



Hazard Analysis & Critical Control Points (HACCP)

What it is, why you need it, & how it works



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Do you have a plan to keep your food safe?

Common sense might be good enough for the leftovers in your fridge at home. But the “smell test” isn’t going to cut it if you work in a supermarket, retail store, restaurant or packaging facility that processes potentially hazardous food.

Your customers are more educated about food and food-borne illnesses than ever before. You have to reassure them that you are using government-recognized sanitation and handling practices if you want to give them confidence that your products are safe and properly labeled.

What is HACCP?

Hazard Analysis and Critical Control Points (HACCP, for short) is defined by the US Food and Drug Administration as a *“management system in which food safety is addressed through the analysis and control of biological, chemical and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product.”*

The translation? A HACCP plan is a written document that clearly states how you and your business should correctly handle food, monitor procedures and keep records to keep consumers safe.

There are several food safety courses you can take—HACCP is one of them. This is very specific training that will give you the most specific blueprint for food safety.



It is much more involved than inspecting finished food products. It is a way to detect, correct and prevent physical, chemical and biological hazards in the production process.

The US Department of Agriculture (USDA) regulates HACCP systems that deal with meat production. Seafood and juice industries are subject to FDA regulations. In other food industries, like restaurants, HACCP is voluntary as far as government regulations are concerned. But knowing the system and how to implement it can help you land a good job as a manager or supervisor in a wide range of food industries.

The 1993 outbreak and HACCP response

As is often the case, it took a nationwide scare to cause industry-wide changes to improve health.

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In 1993, 623 Americans were sickened by E. coli later traced to undercooked hamburger from Jack in the Box fast food restaurants. Four children died. Overnight, foodborne illness was a big story.

The USDA responded with a warning to the beef industry. From then on, “adulterated product,” already illegal to sell, would be redefined. Until that point, it meant product containing harmful chemicals or foreign objects. But from then on, it would also mean product containing illness-causing bacteria. The bacteria actually originates in the gut of the cow, but that wouldn’t matter. If E. coli survived processing and made it into cooked ground beef, the beef would be deemed illegal.

Up until 1993, the beef and fast food industry had never even heard of E. coli. But Jack in the Box responded with a systematic HACCP approach that targeted suppliers, transportation, restaurant staff and corporate infrastructure. Suppliers were subject to random sampling and microbial testing. Jack in the Box fired suppliers that continued to test positive for harmful bacteria.



Slaughterhouses were given checklists that standardized how cows were killed and cleaned. Since E. coli contamination usually occurs when contaminated feces leaks from ruptured intestines, proper methods to remove intestines without rupturing them were instilled.

Jack in the Box also revamped how its meat was transported, requiring safe temperatures at every step along the way and requiring patties to be heated to an internal temperature of at least 155 degrees.

The result? In the 20 years since, there has been a dramatic reduction in the number of E. coli infections from ground beef. The beef industry has spent some \$30 million to research safety since the Jack in the Box outbreak. Industry leaders meet at an annual food safety summit to exchange their best food safety practices. Today, most beef recalls are below 10,000 pounds; many are below 1,000.

The restaurant chain credits its company-wide HACCP plan for the success story. HACCP had been around since the 1960s. It was developed by NASA and the Pillsbury Company to make sure the food for the space program was contaminant-free. The system had been successfully employed by poultry operations in the 80s to reduce instances of Salmonella contamination.

As HACCP is implemented across many food service industries, best practices continue to evolve based on new scientific findings and industry-driven experience in day-to-day operations. But the basic principles of a

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successful HACCP plan are the same from one business to another. Let's look at these principles and at how businesses put them to use every day.

Seven principles of your HACCP plan

There are seven principles that make up a HACCP plan. Learning them isn't so hard once you get past the technical language and rigid terminology and understand that each principle describes a concept you probably deal with every day if you work with food production. The principles are:

1. Identify hazards.
2. Identify Critical Control Points (CCPs).
3. Establish Critical Limits.
4. Monitor the CCPs.
5. Establish Corrective Actions.
6. Establish Verification Procedures.
7. Establish Record-Keeping Procedures.

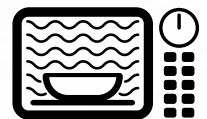
Let's look at each principle, one by one. Remember, HACCP plans are all about being specific, keeping careful records, and following rules that were created based on scientific information. But the concepts that underlie the plan are easy to learn and remember once you educate yourself about health hazards in food production.

1. Identify hazards. These could be anything that poses an unacceptable health risk. They might be chemical (pH balance), physical (temperature) or biological (bacteria).

The **biggest threats to food safety** are from microbiological contaminants, including Salmonella, E. coli, Listeria, Campylobacter and Clostridium botulinum.

2. Identify Critical Control Points (CCPs). Think of CCPs as points in the process where contamination hazards can be controlled, prevented or reduced to acceptable levels. That's just another way to refer to a stage of production for your food product, stages such as:

- Receiving
- Freezing
- Cold storage
- Thawing
- Preparation
- Mixing
- Cooking
- Cooling
- Reheating
- Cleaning
- Hot/cold holding
- Transportation



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3. Establish Critical Limits. CCPs have measurable boundaries that you have to stay within. If you stray, the process is not within a safe zone. Critical limits are measurable standards such as temperature and time, but may also include measurements of pH, humidity or salt concentration, for example. It's about being specific with guidelines such as "Heat to an internal temperature of 165 degrees for 15 seconds."

4. Monitor the CCPs. Sometimes the established critical limits aren't followed in a real-life scenario. A food safety manager and employees involved in the foodservice process have to make sure the standards are kept and make the necessary adjustments to keep temperature and other CCPs within the boundaries of the critical limits.

