



Creating Hazard Analysis and Critical Control Point (HACCP) Plans that are FSIS-Compliant

Every meat and poultry processor in the United States must create a Hazard Analysis and Critical Control Point (HACCP) plan. This is according to regulations set forth by the Food Safety and Inspection Service, an investigative wing of the U.S. Department of Agriculture.

But what does the HACCP plan entail? And how can small and beginning food operations complete the process without running afoul of U.S. food safety regulations?

This beginner's guide will walk you through the creation of a code-compliant HACCP plan in seven steps, based on the FSIS' [Pathogen Reduction/Hazard Analysis and Critical Control Point \(HACCP\) Systems Final Rule](#).

Note that this guide is intended only as an introduction to HACCP plans in the United States. For more detailed guidance, contact the FSIS [here](#).

Preparing a Compliant HACCP Plan Using the Seven HACCP Principles

The National Advisory Committee on Microbiological Criteria for Foods (NACMCF) studies the science of food safety, offering science-based information to food safety agencies like the USDA and the FDA. When working on the HACCP regulations, which entered the Code of Federal Regulations in 1996, the NACMCF identified [seven principles](#) of an effective HACCP system. These principals double as a step-by-step guide to establishing an HACCP plan that complies with FSIS rules and regulations, as follows:

Step 1: Complete Hazard Analyses of All Production Processes

A thorough hazard analysis should uncover specific risks to food safety incurred at each step of the production process. Because you'll take a close look at every procedure that transforms raw ingredients into a finished commercial food product, you'll need to start with a detailed process flow diagram.

Once you have your steps clearly listed and verified with walkthroughs, you can complete the hazard analysis, or a list of steps in which food safety hazards may occur — as well as a set of preventative measures that will reduce the risk.

Sometimes these safety controls will be as simple as choosing facility equipment. Stainless steel material handling equipment, such as [Dumpmaster Bin Tipper](#) with the stainless option, act to control the build-up of microbes in cracks and crevices, to comply with the FDA Food Code. More often, though, the



Figure 1. Dumpmaster Bin Tipper

preventative measures you plan for will be procedural.

According to the regulations, food safety hazards can be "any biological, chemical, or physical property that may cause a food to be unsafe for human consumption."

Biological hazards include pathogens and parasites. Chemical poisons can arise naturally in some foods, such as shellfish. They may also come from other food-production processes, from the use of pesticides and insecticides in feed to contamination with cleaners at the production facility. Physical hazards include contaminants like bits of plastic or metal that could potentially cause human injury.

For more detailed information on biological, chemical, and physical hazards in food production, see the FSIS' [Meat and Poultry Hazards and Controls Guide](#).

Step 2: Find the Critical Control Points (CCPs) in Production

Critical control points (CCPs) are those parts of the production process at which engineers can introduce controls into the system. Examples of CCPs with controls include refrigeration during storage, pH adjustments in mixing vats, and even cooking within parameters that kill microbes.

The purpose of identifying critical control points is to determine which preventative measures, identified in the hazard analysis, you can introduce to prevent or reduce the risk.

An April 1997 FSIS document, the *Guidebook for the Preparation of HACCP Plans* — to which the present article is deeply indebted — offers a step-by-step decision tree for identifying CCPs in food production applications. However, for reasons that remain unclear, the *Guidebook* is unavailable on the FSIS website at the time of this writing. Find this resource along with generic HACCP models for different applications on the [HACCP Alliance website](#).

Step 3: Create or Identify Critical Limits at each CCP

If a CCP is designed to create controls, you need scientifically proven critical limits to control for. These critical limits are quantifiable and measurable, and they will be familiar to any food engineer. They include things like temperature, pH, chlorine levels, and cooking time.

Whatever critical limits you work with, the goal always remains the same. The spread between minimum and maximum safe limits should always control hazards such that they "prevent, eliminate, or reduce to an acceptable level the occurrence of the identified food safety hazard," according to the regulation.

Step 4: Build a Monitoring Plan, Complete with Requirements and Procedures

It's not enough to stay within critical limits; food producers must also establish methods of monitoring that will alert them if a process moves outside of those limits. You must find ways to monitor every CCP that you identify in the HACCP plan, ideally through continuous measurement. For instance, an ongoing recording of an oven's temperature alerts managers to any deviation from critical limits while also building documentation for later verification of the HACCP plan.

