

HACCP Principle 1 – Conduct a Hazard Analysis

FSKN I 15B

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HACCP Principles

- Principle 1
 - Conduct a hazard analysis. Prepare a list of steps in the process where significant hazards occur and describe preventative measures.

Hazard Analysis

- Hazard analysis is the process used by the HACCP team to determine which potential hazards present a significant health risk to consumers.
- Only those hazards that pose **significant** risk to the health of consumers should be included in the HACCP plan.

Purpose of the Hazard Analysis

- The purpose of the hazard analysis is to develop a list of hazards which are of such significance that they are reasonably likely to cause injury or illness **if not effectively controlled**.
- Successful application of HACCP principles 2-7 depends on a high-quality hazard analysis.

Importance of Conducting a Thorough Hazard Analysis

- An improper hazard analysis may result in a HACCP plan that is not effective in protecting consumers regardless of how well it is followed.
- Plant operations may be modified based on a thorough hazard analysis.

Hazard Analysis Process

- Hazard Identification and Determination of Acceptable Levels
 - List of potential hazards that may be associated with a food.
 - Determination of the acceptable level for each identified food safety hazard.
- Hazard Evaluation
 - Evaluation based on the **likelihood of occurrence** and the **severity of effects** of a particular hazard.
 - Identify which of the potential hazards pose a **significant risk** to the consumer.

Hazard Identification

- “Brainstorming Session”
- HACCP team develops a list of potential biological, chemical, and physical hazards that may be introduced, increased, or controlled at each step described on the product flow diagram.

Hazard Identification Shall Consider

- The preliminary information collected while developing the product description
- Experience
- External information including, when possible, epidemiological and other historical data
- Information from the food chain on food safety hazards that may be of relevance for the safety of the end products, intermediate products and the food at consumption

Determination of Acceptable Levels

- For each food safety hazard identified, its acceptable level in the end product shall be determined whenever possible.
- This determination shall consider:
 - Regulatory requirements
 - Customer requirements
 - Intended use by the customer
 - Other relevant data
- Record the result of the determination and its justification.

Hazard Evaluation

- The HACCP team decides which of the potential hazards listed during hazard identification stage present a **significant risk** to consumers.
- Each potential hazard should be evaluated based on two factors:
 - **Severity** (of the potential illness or injury)
 - **Likelihood of occurrence**

Evaluating Severity

- Will require consideration of various factors, including:
 - Susceptibility of intended customers to foodborne illness (e.g. children versus adults)
 - Possible impact of secondary problems
 - Magnitude and duration of the illness or injury