For example, receiving shipments is a CCP. To monitor, you might examine packages to make sure they are sealed and that cans aren't dented. Employees involved in food production at each CCP might use a tool to ensure an item is within critical limits. You might use a thermometer to ensure a meat item is within critical limits or a paper strip to test the strength of sanitizing solution.

5. Establish Corrective Actions. If the food isn't within the critical limits, you'll need to do something about it. If meat on a buffet line has cooled to below the minimum acceptable temperature, for example, you might need to reheat it (to a specific, safe internal temperature) before serving. If a shipment of frozen seafood arrives thawed, you might have to reject it.

Sometimes, your corrective action depends on more than one factor. Say a walk-in refrigerator is at 50 degrees, when the critical limit was 41 degrees. Is your corrective action to throw the food out? Or is your corrective action to move the food to a properly-functioning refrigerator as soon as possible? Actually, either course of action might be appropriate, depending on how long the food had been outside the critical limits for temperature. If the food was at 50 degrees for an hour or two, moving the food might be sufficient. If the food was at 50 degrees for longer than two hours, you'll have to get rid of it.

Your HACCP plan has to list every acceptable corrective action for each CCP. It isn't easy listing every possible scenario and every possible outcome, but remember—being specific with your plan means you're doing it the right way.

Remember the **danger zone**: 41° F - 135° F. Potentially hazardous foods at this temperature range for more than 4 hours (at one time or cumulatively) are not safe to eat. These include meat, poultry, eggs, seafood, dairy products, cut melon, raw seed sprouts, garlic-in-oil mixtures, cooked rice and potatoes.

(Source: US Food and Drug Administration)



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6. Establish Verification Procedures. Remember, the hazard analysis and the critical limits aren't just your opinion or best guess; they're based on scientific validation. Your HACCP plan will have to withstand independent audits or some other verification procedure endorsed by an agency such as the FDA, USDA or US Department of Commerce. Internal review will be the most frequent verification (managers reviewing temperature records or calibrating equipment, for example). If frequent corrective actions are needed, an overall policy change may be necessary.

7. Establish Record-Keeping and Training Procedures. Finally, the best HACCP plans in the world don't mean a thing if employees don't know about them or how to implement them. That's why the last important principle is so important. All employees must be required to review the HACCP plan and should be tested to make sure they "get it." All the rules in the world won't help if they don't.

Part of making sure everyone understands the HACCP plan means you'll need to verify that employees are entering the correct data in your record-keeping system. From hand-written labels to highly detailed computer spreadsheets, accurate records will help show that any future reports of foodborne illness did not originate in your kitchen.

When you're handling food, you'll apply one or more of these principles at each step along the way. For example, when you're purchasing food, identify hazards. Does the supplier have a good reputation? Is the delivery truck

clean and properly refrigerated? When you take a meat shipment, monitor CCPs by making sure it is within the correct temperature range. When you're holding cooked food in preparation for service or packaging, establish critical limits such as time and temperature.



Putting Together Your HACCP Plan

There are countless ways to create an HACCP plan. The plan you build and implement will depend on your business and the CCPs you deal with. But for the sake of illustration, let's look at a basic menu-based plan that might be used by a restaurant.

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Menu Item	CCP #1: Receiving	CCP #2 : Cold Holding	CCP #3: Thawing	CCP #4: Cooking	CCP #5: Preparation	CCP #6: Hot Holding	CCP #7: Cooling	CCP #8: Reheating	CCP #9: Transporting
Soup	■	■	■	■	■	■			■
Salad	■	■			■				■
Fish	■	■	■	■	■				■
Chicken	■	■		■	■				■
Meatloaf	■	■	■	■	■	■	■	■	■
Pasta	■	■		■	■				■
Pasta sauce	■	■		■	■		■	■	■

Creating this plan starts with identifying the types of recipes the restaurant will make. The menu items we see here can be grouped into three categories:

- **Simple recipes** don't have to be cooked. Think of coleslaw or fruit salad. You might open a can or jar; you might chop some vegetables. Ingredients might be mixed and chilled before service, but nothing is cooked.
- **Same-day recipes** are prepared the same day they'll be served. Ingredients such as raw chicken may go from frozen to thawed to being battered and fried, but it all happens within a few hours.
- **Complex recipes** require preparation, cooling, storage and reheating. Food will pass through the temperature danger zones more than with the first two recipe classifications. Think of homemade chili or turkey with stuffing, with some or all components made a day or more in advance of consumption.

As you can see, we've looked at the types of recipes we'll be preparing and identified each CCP accordingly. Next we can lay out the key points of your business HACCP plan:

- Designate critical limits for each CCP.
- Establish monitoring procedures for each CCP.
- Specify what corrective actions will be taken when there is a loss of control at a CCP.
- Establish verification to ensure each CCP monitoring procedure.
- Write down all employee training procedures.
- List all food service equipment used at each CCP.

Remember, the FDA and USDA look at the following risk factors when they're studying retail food establishments. These red flags each constitute a lack of control at CCP:

- Unsafe sources.
- Poor personal hygiene.
- Inadequate cooking.
- Improper holding time and temperature.
- Contaminated surfaces equipment.

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Summary

Food processing facilities, restaurants and supermarkets may require HACCP training for some manager-level positions, especially in jobs that deal with meat, seafood and juice. Taking an HACCP food safety training course will demonstrate to prospective employers that you can identify the causes of foodborne illnesses, follow the requirements of food safety programs, implement monitoring procedures and determine effective corrective actions. Food safety is serious business, and taking the initiative to get advanced training will boost your employment outlook, raise your earnings potential, and

help you keep the consumer safe and happy.



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