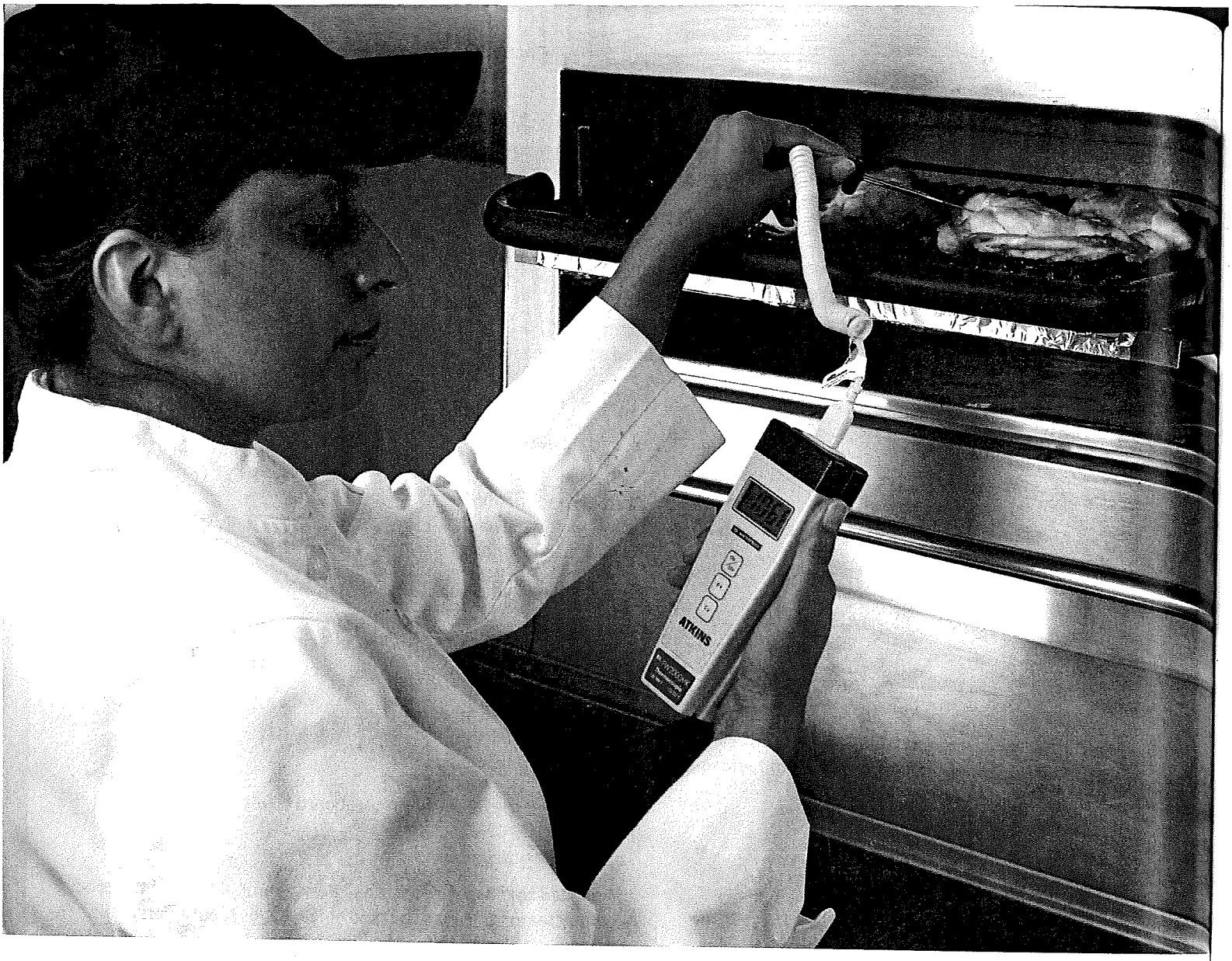


chapter 8
Food Safety Management Systems

Food Safety Management Systems

- Overview of Food Safety Management Systems
- Active Managerial Control
- HACCP

NEWS Blue Skies Handles It Correctly

The calls started on a Thursday morning at Blue Skies Café, a small but well-liked diner in a busy city neighborhood. The callers complained of stomach cramps and diarrhea. The owner of the café took the first few calls and realized that she might have a foodborne-illness outbreak on her hands. She filled out an incident report for each call, and then she contacted the local regulatory authority.

