



Principle 2

Determine Critical Control Points

Considering Hazards for CCP Decision

Severity				
High	H-R	H-L	H-M	H-H
Medium	M-R	M-L	M-M	M-H
Low	L-R	L-L	L-M	L-H
	Remote	Low	Med	High
	Frequency			

Principle #2 - Critical Control Points

Identify the Critical Control Points (CCPs) in the process

- Hazard Analysis identified process steps associated with the introduction, increase, or control of potential hazards that are both severe & frequent (= significant hazards)

Control Points

- Any step at which biological, physical, or chemical factors can be controlled

PROCESS STEP

- EVERY STEP IDENTIFIED IN FLOW DIAGRAM MUST BE THERE

CCPs

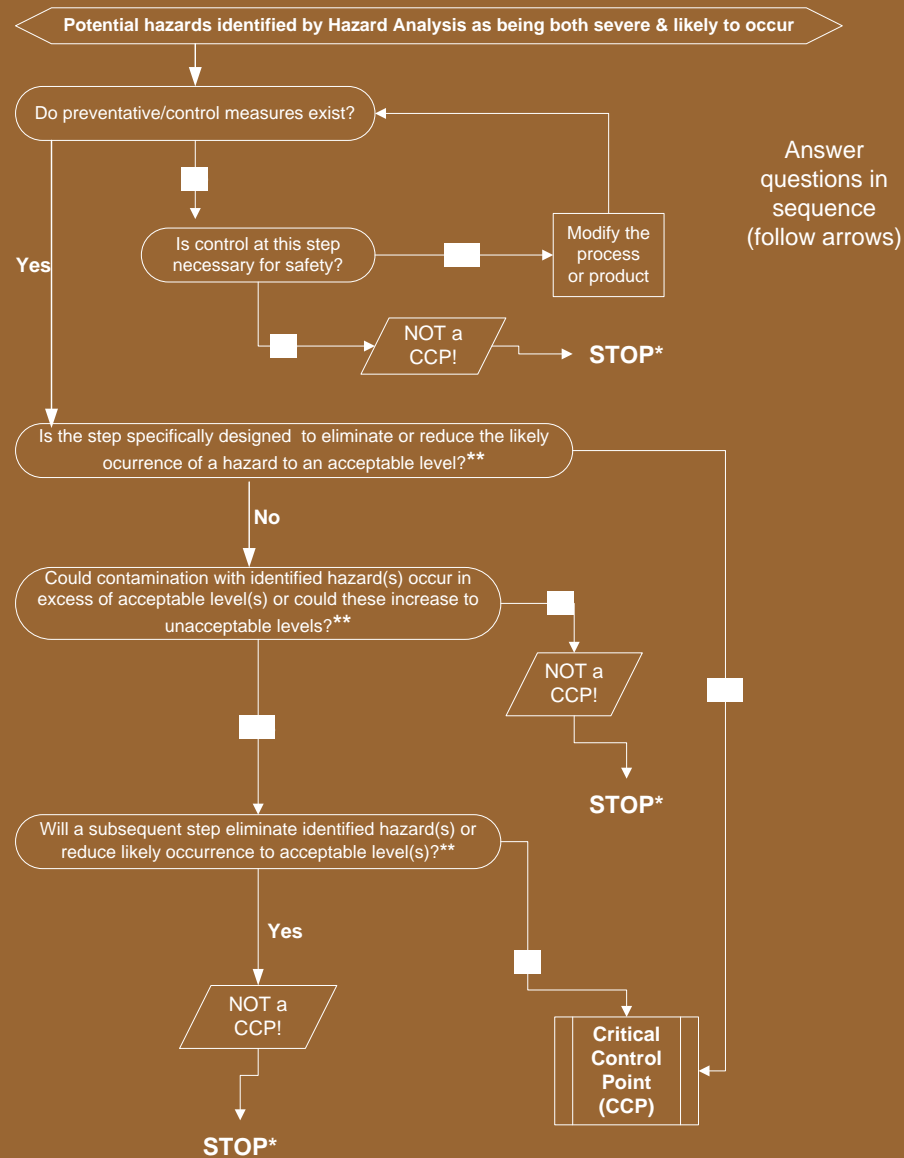
CCPs are located at any step in the process at which control can be applied & is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level