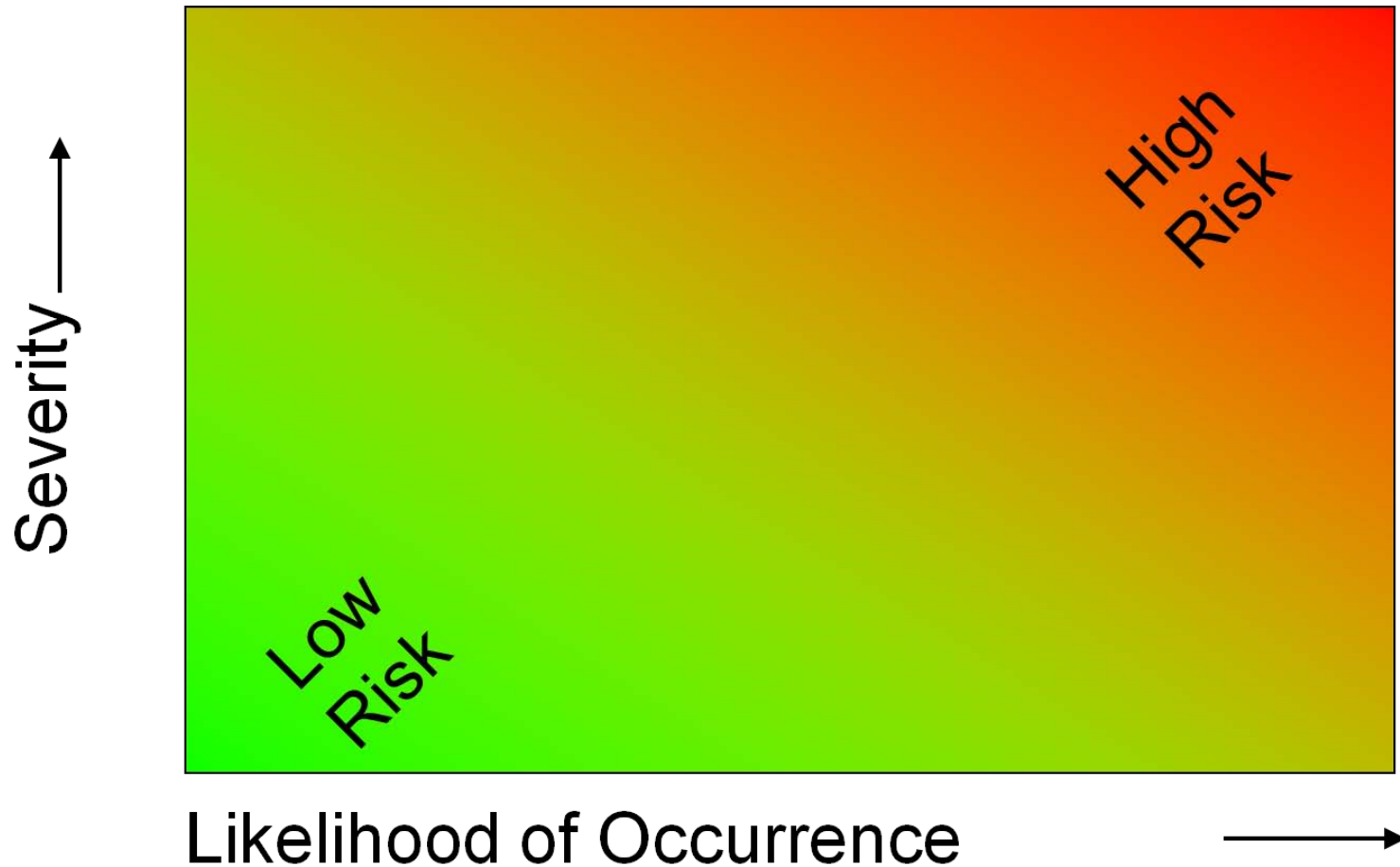
Estimating Likelihood of Occurrence

- Experience
- Data from past foodborne illness outbreaks
- Information in the scientific literature
- Historical information gathered by the establishment

Factors Influencing Likelihood of Occurrence

- Effectiveness of prerequisite programs
- Frequency of association of the potential hazard with the food or ingredient
- Method of preparation
- Conditions during transportation
- Expected storage conditions
- Likely preparation steps before consumption

Evaluating Hazards



Hazards that Pose a Significant Risk

- Should be addressed in the HACCP plan
- **Control measures** must be described for each hazard that will prevent, eliminate, or reduce the hazard to an acceptable level.
- Significant hazards may be different for the same product produced at different facilities.

Control Measures

- Any action or activity that can be used to prevent or eliminate a food safety hazard, or reduce it to an acceptable level.
- Often termed “Preventive Measures” in earlier HACCP documents.

Control Measures

- More than one control measure may be required for a specific hazard.
- More than one hazard may be addressed by a specific control measure.



Examples of Control Measures

- Cooking
- Pasteurization
- Thermal processing
- Acidification
- Fermentation
- Disinfection
- Refrigeration
- Freezing
- Metal detectors
- X-ray devices
- Irradiation

Control Measures

- Selection and categorization of control measures shall include assessments with regard to:
 - Its effect on identified food safety hazards
 - Its feasibility for monitoring
 - Its place in the system relative to other control measures
 - The likelihood of failure of a control measure or significant processing variability
 - The severity of consequences in case of a failure
 - Whether the control measure is specifically established and applied to eliminate or significantly reduce the level of hazards
 - Synergistic effects between control measures

Summarize the Hazard Analysis

- Identify potential hazards for each step in the process flow diagram.
- Determine significance of identified hazards, and justify this decision.
- Identify control measures that can be applied at each step to control the identified hazards.
- Keep records of this analysis.

Example – Hazard Analysis

(1) Ingredient/ processing step	(2) Identify potential hazards introduced, controlled or en- hanced at this step	(3) Are any poten- tial food safety hazards signifi- cant? (Yes/No)	(4) Justify your decision for Column 3	(5) What measure(s) can be applied to control the significant hazards?
Receiving (raw apples)	<p>Biological (B) - 1. Vegetative pathogens</p> <p>2. protozoan pathogens</p> <p>Chemical (C) - 1. Pesticides</p> <p>2. Patulin</p> <p>Physical (P) - None</p>	<p>B - 1. Yes</p> <p>2. Yes</p> <p>C - 1. No</p> <p>2. Yes</p>	<p>B - History of outbreaks.</p> <p>C - 1. In the U.S. unapproved pesticide residues occur infrequently and public health impact is typically not severe.</p> <p>2. Causes illness or injury. Patulin is reasonably likely to exceed regulatory action levels if not controlled.</p>	<p>B - Pasteurization step</p> <p>C - 1. Not applicable</p> <p>2. Culling</p>
Receiving (packaging)	<p>B - None C - None P - None</p>			

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