planned sequence of **observation or measurements** of control parameters to assess whether a CCP/oPRP is under control*

Sensory

Chemical

Physical

Time

Tests

Use of Microbiological Criteria (MC) in HACCP – validation

VALIDATION

*Obtaining **evidence** that a control measure or combination of control measures, if properly implemented, is capable of controlling the hazard to a specified outcome*

Hazard
analysis

Monitoring
method

Critical limit

Corrective
action

GMP/GHP

**Hazard
occurrence
(raw material)**

Recontamination

Cleaning/disinfection

Use of Microbiological Criteria (MC) in HACCP – verification

VERIFICATION

*The application of methods, procedures, **tests**, and other evaluations, in addition to monitoring, to determine whether a control measure is or has been operating as intended*

CCPs/oPRPs

System

Shelf-life

GMP/GHP

Process control

Reestablish control

If safety
limitations

Environmental
control