"We were also getting calls, so we went to the café to see what happened," said the health inspector assigned to the case. "With the cooperation of the owner, we were able to identify the Caesar salad dressing as the source of the customers' illnesses."

A batch of the dressing was made with contaminated eggs. It eventually got 30 people sick. Because Caesar dressing isn't fully cooked, the café could not have done anything different to prep the dressing. "To correct the issue, we now use pasteurized eggs for the dressing, and we make new batches every few hours," said the owner.

The inspector also noted that the café's health-inspection score was not changed because of the outbreak. Nor was the operation forced to close. "They handled the problem quickly, and the rest of the operation is clean and well run," he said. Additionally, the café's insurance covered the healthcare costs and lost wages that the outbreak caused.

You Can Prevent This

A foodborne-illness outbreak is any manager's nightmare. But, as you can see in the story above, you can survive one. Creating a food safety management system will help prevent problems before they happen.

In this chapter, you will learn about the following systems.

- Food safety management systems
- Active managerial control
- Hazard Analysis Critical Control Point (HACCP)

Food Safety Management Systems
- Overview of Food Safety Management Systems
- Active Managerial Control
- HACCP

Food Safety Management Systems

In chapters 4 through 7, you learned how to handle food safely throughout the flow of food. Now, you will learn how all of it can be applied to a food safety management system. To do this, you must understand how a food safety management system works.

Overview of Food Safety Management Systems

A food safety management system is a group of practices and procedures intended to prevent foodborne illness. It does this by actively controlling risks and hazards throughout the flow of food.

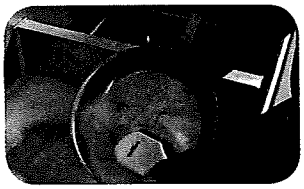
Having some food safety programs already in place gives you the foundation for your system. The principles presented in the ServSafe program are the basis of these programs. Here are some examples of the programs your operation needs.

Personal hygiene program

Food safety training program

Supplier selection and specification program

Quality control and assurance programs



Cleaning and sanitation program

Standard operating procedures (SOPs)

Facility design and equipment maintenance program

Pest-control program

Active Managerial Control

Earlier, you learned that there are five common risk factors for foodborne illness.

1. Purchasing food from unsafe sources
2. Failing to cook food correctly
3. Holding food at incorrect temperatures
4. Using contaminated equipment
5. Practicing poor personal hygiene

It is the manager's responsibility to actively control these and other risk factors for foodborne illness. This is called active managerial control. It is important to note that active managerial control is proactive rather than reactive. You must anticipate risks and plan for them.

There are many ways to achieve active managerial control in the operation. According to the Food and Drug Administration (FDA), you can use simple tools such as training programs, manager supervision, and the incorporation of SOPs. Active managerial control can also be achieved through more complex solutions such as a HACCP program.

Monitoring is critical to the success of active managerial control. Food will be safe if managers monitor critical activities in the operation. For example, the manager in the photo at left is monitoring a food handler as she carries out the critical task of cooling food correctly. Managers must also take the necessary corrective action when required. They must also verify that the actions taken to control the risk factors for foodborne illness are actually working.

Something to Think About...

Get a Handle on it!

A local regulatory authority was inspecting an operation in a large quick-service chain. The inspector noticed that the grill operator handling raw chicken fillets also put cooked fillets in a holding drawer. A sandwich maker touched the handle of the drawer each time she retrieved a cooked fillet.