- May use tools (decision tree, for example) or expert knowledge
- Applied only to processes where hazards are severe & or frequent (= significant hazards)

DETERMINING CCPS – STEPS

- IDENTIFY THE HAZARD
 - FROM HAZARD ANALYSIS
 - EVERY HAZARD IDENTIFIED MUST BE ADDRESSED
 - RELY ON THE HAZARD ANALYSIS INFORMATION
 - AVOID SUPERFLOUS/NON FOOD SAFETY CCPs
- IDENTIFY THE CONTROL MEASURE
- IDENTIFY THE STEP IN THE PROCESS
 - POINT OF CONTROL
 - FROM FLOW DIAGRAM

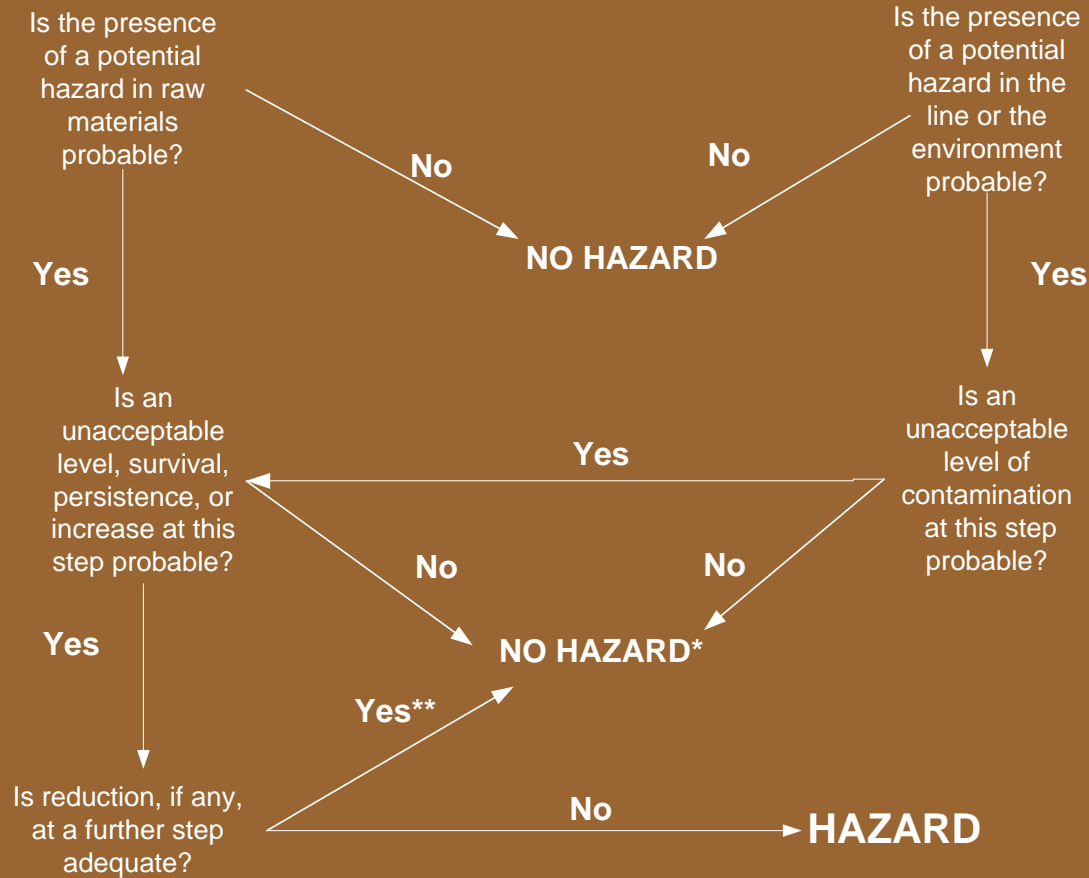
Critical Control Point (CCP) Decision Tree (Adapted from Codex Alimentarius, 1997, and NACMCF, 1997)