Step 5: Identify Corrective Actions for Future Violations of Critical Limits

If monitoring does uncover a failure in the safety controls of a given CCP, the HACCP plan is where you'll find your prescribed corrective measure. There are four elements in an appropriate corrective action, according to *The HACCP Seven Principles*:

1. The action should uncover the cause of the problem, and should get rid of it.
2. The correction is not complete until the CCP has been verifiably fixed.
3. The corrective measure includes steps that will prevent the problem from returning.
4. If the deviation from critical limit had any effect on food products, those products must not be allowed to ship.

When a problem occurs at a CCP, the HACCP plan should provide the solution, which staff is responsible for implementation, and what sort of documentation that staff should keep on the incident.

Step 6: Plan for Accurate, Comprehensive Record-Keeping on the HACCP Plan

[Regulatory requirements under 9 CFR 417](#) call for specific records as part of each producer's HACCP plan and subsequent monitoring and documentation. These records include lists of food safety hazards, a written copy of the HACCP plan itself, and dated documentation of CCP monitoring, such as:

- Details on measuring instruments.
- Any corrective action taken in response to a deviation from critical limits.
- Identifying information about the product.
- The date the records were produced.

In order to comply with these requirements, the HACCP plan should detail the procedures staff will use to ensure this record-keeping is complete and up-to-date.

Step 7: Create Procedures to Verify the Functionality of the HACCP System

The final step in creating a compliant HACCP plan is to make sure the plan works. This isn't a one-time action; the HACCP plan must include steps for ongoing testing and reassessment of the entire food-safety system.

Broadly speaking, this part of the plan consists of three overall goals: Initial *validation* of the HACCP system, ongoing *verification* of the system's functionality, and periodic *reassessment* of the plan's implementation and effectiveness.

Verification takes place during the first 90 days of the HACCP plan's implementation, or following any changes to the plan and its enforcement. Verification continues as long as the facility remains active; it includes record reviews, testing, and observation of actual workplace practices. Reassessment, finally, is an annual process during which decision-makers review the year's records to see if they need to make changes to the HACCP plan. If they do, the validation process begins again after the changes are made.

For more detailed information about keeping HACCP systems compliant with FSIS validation rules, see the *FSIS Compliance Guideline on HACCP Systems Validation* [here](#).

Why the Pathogen Reduction and HACCP Rule?

After understanding all that goes into a successful HACCP rule, you might wonder when and why the FSIS instituted the associated regulations. The regulations date back to the 1990s. By the middle of the decade, it was clear to FSIS leadership that their inspection efforts weren't entirely succeeding. Between 1993 and 1997, the Centers for Disease Control and Prevention tracked 2,751 cases of foodborne disease, with more than 86,000 people affected. During this time period, the illnesses peaked in 1994, with 653 cases.

The following year, the FSIS published its Pathogen Reduction/Hazard Analysis and Critical Control Point (HACCP) Systems Final Rule in the Federal Register, and it entered the U.S. Code of Federal Regulations.

"The HACCP requirement and other food safety measures proposed by FSIS in the Pathogen Reduction/HACCP proposal were motivated by the critical need to fill a gap in the current regulation and inspection system and the lack of adequate measures to address the problem of pathogenic microorganisms on raw meat and poultry products," reported the FSIS.

To learn more about HACCP regulations, and how to build a compliant HACCP plan, see the full list of FSIS resources [here](#).

References:

["9 CFR Part 304, et al. Pathogen Reduction; Hazard Analysis and Critical Control Point \(HACCP\) Systems; Final Rule."](#) *FSIS*. Food Safety and Inspection Service, U.S. Department of Agriculture, 25 July 1996. PDF. 30 Apr. 2018.

["FSIS Compliance Guideline HACCP Systems Validation."](#) *FSIS*. Food Safety and Inspection Service, U.S. Department of Agriculture, Apr. 2018. PDF. 30 Apr. 2018.

["FSIS Strategic Implementation Plan for Strengthening Small and very Small Plant Outreach."](#) *FSIS*. Food Safety and Inspection Service, U.S. Department of Agriculture, 2007. PDF. 30 Apr. 2018.

["Guidebook for the Preparation of HACCP Plans."](#) *HACCPAlliance*. U.S. Department of Agriculture, Apr. 1997. PDF. 30 Apr. 2018.

["HACCP Seven Principles."](#) *FSIS*. Food Safety and Inspection Service, U.S. Department of Agriculture, 15 Mar. 2016. PDF. 28 May 2018.