The inspector saw that the grill operator was contaminating the holding-drawer handle. It happened each time he put a cooked fillet inside— since his hands had touched raw chicken. When the sandwich maker touched the contaminated handle, there was chance of cross-contamination.

Working with the manager, the inspector recommended adding an extra handle to the holding drawer. The grill operator and sandwich maker were assigned their own handle. The chain adopted the recommendation in all of its units.

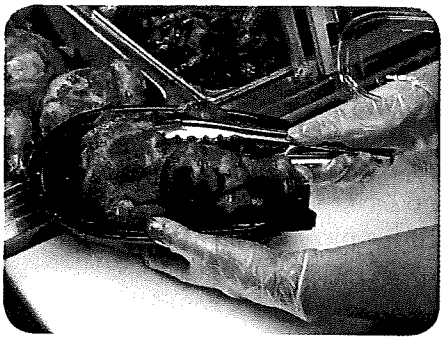
In dealing with the risk of contamination, the chain practiced active managerial control. This included modifying their SOPs to control the risk and retraining staff. They also incorporated the new SOPs in the chain's monitoring program.

The FDA's Public Health Interventions

The FDA provides specific recommendations for controlling the common risk factors for foodborne illness. These are known as public health interventions. They are designed to protect public health.

Demonstration of knowledge As a manager, you must be able to show that you know what to do to keep food safe. Becoming certified in food safety is one way to show this.

Staff health controls Procedures must be put in place to make sure staff are practicing personal hygiene. For example, staff must know that they must report illnesses and illness symptoms to management.



Controlling hands as a vehicle of contamination Controls must be put in place to prevent bare-hand contact with ready-to-eat food. This might include requiring the use of tongs to handle ready-to-eat food, as shown in the photo at left.

Time and temperature parameters for controlling pathogens Procedures must be put in place to limit the time food spends in the temperature danger zone. Requiring food handlers to check the temperature of food being hot-held every two hours is an example.

Consumer advisories Notices must be provided to customers if you serve raw or undercooked menu items. These notices must include a statement about the risks of eating these foods.

HACCP

There are many systems you can implement to achieve active managerial control of foodborne illness risk factors. Hazard Analysis Critical Control Point (HACCP) is one such system. HACCP (pronounced HASS-ip) is based on identifying significant biological, chemical, or physical hazards at specific points within a product's flow. Once identified, the hazards can be prevented, eliminated, or reduced to safe levels.

An effective HACCP system must be based on a written plan. This plan must be specific to each facility's menu, customers, equipment, processes, and operations. Since each HACCP plan is unique, a plan that works for one operation may not work for another.

The HACCP Approach

A HACCP plan is based on seven basic principles. They were created by the National Advisory Committee on Microbiological Criteria for Foods. These principles are the seven steps that outline how to create a HACCP plan.

The Seven HACCP Principles

Each HACCP principle builds on the information gained from the previous principle. You must consider all seven principles, in order, when developing your plan.

Here are the seven principles.

1. Conduct a hazard analysis.
2. Determine critical control points (CCPs).
3. Establish critical limits.
4. Establish monitoring procedures.
5. Identify corrective actions.
6. Verify that the system works.
7. Establish procedures for record keeping and documentation.

In general terms, the principles break into three groups.

- Principles 1 and 2 help you identify and evaluate your hazards.
- Principles 3, 4, and 5 help you establish ways for controlling those hazards.
- Principles 6 and 7 help you maintain the HACCP plan and system, and verify its effectiveness.

The next few pages provide an introduction to these principles. They also present an overview of how to build a HACCP program.

A real-world example has also been included for each principle. It shows the efforts of Enrico's, an Italian restaurant, as it implements a HACCP program. The example will appear after the explanation of each principle.

