Food Safety Quarterly

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HACCP:
The Most Effective Method to Prevent Foodborne Disease

DEVELOP YOUR OWN HACCP PLAN AND PREPARE SAFER FOOD!

What is HACCP?

HACCP is a food production system that provides your business with the safest possible way to prevent food-borne disease.

HACCP stands for Hazard Analysis and Critical Control Points and has a two-part meaning. The HA of HACCP stands for Hazard Analysis, and the CCP stands for Critical Control Points.

A Hazard is anything that could be in food that might cause a person to become ill. Hazards include:

- Chemical hazards - such as adding too much of an ingredient to a food
- Physical hazards – foreign objects, such as a piece of glass
- Biological hazards – organisms like bacteria, viruses, and parasites

A Critical Control Point (CCP) is something you can do to reduce, eliminate or prevent the hazard so that there is no threat to the health of your customer.

For example, cooking food eliminates harmful organisms; and refrigeration prevents harmful organisms from growing.

You are probably already doing some aspects of HACCP without realizing it. For example, you know that a possible Hazard in ground beef is *E. coli*. You eliminate this hazard by cooking ground beef to 155°F for 15 seconds. That is why we call this a Critical Control Point; the heat kills the *E. coli* and eliminates the hazard.

Where did HACCP come from?

In the 1960's, NASA wanted to be sure that the astronauts would not become ill from foods they carried into space. Therefore,
NASA looked for a company that could produce foods in the safest possible manner. Pillsbury Foods, Inc. was chosen to produce astronaut foods because they had developed an excellent production system for ensuring the safety of their foods. They invented the name "HACCP" for their production system.

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What is the advantage of HACCP?

Without using HACCP, there are really only two ways of determining if prepared foods are safe. One way is to test the final food product in a microbiology laboratory. The other is for a consumer to get sick.

Laboratory testing is not feasible for four good reasons: 1) it is very expensive; 2) you use-up much of the food in the tests; 3) test results would not be ready for several days; and 4) only the foods tested would be proven safe, not the untested foods.

Too often an unsafe food is identified only when someone eats it and gets sick. Certainly, this is not the way we want to discover if a food is safe or not.

HACCP avoids these problems by identifying the steps (e.g. cooking, reheating, etc.) where the hazards can be reduced, eliminated or prevented. This reduces the chance the food will cause illness.

This is how HACCP works

Producing foods using a HACCP system allows you to focus on the CCPs that really make a difference in the safety of the food. When you know that the CCPs are being achieved during food preparation, it is unlikely that customers will get sick.

For example, if you insert a thermometer into a cooked chicken to verify that it reaches 165°F, then there is virtually no chance that a biological hazard like salmonella can exist at that point. However, if you do not check the temperature, you will not know if it is safe.

The Steps in a HACCP Plan

There are 7 steps (sometimes called HACCP Principles) involved in developing and carrying out a HACCP plan. These are:

- **Step 1. Identify the Hazards**
- **Step 2. Identify the Critical Control Points**
- **Step 3. Identify the Critical Limits for the CCPs**
- **Step 4. Monitor the CCPs**
- **Step 5. Keep Records of CCP Monitoring**
- **Step 6. Determine Corrective Actions**
- **Step 7. Verify the HACCP Plan**

Let's look at each step, and some real examples.

1. **Identify the Hazards**

The first step in developing a HACCP plan is to look at your food recipes and determine what the Hazards are.

Example 1 (raw food hazards): potential Hazards in raw chicken are dangerous bacteria, like salmonella and campylobacter. There is no easy way for us to tell which chickens have dangerous bacteria and which do not. We must assume that all raw chicken has these harmful bacteria. The way we control (i.e. CCP) this potential Hazard is to cook the product to 165°F for 15 seconds.

Example 2 (shellfish hazards): potential Hazards in shellfish are salmonella and Hepatitis A virus. Like chicken, you cannot look at a shellfish and know which has dangerous germs. The only way to control (i.e. CCP) these potential Hazards is to check that the shellfish have a proper tag, which indicates that they were harvested from safe waters.

