

Hazard Analysis and Critical Control Points (HACCP) overview

Extension Food Safety Fact Sheet- June 2014

A Hazard Analysis and Critical Control Points (HACCP) plan is a regulatory requirement for processing of some food products (meat and poultry, juice, seafood, some vacuum packaged foods). However, more food buyers are now requiring other food producers to have a HACCP plan in place. Developing and implementing a 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)¹ 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 towards having HACCP plans.

Pre-requisites for HACCP

Before implementing a HACCP plan, processors must have certain pre-requisite 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 pre-requisite programs is available in a Kansas State University/ University of Missouri Extension Food Safety Fact Sheet on "Good Manufacturing Practices for Food Safety"². These programs include the following:

Good Manufacturing Practices including:

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

Other pre-requisite 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)



¹ Current information on FSMA is available from: www.fda.gov/Food/FoodSafety/FSMA/default.htm

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

Initial steps to developing a HACCP plan

Once your pre-requisite programs are in place, you should undertake the following steps:

- Describe your product (model product description forms available³)
- Develop a detailed process flow diagram for your product (models available³)
 - o Note that for processed food products, a separate HACCP plan is needed for each product, or for a group of products (i.e. 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 process⁴.

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 product flow diagram
 - a. Identify and evaluate biological, physical, chemical food safety hazards at each step of 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, including⁵:
 - 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* pre-requisite 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. i.e. 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. i.e. cooking to $\geq 170^{\circ}\text{F}$, obtaining $\text{pH} < 4.6$
- 4) Develop procedures to monitor CCPs
 - a. Planned sequence of observations/ 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. i.e. 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

³ A number of HACCP resources, including example forms that can be utilized are available from Kansas State University: www.ksre.ksu.edu/meatscience/HACCP/HACCPResources.htm Others are also available by searching online.

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

⁵ 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.

- 6) Perform verification procedures
 - a. These are the activities performed to verify that:
 - i. The HACCP plan is adequate to control hazards
 - 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
 - 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 inspectors 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

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

2201 W. Innovation Dr
 Olathe, KS 66061
 tel: 913-307-7391
 email: lnwadike@ksu.edu
www.ksre.ksu.edu/foodsafety/

105 East 5th St, Suite 200
 Kansas City, MO 64106
 tel: 816-482-5850
 email: nwadikel@missouri.edu
missourifamilies.org/foodsafety/

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*