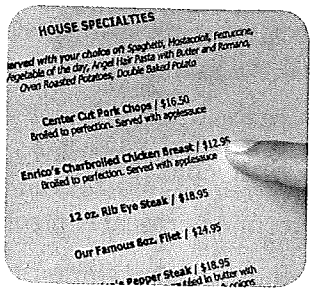
Principle 1: Conduct a Hazard Analysis

First, identify and assess potential hazards in the food you serve. Start by looking at how food is processed in your operation. Many types of food are processed in similar ways. Here are some common processes.

- Prepping and serving without cooking (salads, cold sandwiches, etc.)
- Prepping and cooking for same-day service (grilled chicken sandwiches, hamburgers, etc.)
- Prepping, cooking, holding, cooling, reheating, and serving (chili, soup, pasta sauce with meat, etc.)

Look at your menu and identify items that are processed like this. Next, identify the TCS food. Determine where food safety hazards are likely to occur for each TCS food. There are many types of hazards to look for. These can come from biological, chemical, or physical contaminants.

Principle 1 Example



The management team at Enrico's decided to implement a HACCP program. They began by analyzing their hazards.

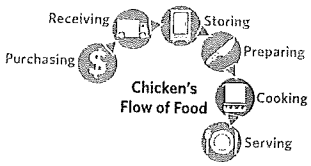
The team noted that many of their dishes are received, stored, prepared, cooked, and served the same day. The most popular of these items was the spicy charbroiled chicken breast.

The team determined that bacteria were the most likely hazard to food prepared this way.

Principle 2: Determine Critical Control Points (CCPs)

Find the points in the process where the identified hazard(s) can be prevented, eliminated, or reduced to safe levels. These are the critical control points (CCPs). Depending on the process, there may be more than one CCP.

Principle 2 Example



Enrico's management identified cooking as the CCP for food prepared and cooked for immediate service. This included the chicken breasts.

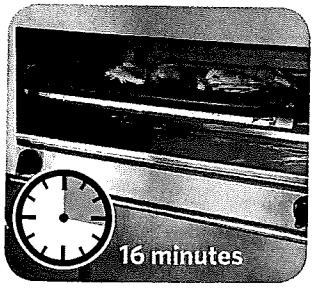
These food items must be handled correctly throughout the flow of food. However, correct cooking is the only step that will eliminate or reduce bacteria to safe levels.

Since the chicken breasts were prepared for immediate service, cooking was the only CCP identified.

Principle 3: Establish Critical Limits

For each CCP, establish minimum or maximum limits. These limits must be met to prevent or eliminate the hazard, or to reduce it to a safe level.

Principle 3 Example



With cooking identified as the CCP for Enrico's chicken breasts, a critical limit was needed. Management determined that the critical limit would be cooking the chicken to a minimum internal temperature of 165°F (74°C) for 15 seconds.

They decided that the critical limit could be met by cooking chicken breasts in the broiler for 16 minutes.

Principle 4: Establish Monitoring Procedures

Once critical limits have been created, determine the best way for your operation to check them. Make sure the limits are consistently met. Identify who will monitor them and how often.

Principle 4 Example

At Enrico's, each charbroiled chicken breast is cooked to order. The team decided to check the critical limit by inserting a clean and sanitized thermocouple probe into the thickest part of each chicken breast.

The grill cook must check the temperature of each chicken breast after cooking. Each chicken breast must reach the minimum internal temperature of 165°F (74°C) for 15 seconds.

Principle 5: Identify Corrective Actions

Identify steps that must be taken when a critical limit is not met. These steps should be determined in advance.

Principle 5 Example

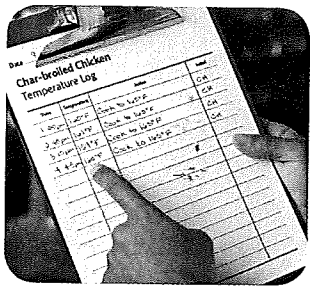
If the chicken breast has not reached its critical limit within the 16-minute cook time, the grill cook at Enrico's must keep cooking the chicken breast until it has reached it.