Example 3 (cooked food hazards): after you cook food, a potential Hazard is that it might become contaminated with dangerous bacteria on someone's hands, from a sneeze, or by an unclean utensil. The way you control (i.e. CCP) the potential Hazard is to cool it properly, or hot-hold it at 140°F, or reheat it to 165°F.

Let's look at ways that we can identify CCPs to eliminate, reduce or prevent these hazards.

2. **Identify the Critical Control Points**

A CCP is what you can do to eliminate, reduce or prevent a Hazard. Let's look at some examples.

Eliminating a hazard - Cooking chicken to 165°F kills (ELIMINATES) potentially dangerous bacteria in the chicken, therefore it is a CCP.

Preventing a hazard – storing possibly contaminated foods away from or under ready-to-eat food which, prevents dangerous bacteria from infecting the ready-to-eat food, and is a CCP.

Common CCPs that eliminate, reduce or prevent Hazards:

- Shellfish tags - checking that raw shellfish containers/sacks are tagged indicating they were harvested from approved waters.
- Proper storage – be sure that ready-to-eat foods are placed above raw animal products to prevent cross-contamination.
- Thawing foods – thawing foods properly so that they are not exposed to temperatures above 41°F for more than 4 hours.
- Cooking – cooking foods to the proper minimum internal temperature
- Cooling cooked foods – cooling cooked foods to 70°F within 2 hours, then from 70°F to 41°F within 4 more hours.

- Reheating foods – reheating leftover foods to 165°F to kill bacteria that might have contaminated the product.

Completing this step in your HACCP plan identifies what you can do to eliminate, reduce or prevent hazards that can cause illness in your customer.

3. Identify Critical Limits for the CCPs

The next step in a HACCP plan is to determine the critical limits for each of the CCPs. Nearly all of these are already determined for foodservice operations and are found in the State of Florida and the US Food & Drug Administration Food Codes.

Critical Limits, simply put, are the criteria that we know will eliminate, reduce or prevent the food safety Hazards. Examples of Critical Limits are shown below:

- The Critical Limit for eliminating biological Hazards in pork is cooking the food to a minimum internal temperature of 155°F for 15 seconds.
- The Critical Limit for preventing bacterial growth on a hot buffet line is to hold the food at a minimum internal temperature of 140°F.
- The Critical Limit for preventing bacterial growth when cooling hot foods is to reduce the temperature from 140°F to 70°F within 2 hours, and from 70°F to 41°F within an additional 4 hours.
- The Critical Limit for preventing bacterial growth when reheating food is to heat it to a minimum internal temperature of 165°F within 2 hours.

All CCPs have their Critical Limits which must be determined to establish your HACCP plan.

4. Monitor the CCPs

After you establish the Critical Limits, begin monitoring the CCPs. Examples of monitoring activities include:

- Measuring internal temperatures of:
  - cooked foods
  - refrigerated foods
  - hot-held foods
  - reheated foods
  - cooled foods
- Observing the placement of stored foods
- Monitoring time limits when cooling foods

While monitoring, record these Critical Limits so that you can verify that the Hazards have been reduced.

5. Keep Records of CCP Monitoring

Monitoring CCPs is very important, but so is keeping the records. Records permit you to examine the total process of safely producing foods, and allow you to see where problems (deviations) might be occurring. Additionally, if your business is ever involved in a suspected foodborne outbreak, you will have the records to validate how you produced the foods.

6. Determine the Corrective Actions

Normally, you prepare food in a safe manner, meaning that you correctly address the Critical Limits for the specific CCPs.

Occasionally, problems can occur that need to be corrected. Therefore, when developing procedures for monitoring the CCPs, it is important to use your experience to anticipate what might go wrong, and how to correct the problem so no foodborne illness occurs.