* Proceed to the next identified hazard in the described process

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

Hazard Determination Tree (Modified from ILSI, 1997)



*Not a hazard to be controlled at this step

**Subsequent Reduction step thus becomes a CCP

CCP Determination Chart

Process Step	Hazard Bio. Chem. Phy. Describe hazard	Do preventive measures exist for the identified hazard If no, not a CCP If yes move to next Question Identify the measure.	Does this step eliminate or reduce the likely occurrence of a hazard to an acceptable level If no, move to next question. If yes, this is a CCP	Could contamination with identified hazard occur in excess of acceptable levels or could hazards increase to unacceptable levels If no, not a CCP If yes, move to the next question	Will a later step eliminate hazard or reduce the likely occurrence to an acceptable level? If no, this is a CCP If yes, not a CCP	CCP No.

Examples of CCPs

- Thermal Processing (cooking)
- Chilling
- Product characteristics (e.g. pH and a_w)
- Degree-hours for fermentation of sausages
- Addition of rework to an allergen-free product
- Addition of controlled ingredients (e.g. pure nitrite)

Examples of CCPs, CPs

Type of Attribute	CCP	CP or MCP
Biological	<i>Salmonella</i> in dried milk	Freezing temp on cooked RTE, APC (spec.)
Chemical	Addition of nitrite/salt	TBA value, Fat level
Physical	Metal detection (baby food)	Product thickness, Piece weight

Chilling of a Cooked Product

Process Step

- **Chilling**

Identified Potential Hazard

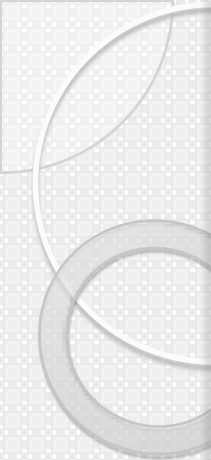
Bio.

Chem.

Phy.

Describe hazard

C.Prefrengens growth due to failing to meet Appendix B

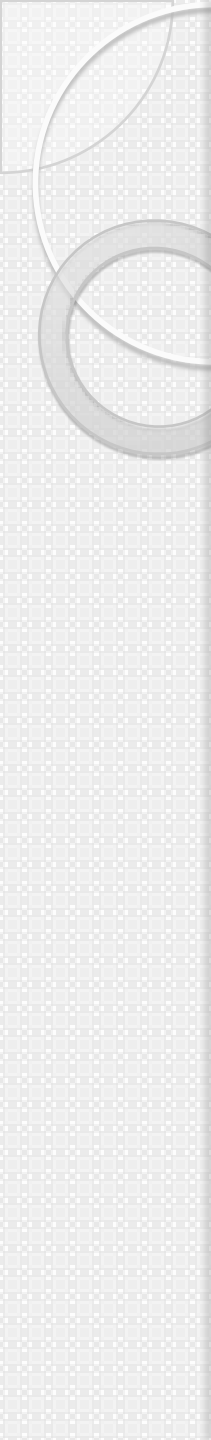


Do preventive measures exist for the identified hazard

If no, not a CCP

If yes move to next Question

Yes, Preventive measures exist which are chilling from 130F to 80F in 5 hours then 80 to 45 F in 10 hours.

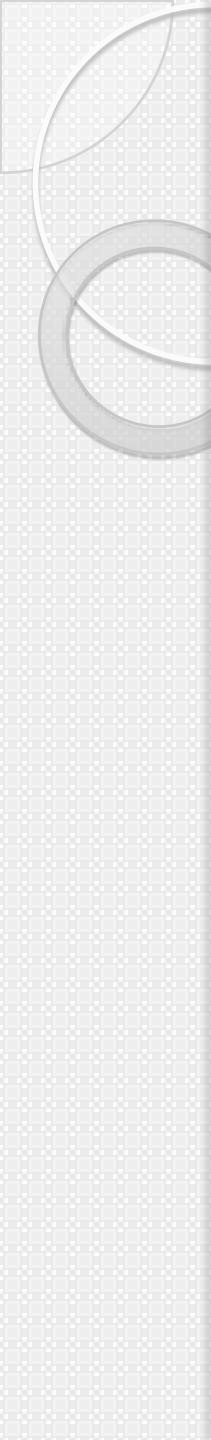


Does this step eliminate or reduce the likely occurrence of a hazard to an acceptable level

If no, move to next question.