This and all other corrective actions are noted in the temperature log.

Principle 6: Verify That the System Works

Determine if the plan is working as intended. Evaluate it on a regular basis. Use your monitoring charts, records, hazard analysis, etc.; and determine if your plan prevents, reduces, or eliminates identified hazards.

Principle 6 Example



Enrico's management team performs HACCP checks once per shift. They make sure that critical limits were met and appropriate corrective actions were taken when needed.

They also check the temperature logs on a weekly basis to identify patterns. This helps to determine if processes or procedures need to be changed. For example, over several weeks they noticed problems toward the end of each week. The chicken breasts often failed to meet the critical limit. The appropriate corrective action was being taken.

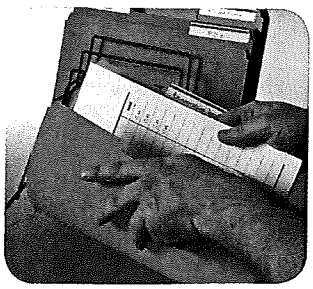
Management discovered that Enrico's received chicken shipments from a different supplier on Thursdays. This supplier provided a six-ounce chicken breast. Enrico's chicken specifications listed a four-ounce chicken breast. Management worked with the supplier to ensure they received four-ounce breasts. The receiving procedures were changed to include a weight check.

Principle 7: Establish Procedures for Record Keeping and Documentation

Maintain your HACCP plan and keep all documentation created when developing it. Keep records for the following actions.

- Monitoring activities
- Taking corrective action
- Validating equipment (checking for good working condition)
- Working with suppliers (i.e., shelf-life studies, invoices, specifications, challenge studies, etc.)

Principle 7 Example



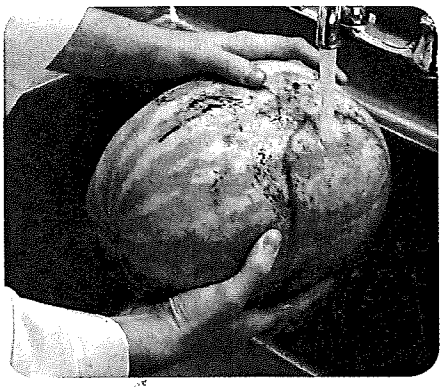
Enrico's management team determined that time-temperature logs should be kept for three months. Receiving invoices would be kept for 60 days. The team used this documentation to support and revise their HACCP plan

Another HACCP Example

The Enrico's example shows one type of HACCP plan. Another plan may look very different when it deals with food that is processed more simply. For example, food that is prepared and served without cooking needs a different approach.

Here is an example of the HACCP plan developed by The Fruit Basket. This fruit-only operation is known for its signature item—the Melon Medley salad.

1. Analyzing hazards The HACCP team at The Fruit Basket decided to look at hazards for the Melon Medley. The salad has fresh watermelon, honeydew, and cantaloupe. The team determined that bacteria pose a risk to the fresh-cut melons.



2. Determining CCPs The melons are prepped, held, and served without cooking. The team determined that preparation and holding are CCPs for the salad. They decided that cleaning and drying the melons' surfaces during prep, as shown in the photo at left, would reduce bacteria. Holding the melon at the correct temperature could prevent the bacteria's growth. Receiving was ruled out as a CCP, since the operation only purchases melons from approved suppliers.

3. Establishing critical limits For the preparation CCP, the team decided the critical limit would be met by washing, scrubbing, and drying whole melons. They created an SOP with techniques for washing the melons. For the holding CCP, they decided that the salad must be held at 41°F (5°C) or lower, because it had cut melons.

4. Establishing monitoring procedures The team decided that the operation's team leader should monitor the salad's critical limits. The team leader must observe food handlers to make sure they are prepping the melons the correct way. Food handlers must remove all surface dirt from the washed melons. Then they must cut, mix, and portion the salad into containers. The finished salads are put in the display cooler. The team leader must then monitor the temperature of the held salads to make sure the holding critical limit is met. The internal temperature of the salads must be 41°F (5°C) or lower. It must be checked three times per day, as shown in the photo at left.

