HACCP Principle 1: Conduct a Hazard Analysis

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Hazard Analysis

• Prepare a List of Hazards that are of "such significance that they are reasonable likely to cause injury or illness if not effectively controlled."

• Describe Control Measures
  • Not all hazards can be prevented, but virtually all can be controlled
# Hazard Analysis

**Product:** Ground Meats

<table>
<thead>
<tr>
<th>Process Step</th>
<th>Potential hazard introduced, controlled or enhanced at this step</th>
<th>Should the hazard be addressed in the HACCP plan?</th>
<th>Justification for decision.</th>
<th>What control measures can be applied to prevent the significant hazards?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receive Fresh Beef</td>
<td>B- Pathogens on incoming material</td>
<td>B- Yes</td>
<td>B - Potentially high severity, high occurrence, according to plant experience.; Low severity.</td>
<td>B-Temperature control of product.</td>
</tr>
<tr>
<td></td>
<td>C- Hydraulic fluid, oil</td>
<td>C- No</td>
<td>C- Low occurrence, according to plant; Low severity.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P- Foreign materials, hooks, bones, plastic</td>
<td>P- No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pork Trim</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Important!!!

• If Hazard Analysis is not done Correctly:
  • Hazards warranting control are not Identified
  • Plan will not be effective even if it is carefully followed
FSIS Definition

• “Reasonably Likely to Occur”
  • “If a problem has occurred more than once, ...agency will deem hazard reasonable likely to occur, even if no demonstrable health risk”
• “Control” “Absence of Control”
  • “…if an establishment institutes a control, the control should be a CCP”
What Does This Mean?

- If there is a hazard that is “reasonably likely to occur” and the control measure is within your establishment then it is a CCP.

- Regulatory HACCP!
Food Safety Hazards

- ZERO TOLERANCE -
- FSIS regards its requirements for no visible feces on carcasses as food safety “performance standards”
- Companies are “obliged” to include CCP’s to assure that the standard is met.
Purpose of Hazard Analysis

- Identify Significant Hazards and Control Measures
- Can be used to Modify a Process or Product to Further Assure or Improve Safety
- Basis for Determining Critical Control Points (CCP)
Hazard Analysis

- Series of Questions to Determine Factors that Effect the Safety of the Product
- Questions Vary Depending on Product and Process
Two Steps of Hazard Analysis

1. Hazard Identification
   - “Brainstorm”
   - List all Potential Hazards

2. Hazard Evaluation
   - Base on Severity and Likelihood of Occurrence
   - Consider Short Term and Long Term Exposure
Hazards:

- Significant - Low Risk Hazards Usually Addressed in GMP and/or SSOP’s.
- Likely to Occur
- Prevention, Elimination or Reduction to Acceptable Levels is Essential to Produce a Safe Product
- Do NOT include Quality Concerns
Significance of Hazard

- Severity
  - Magnitude and Duration of illness
  - Public Health Impact
- Occurrence
  - Experience
  - Epidemiological Data
  - Information in Technical Literature
Determining Risk

- An estimate of likely occurrence of hazard
- Based on - Experience, epidemiological data, and other information from the scientific literature.
- Severity is the seriousness of the risk.
# Severity and Likelihood

## Severity and Likelihood Matrix

<table>
<thead>
<tr>
<th>Severity</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>LL*</td>
<td>LM</td>
<td>LH</td>
</tr>
<tr>
<td>Medium</td>
<td>ML</td>
<td>MM</td>
<td>MH</td>
</tr>
<tr>
<td>High</td>
<td>HL</td>
<td>HM</td>
<td>HH#</td>
</tr>
</tbody>
</table>

- **High**: # Probably Yes
- **Medium**: * Probably No

Likelihood of Occurrence:
- **Low**
- **Medium**
- **High**

Severity:
- **Low**
- **Medium**
- **High**
Potential Questions:

• Does the food contain ingredients that might cause microbiological, physical or chemical hazards?

• Which intrinsic factors must be controlled to assure food safety?

• Have there been food-borne outbreaks associated with this product?

• Is there a “kill step” in the process to control pathogens?
# Hazard Analysis

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Potential Questions

- Is there potential for recontamination after processing?
- What is the microbial content of the food? Does it change during storage?
- Does the equipment function properly to destroy microbial hazards?
- Can equipment be properly sanitized?
- Are employees trained to handle food safely?
Control Measures

- Physical/Chemical or Other Factors that can be used to Control Hazard
- May be More than one Control for Each Hazard
- Each Control Measure may Control More than one Hazard
Important

• Each Hazard Must be Considered and Documentation must be Provided.
• Identification of a Hazards is NOT an exact Process. It is Debatable.
• Must rely on Expert Opinion, Epidemiological Data, and Scientific Literature to Come to a Logical Decision.
Group Exercise

- List Process Steps on Hazard Analysis Worksheet.
- Identify all Chemical, Physical, and/or Biological Hazards Associated with each Step.
- Determine if Hazard Significant.
- Document why a hazard was determined to be significant/insignificant.
- Cross Insignificant Hazards off List.
- Identify Control Measures for each Significant Hazard.