If yes, this is a CCP

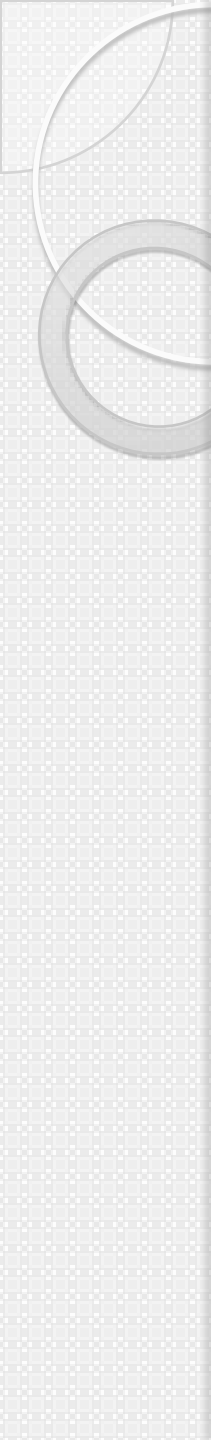
Yes



Could contamination with identified hazard occur in excess of acceptable levels or could hazards increase to unacceptable levels

If no, not a CCP

If yes, move to the next question



Will a later step eliminate hazard or reduce the likely occurrence to an acceptable level?

If not, this is a CCP

If yes, this is not a CCP

CCP Determination Chart

Step	Hazard	Preventive	Eliminate or reduce	Contaminate Or increase	Later Step Eliminate	CCP #
chill	c.Prefrengens growth due to not chill to meet appendix B	Yes Yes, Preventive measures exist which are chilling from 130F to 80F in 5 hours then 80 to 45 F in 10 hours.	yes			B-1



EXAMPLES

CHEDDAR CHEESE

- HAZARD
 - *STAPHYLOCOCCUS AUREUS*
 - ENTEROTOXIN
- CONTROL MEASURE
 - FERMENTATION CONDITIONS
 - RATE OF ACID DEVELOPMENT
- POINT OF CONTROL
 - FERMENTATION STAGE OF CHEESE MAKING
 - IN THE VAT – NOT RIPENING (ERROR IN BOOK)
 - WHY NOT RIPENING?
- CCP?

CANNED BEETS

- HAZARD
 - *CLOSTRIDIUM BOTULINUM*
- CONTROL MEASURE
 - TIME/TEMPERATURE
- POINT OF CONTROL
 - RETORT
- CCP?

PICKLED BEETS (ACIDIFIED)

- HAZARD
 - *CLOSTRIDIUM BOTULINUM*
- CONTROL MEASURE
 - TIME/TEMPERATURE?
 - pH OR ACID ADDITION?
- POINT OF CONTROL
 - BRINE KETTLE
- CCP?

PASTEURIZED MILK

- HAZARD
 - ENTERIC PATHOGENS
 - WHICH ONES?
 - CONTROL MEASURE
 - PASTEURIZATION
 - PREVENTION OF POST-PASTEURIZATION CONTAMINATION
 - POINT OF CONTROL
 - PASTEURIZER
 - POST-PROCESS HANDLING (FILLER, ETC.)
 - CCP?
 - BOTH PROCESSING STEPS?????

GROUND BEEF MANUFACTURE

- HAZARD
 - METAL FRAGMENTS
- CONTROL MEASUERE
 - MAGNET
 - METAL DETECTORS
- POINT OF CONTROL
 - AFTER EACH GRINDER – MAGNET
 - AFTER PACKAGING – METAL DETECTOR
- CCP?

GROUND BEEF (COOKING)

- HAZARD
 - PATHOGENS
 - WHICH ONES?
- CONTROL MEASURE
 - TEMPERATURE/TIME
 - PATTY THICKNESS
 - BELT SPEED (CONTINUOUS COOKERS)
- POINT OF CONTROL
 - COOKER
- CCP?