5. Identifying corrective actions Sometimes after preparation, the melons still have surface dirt. The team had to determine a corrective action for this. They decided that the action would be to rewash the melons. Then the team leader must approve the melons before they are sliced.

To correct a holding temperature that is higher than 41°F (5°C), the team leader must check the temperature of every Melon Medley in the cooler. Any salad that is above 41°F (5°C) must be thrown out.

⑥ Verifying that the system works To make sure the system is working correctly, the team decided that the operation team leader must review the Manager Daily HACCP Check Sheet at the end of each shift. The team leader makes sure that each item was checked and initialed. The team leader also confirms that all corrective actions have been taken and recorded. The Fruit Basket also evaluates the HACCP system quarterly to see if it is working.

⑦ Establishing procedures for record keeping Since a foodborne illness associated with fresh produce can take as long as 16 weeks to emerge, the team determined that all HACCP records must be maintained for 16 weeks and kept on file.

Specialized Processing Methods and HACCP

Some food processes are highly specialized and can be a serious health risk if specific procedures are not followed. Typically these processes are carried out at processing plants.

- Smoking food as a method to preserve it (but not to enhance flavor).
- Using food additives or adding components such as vinegar to preserve or alter it so it no longer requires time and temperature control for safety.
- Curing food.
- Custom-processing animals. For example, this may include dressing deer in the operation for personal use.
- Packaging food using reduced-oxygen packaging (ROP) methods. This includes MAP, vacuum-packed, and *sous vide* food. *Clostridium botulinum* and *Listeria monocytogenes* are risks to food packaged in these ways.
- Treating (e.g., pasteurizing) juice on-site, and packaging it for later sale.
- Sprouting seeds or beans.

! Pathogen Alert

A variance from the regulatory authority will be required before processing food this way. A variance is a document that allows a requirement to be waived or changed.

A HACCP plan may also be required if the processing method carries a higher risk of causing a foodborne illness. There may also be dangers unique to these processes that are best addressed by HACCP. For example, if not done correctly, reduced-oxygen packaging (ROP) has a very high risk of causing a foodborne illness. Because of this, a HACCP plan is required when a variance has not been requested.

Check with your local regulatory authority before using any of these specialized processing methods on-site.

Apply Your Knowledge

It's the Principle of the Thing

Identify the HACCP principle defined by each statement. Write the number of the principle in the space provided.

Ⓐ _____ Checking to see if critical limits are being met

Ⓑ _____ Keep HACCP plan documents

Ⓒ _____ Assessing risks within the flow of food

Ⓓ _____ Specific places in the flow of food where a hazard can be prevented, eliminated, or reduced to a safe level

Ⓔ _____ Predetermined step taken when a critical limit is not met

Ⓕ _____ Minimum or maximum boundaries that must be met to prevent a hazard

Ⓖ _____ Determining if the HACCP plan is working as intended

① Hazard analysis

② Critical control points

③ Critical limits

④ Monitoring

⑤ Corrective action

⑥ Verification

⑦ Record keeping and documentation

For answers, please turn to page 8.15.

Chapter Summary

- A food safety management system is a group of procedures and practices intended to prevent foodborne illness. It does this by actively controlling risks and hazards throughout the flow of food.
- It is the manager's responsibility to actively control the risk factors for foodborne illness. This is called active managerial control. It can be achieved by incorporating specific actions and procedures into the operation to prevent foodborne illness.
- The FDA provides specific recommendations for controlling the common risk factors for foodborne illness. These are known as public health interventions. They are designed to protect public health.
- HACCP is based on identifying significant biological, chemical, or physical hazards at specific points within a product's flow. Once identified, the hazards can be prevented, eliminated, or reduced to safe levels.
- A HACCP plan is based on seven basic principles. These principles are the seven steps that outline how to create a HACCP plan.
- Some food processes are highly specialized and can be a serious health risk if specific procedures are not followed. This includes processing methods such as curing food, or smoking food to extend shelf life. Always check with your local regulatory authority before using specialized processing methods on-site.

