

## HACCP Principle 4: Monitoring Critical Limits

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> **HACCP and Food Safety Heip for Small Meat and Food Processing Operations**

#### **Critical Limits**

- Observations and/or Measurements to Assess Whether a CCP is Under Control
- Must be Able to Produce an Accurate Record of Measurement or Observation

#### Purpose

- Track System Operation
  - Trends Toward Loss of Control
  - Action Taken before Limit Exceeded
- Determines when There is Loss of Control and Corrective Action Needed
- Provides Written Documentation for use in Verification of HACCP Plan

#### **Application of Principle 4**

- Who will conduct the monitoring?
- What will be monitored?
- How will it be monitored?
- When it will be monitored?

# Who is Responsible for Monitoring?

- Each CCP must be Monitored by a Specific Individual
- Consider
  - Number of Critical Control Points
  - Preventive Measures
  - Complexity of Monitoring

#### **Personnel to Consider**

- Line Supervisors
- QC Personnel
- Selected Line Workers
- Maintenance

#### **Other Considerations**

- Personnel Must be Trained in Technique used to Monitor
- Need to Understand Importance and Purpose of Monitoring
- Have Ready Access
- Unbiased in Monitoring and Reporting
- Accurately Report

#### Important!!

- Report Unusual Occurrences Immediately.
  - Rapid Adjustment so Process Stays in Control

or

- Corrective Action Taken
- All Records must be Signed or Initialed by Person Doing the Monitoring.

#### What will be monitored?

- Monitoring at each CCP to determine if the process is operating within the established critical limits.
- The critical limits and monitoring must match.
  - Refrigeration room temperature versus product temperatures

#### What will be monitored?

- Consider what the hazard is?
  - Lethality at the surface of the product or in the center.
  - Biological pathogen growth to excess levels to cause a food safety hazard.

#### How will it be monitored?

- Measurement or observation
  - Accurate and precise
  - Calibrated measurement devices
  - Trained individuals
- Real time assessment
  - Microbiological testing not suited for monitoring.
- Provide a value that can be recorded
  - Alarms or diversion valves not monitoring

#### How will it be monitored?

- Measurement procedures
  - Standard Operating Procedures
  - Provide detail
- Repeated measures
  - CL is not an average
  - Each measure must meet the CL

#### When will it be monitored?

- Frequency needs to be able to detect possible deviations.
- Frequency may also be based on amount of product at risk for a corrective action.
- USDA requires supporting documentation for frequency.

#### **Continuous Monitoring**

- Ideal All Products Tested
- Time/Temperature Processes
- pH of Batch
- Equipment Must be Calibrated
- Automated Equipment or Sensors

#### **Discontinuous Monitoring**

- Sometimes Continuous Not Possible
- Establish Monitoring Interval
- Statistically Designed Data Collection
- May select the worst case
  - Select the largest roast during cooking
  - Temperature variation in smoke house

#### **Discontinuous Monitoring**

- Best used when variation in the monitored parameter is low.
  - Know you standard deviation
- Also when monitored parameter is well beyond the critical limit.
  - pH of product is 4.5 and critical limit is
    5.2

#### **Discontinuous Monitoring**

- If the monitored parameter is close to the critical limit, increase the frequency.
- Frequency should not be burdensome
  - Measure every roast in an oven during cooking
  - Possibility of missing a monitoring

### Discontinuous Monitoring Examples

- Visual Observations
  - Zero tolerance
- Internal Time/Temperature
  Measurements
- pH
- Moisture Level (Aw)

#### **Random Checks**

- Useful for Supplementing Monitoring
  - Testing of Incoming Ingredients
  - Check Equipment
  - May include Physical, Chemical and/or Microbial Testing

#### Summary Monitoring Procedures

#### For Each CCP

- Who will conduct monitoring
- What will be monitored
- Determine the Best Monitoring
  Procedure (How)
- Determine the Frequency of Monitoring
  and Documentation (When)