

## Hazard Analysis and Critical Control Points Overview

Extension Consumer Food Safety Fact Sheet

**Dr. Londa Nwadike**  
Kansas State University  
22201 W. Innovation Drive  
Olathe, KS 66061  
913-307-7391  
lnwadike@ksu.edu

University of Missouri  
105 East 5th St., Suite 200  
Kansas City, MO 64106  
816-482-5860  
nwadikel@missouri.edu

A Hazard Analysis and Critical Control Points (HACCP) plan is a regulatory requirement for processing some food products (meat and poultry, juice, seafood, some vacuum-packaged foods). However, more food buyers are now requiring other food producers to have an HACCP plan in place. Developing and implementing an HACCP plan can help food processors produce food with a risk-based, systematic, preventive approach to food safety. Once implemented, the FDA Food Safety Modernization Act (FSMA)<sup>1</sup> will also require that processors of products other than those listed above have a preventative control plan in place, which is similar to HACCP plans. Therefore, it is beneficial for all food processors to move toward having HACCP plans.

### Prerequisites for HACCP

Before implementing an HACCP plan, processors must have certain prerequisite programs in place. Note that the importance of these programs will be even more prominent under FSMA and will require more documentation (monitoring, corrective actions, etc.). More information on these prerequisite programs is available in a Kansas State University/University of Missouri Extension Food Safety

Fact Sheet MF3201, *Food Safety: Good Manufacturing Practices*<sup>2</sup>. These programs include the following:

### Good Manufacturing Practices including

- Buildings and facilities
- Equipment and utensils
- Personnel
- Raw material/supplier control
- Process control

### Other prerequisite programs

- Cleaning and sanitation
- Allergen control programs
- Pest control programs
- Chemical control
- Glass control
- Foreign material control
- Traceability and recall systems
- Food defense program
- Pathogen testing

### Intent of HACCP

- HACCP aims to prevent hazards in the following categories:
- Biological (e.g. bacterial pathogens)
- Chemical (e.g. cleaner residues, allergens)
- Physical (e.g. glass and metal fragments)



<sup>1</sup> Current information on FSMA is available from: [www.fda.gov/Food/FoodSafety/FSMA/default.htm](http://www.fda.gov/Food/FoodSafety/FSMA/default.htm)

<sup>2</sup> Available from: <http://www.ksre.ksu.edu/foodsafety/>

## Initial Steps to Developing an HACCP Plan

Once your prerequisite programs are in place, you should undertake the following steps:

- Describe your product (model product description forms available<sup>3</sup>).
- Develop a detailed process flow diagram for your product (models available<sup>3</sup>).
- Note that for processed food products, a separate HACCP plan is needed for each product, or for a group of products (for example, different dry spice blends in a sausage) that would have the same hazards. In retail and foodservice HACCP plans, each plan will cover a different food preparation process<sup>4</sup>.

## Develop Your HACCP Plan

These seven principles should be followed in order to ensure a robust HACCP plan:

1. Complete a hazard analysis for every step in your product flow diagram.
  - a. Identify and evaluate biological, physical, chemical food safety hazards at each step of the process.
  - b. Identify which hazards are likely to cause illness if not controlled.
  - c. Must include documentation that supports all decisions made in the hazard analysis, including<sup>5</sup>:
    - i. Determining if something is or is not a hazard (decision-making documents).
    - ii. The effectiveness of a control measure.
  - d. Note that for every step in the hazard analysis:
    - i. If the decision is made that the hazard is likely to occur, there needs to be an intervention somewhere in the process, and
    - ii. If the decision is made that the hazard is not likely to occur, there needs to be a scientific document or prerequisite program supporting that decision.
2. Identify Critical Control Points (CCPs) required to control identified hazards.
  - a. The last point in your process where control can be applied to prevent, eliminate, or reduce hazard to acceptable level before product leaves your control.
  - b. For example, chilling, cooking, product formulation controls.
3. Determine Critical Limits (CL) that must be met at each identified CCP.
  - a. Boundaries of safety to control identified hazard to ensure product is safe to eat.
  - b. For example, cooking to > 170°F, obtaining pH <4.6
4. Develop procedures to monitor CCPs.
  - a. Planned sequence of observations or measurements to ensure the CCPs are under control.
  - b. Need to think through and document who, what, where, when (how often), and how measurement will be taken.
  - c. For example, taking and recording product temperatures.
5. Establish corrective actions.
  - a. Procedure to be followed when monitoring indicates a deviation from the critical limit at a CCP.
  - b. Describe how to bring process back under control.
  - c. Document what to do with non-compliant product.
6. Perform verification procedures.
  - a. These are the activities performed to verify that:
    - i. the HACCP plan is adequate to control hazards, and
    - ii. the system is operating as intended.
  - b. Procedures include:
    - i. Review of records (pre-shipment for meat and poultry; within 1 week for FDA products).
    - ii. Direct observation (by a second person) of monitoring activities.

<sup>3</sup> A number of HACCP resources, including example forms that can be utilized are available from Kansas State University: <http://www.asi.k-state.edu/disciplines/meat-science/haccp/haccp-forms.html>. Others are also available by searching online.

<sup>4</sup> Information from numerous sources available from: <http://fsrio.nal.usda.gov/haccp/food-service-haccp>

<sup>5</sup> For meat and poultry products, USDA/FSIS released Directive 5,000.6 "Performance of the Hazard Analysis Verification (HAV) Task" in August 2012 which reinforces the need for this documentation.

- iii. Calibration of equipment (thermometers, etc.).
  - iv. Annual reassessment of equipment operation and the HACCP plan.
7. Establish effective record-keeping systems.
- a. Documents that the HACCP system is operating according to the written plan.
  - b. From an inspector's perspective: if something isn't recorded, it didn't happen.
  - c. Good records allow producer to trace product if problems do arise.
  - d. Records to maintain include the following:
    - i. Summary of hazard analysis (including documentation of justification for all decisions made).
    - ii. Details of your entire HACCP plan (CCPs, CLs, monitoring procedures, corrective actions, verification procedures).
    - iii. Daily monitoring records (including equipment calibration, corrective action log, CCP records).
    - iv. Pre-requisite program information and records, including Sanitation Standard Operating Procedures (SSOPs), allergen control plan, etc. This is particularly important for those programs that are used to support the decisions in the Hazard Analysis.

**Other resources:**

USDA (meat and poultry) website on HACCP: [www.fsis.usda.gov/wps/portal/fsis/topics/regulatory-compliance/haccp/haccp](http://www.fsis.usda.gov/wps/portal/fsis/topics/regulatory-compliance/haccp/haccp)

FDA (seafood, juice, retail and food service, others) website on HACCP: <http://www.fda.gov/food/guidanceregulation/haccp/default.htm>

*Prepared by: Londa Nwadike, Ph.D, Kansas State University/University of Missouri Extension Consumer Food Safety Specialist*

*Fact sheet reviewed by:*

- *Fadi Aramouni, Ph.D, Professor and Extension Food Safety Specialist, Kansas State University*
- *Karen Blakeslee, M.S., Rapid Response Center Coordinator, Kansas State University*



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