Chapter Review Case Study

You can address food safety risks in you operation by creating a food safety management system.

Now, take what you have learned in this chapter and apply it to the following case study.

Maria, an owner/operator of a family restaurant, realized that she needed to do more to keep her place safe. That meant taking charge of food safety in a more formal way than before. It was time to develop a food safety management system. Though she hadn't had any formal training in HACCP, she wanted to develop a HACCP plan for her operation.

Maria began by reviewing her menu to identify CCPs for each menu item. Most dishes on the menu were grilled items that were prepared, cooked, and then served. Maria determined that risks to these items could best be controlled through cooking, so she identified cooking as the CCP. Next, she identified critical limits for each CCP. For grilled hamburgers, she determined that cooking them to 150°F (66°C) for 15 seconds would reduce pathogens to a safe level. For grilled chicken, she knew it was necessary to cook it to 165°F (74°C) for 15 seconds.

Maria decided to monitor the critical limits by having cooks press on the meat with their fingertips to check for doneness. As an additional safeguard, she required cooks to cut open product to check the color for doneness. Maria knew she needed to identify a corrective action for products that had not been cooked enough. She decided that if the meat did not feel right, or if the color inside was not correct, cooks needed to keep cooking the meat.

Maria knew that record keeping was often part of a HACCP program, but she wasn't sure what types of records to keep. She ended up deciding that they really weren't necessary for her operation.

① What did Maria do correctly?

_____

_____

_____

② What mistakes did Maria make?

_____

_____

_____

For answers, please turn to page 8.15.

Study Questions

Circle the best answer to each question.

① **The temperature of a roast is checked to see if it has met its critical limit of 145°F (63°C) for 4 minutes. This is an example of which HACCP principle?**

A Verification
B Monitoring
C Record keeping
D Hazard analysis

② **The temperature of a pot of beef stew is checked during holding. The stew has not met the critical limit and is thrown out according to house policy. Throwing out the stew is an example of which HACCP principle?**

A Monitoring
B Verification
C Hazard analysis
D Corrective action

③ **The deli serves cold sandwiches in a self-serve display. Which step in the flow of food would be a critical control point?**

A Storage
B Cooling
C Cooking
D Reheating

④ **What is the first step in developing a HACCP plan?**

A Identify corrective actions.
B Conduct a hazard analysis.
C Establish monitoring procedures.
D Determine critical control points.

⑤ **What is the purpose of a food safety management system?**

A Keep all areas of the facility clean and pest free
B Identify, tag, and repair faulty equipment within the facility
C Identify and control possible hazards throughout the flow of food
D Document and use the correct methods for purchasing and receiving food

Continued on the next page ►

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⑥ **Reviewing temperature logs and other records to make sure that the HACCP plan is working as intended is an example of which HACCP principle?**

A Monitoring
B Verification
C Hazard analysis
D Record keeping

⑦ **A chef sanitized a thermometer probe and then checked the temperature of minestrone soup being held in a hot-holding unit. The temperature was 120°F (49°C), which did not meet the operation's critical limit of 135°F (57°C). The chef recorded the temperature in the log and reheated the soup to 165°F (74°C) for 15 seconds. Which was the corrective action?**

A Reheating the soup
B Checking the critical limit
C Sanitizing the thermometer probe
D Recording the temperature in the log

⑧ **What does an operation that wants to smoke food as a method of preservation need to have before processing food this way?**

A Food safety certificate
B Crisis-management plan
C Master cleaning schedule
D Variance from the local regulatory authority

For answers, please turn to page 8.15.