Examples:

- CCP – cook ground beef to 155°F internal temperature. *Corrective Action – if the temperature does not reach 155°F, continue cooking.*

- CCP – reheat food to 165°F within 2 hours. *Corrective action – if temperature does not reach 165°F, continue heating. If it does not reach 165°F within 2 hours, discard the food item.*

7. Verify the HACCP Plan is Working

At least once a year verify that your HACCP system is working satisfactorily. This normally involves an examination of your HACCP plan by your HACCP team or a consultant, to see that all of the components (e.g. CCPs, Critical Limits, Recording Keeping) are working properly.

Want to know more about HACCP, try these resources...

Hospitality Education Program 1-800-704-1076
http://www.state.fl.us/dbpr/html/hr/hep/hep1.html

US Food & Drug Administration
http://vm.cfsan.fda.gov/~dms/fcannex5.html

US Department of Agriculture
http://www.fsis.usda.gov/OA/haccp/imphaccp.htm

http://www.hospitalityeducation.org
Division of Hotels & Restaurants

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A SAMPLE HACCP PLAN FOR *HAMBURGERS*

STEP 1. **Identify the Potential Hazards**

    Recipe ingredients:
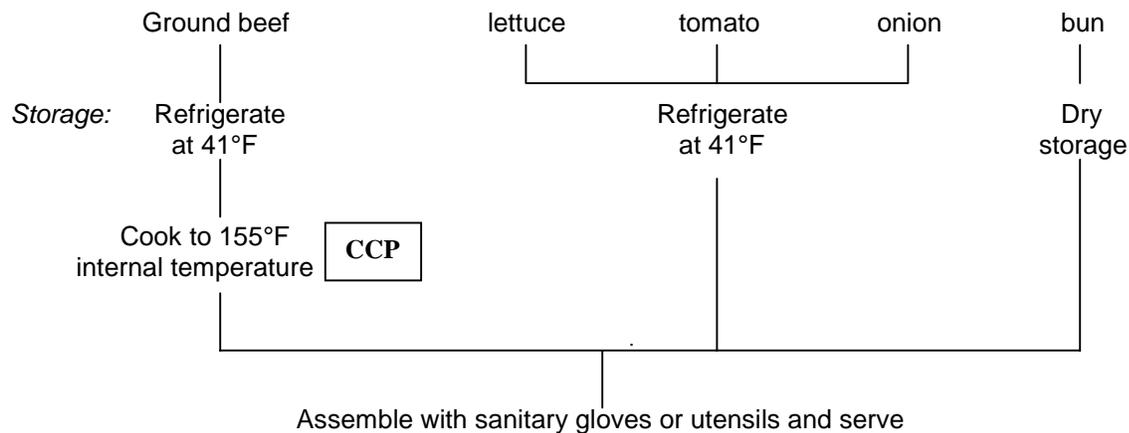   Ground beef - Hazard: ***pathogenic bacteria***
        Lettuce
        Tomato
        Onion
        Bun

STEP 2. **Identify the Critical Control Points**

Ground beef	lettuce	tomato	onion	bun
Storage: Refrigerate at 41°F		Refrigerate at 41°F		Dry storage
Cook to 155°F internal temperature **CCP**				

Assemble with sanitary gloves or utensils and serve

STEP 3. **Identify the Critical Limits for the CCPs**

The Critical Control Point is the cooking step for the ground beef.
The Critical Limit is a minimum internal temperature of 155°F for 15 seconds.

STEP 4. **Monitor the CCPs**

Measure the internal temperature of the ground beef to determine when it reaches 155°F, and record temperature in the cooking log book.

STEP 5. **Keep Records of CCP Monitoring**

Maintain log records in manager's HACCP file.

STEP 6. **Determine Corrective Actions**

CCP – cooking ground beef to a minimum internal temperature of 155°F for 15 seconds.
    If the internal temperature does not reach 155°F, continue cooking.

STEP 7. **Verify the HACCP Plan**

Once each year, or when otherwise necessary, review the plan and revise as needed.