



in Preschoolers and Senior Adults

A Hazard Analysis Critical Control Point Approach to Food Safety

Cooperative Extension Service • The University of Georgia College of Family and Consumer Sciences in cooperation with the College of Agricultural and Environmental Sciences

Identifying Food Safety Hazards and Controls

Certain people are more susceptible to foodborne illnesses than others. The majority of these illnesses are caused by bacteria or viruses. Young children are more susceptible than healthy adults because their ability to fight off illnesses is not fully developed. Older adults are more susceptible because their ability to fight off illnesses is declining. Although the most common symptom is diarrhea, foodborne illness can be very serious, and in some cases, even deadly.

The good news is that the risk of foodborne illness can be reduced. One approach to food safety is called Hazard Analysis Critical Control Point or HACCP (Has-sip). This approach identifies steps in the preparation of a food product where hazards might occur to make the product unsafe. Then, through careful monitoring of those steps, controls can be put into place that will control or eliminate that hazard. This system of food safety reduces the risk that foodborne illness will occur and can be used in the preparation of large or small quantities of food.

To learn more about HACCP, take a closer look at hazards and controls.

What is a Hazard?

A hazard is any kind of danger in food. Hazards can be physical, chemical or microbiological.

What are Some Examples of Physical Hazards?

Examples are broken pieces of glass, rocks and fragments of metal or plastic. Physical hazards in foods are those that can result in bodily injury if consumed. Whenever you purchase or receive food, look for signs of physical dangers. If you find any, do not buy or accept the food.

What are Some Examples of Chemical Hazards?

Examples of chemical hazards would be insecticides, detergents or other chemicals used for cleaning that could end up in food, if stored improperly. All chemicals should be labeled and stored in a locked cabinet away from foods.

What are Some Examples of Microbiological Hazards?

Microbiological dangers are the result of the tiny organisms present all around us - in the air, water, soil, people, animals, etc. Some of these organisms, especially bacteria, can cause illness if they are present in sufficient numbers or have produced a toxin in food. It is important **not** to let bacteria multiply in food. Almost any food can cause illness. Foods, however, that are moist, rich sources of protein are more likely to cause illness if they are not handled properly. These are called "potentially hazardous foods". Foods of animal origin like milk, meat, shell eggs, poultry, fish and seafood are examples of potentially hazardous foods. Raw agricultural products will have some microorganisms on them.

How do Bacteria Multiply?

Bacteria like warm temperatures just like people. They also like moist places and nutrient-rich foods that contain very little, if any, acid. When these conditions are present, they multiply very quickly. Some bacteria produce poisons or toxins that can cause illness. Allowing foods to sit at temperatures in the "danger zone" between 40 and 140°F, cooling foods too slowly, preparing and holding foods too far ahead of time for serving, and holding foods at the wrong temperatures increase the risk that bacteria will multiply in the food.

What is a Critical Control Point and How Can We Control Hazards During Food Preparation?

Good personal hygiene and general cleanliness can prevent food from becoming contaminated and prevent contamination from spreading to other foods. Although cleanliness is extremely important at every step in the preparation, serving or storage of food, there are ways to effectively control the growth of bacteria that may be present.

A critical control point is a step in the preparation, serving or storage of a food where some action can be taken to prevent, reduce or eliminate a hazard. Cooking and cooling steps are critical control points. Cooking thoroughly eliminates or reduces the number of bacteria present to a safe level. Cooling rapidly in shallow containers prevents bacteria from multiplying. Most foods will be safe if they reach an internal temperature of at least 165°F during cooking. For at risk groups like young children and the elderly, higher temperatures of 170°F for meats and 180°F for poultry offer a greater margin of safety. If foods are prepared ahead for serving later, solid foods should be reheated to at least 165°F and liquid foods should be re-heated to a rolling boil before serving. If hot foods are held a short time before serving, they must be kept above 140°F. When storing foods for later use, cool them quickly in shallow pans so that the temperature of the food reaches 40°F or below within 2 hours, or freeze them at 0°F or below.

Other control measures or actions can be taken to help ensure that food will be good quality. These include purchasing high quality raw ingredients from reputable sources, checking packaging to make sure it is intact with no visible signs of contamination, checking the temperature of products purchased or delivered, examining raw produce for visible mold growth or sliminess, storing dry ingredients in air-tight containers off the floor and observing freshness dates on packages.

Ways to Control Hazards

- 1. Physical:** Watch for any signs of broken glass, rocks, metal or plastic fragments, etc. Use visual inspection, that is, use your eyes as an instrument.
- 2. Chemical:** Keep chemicals locked and labeled and away from food.
- 3. Microbial:** Use thermometers - for checking temperatures in refrigerators, freezers and in cooked foods. Cook foods thoroughly. Cool foods quickly in shallow containers to 40°F or below. Keep cold foods cold and hot foods hot. Refrigerate leftovers immediately.

Flowcharts can identify steps in food preparation where hazards may occur and where actions can be taken at critical control points to eliminate those hazards. The following flowcharts list safe food handling practices and critical control points.

Flowchart for Convenience Foods

RECEIVING INGREDIENTS

- ✓ Check condition of packaging
- ✓ Check visible signs of quality
- ✓ Check temperature



STORING INGREDIENTS

- ✓ Dry: air-tight containers, off floor
- ✓ Refrigerated: 40°F or below
- ✓ Frozen: 0°F or below



PREPARATION

- ✓ Good personal hygiene
 - ✓ Clean, sanitized equipment
 - ✓ Follow package directions
- CCP



SERVING/HOLDING

- ✓ Serve immediately
- OR
- CCP ✓ Hold hot foods above 140°F
 - CCP ✓ Hold cold foods at 40°F or below

Flowchart for Hot Foods

RECEIVING INGREDIENTS

- ✓ Check condition of packaging
- ✓ Check visible signs of quality
- ✓ Check temperature



STORING INGREDIENTS

- ✓ Dry: air-tight containers, off floor
- ✓ Refrigerated: 40°F or below
- ✓ Frozen: 0°F or below



PREPARATION

- ✓ Good personal hygiene
- ✓ Clean, sanitized equipment
- CCP ✓ Cook to required temperature for doneness



SERVING/HOLDING

- ✓ Serve immediately
- OR
- CCP ✓ Hold above 140°F



COOLING

- CCP ✓ Cool quickly to 40°F or below



REHEATING

- CCP ✓ Re-heat: Liquids to a rolling boil
Solids to 165°F or above

EXAMPLE 1: HOT FOOD

Tasty Baked Chicken

50 chicken breast quarters
9 cups cornflake crumbs
1 tbsp paprika
1 tsp salt
1-1/2 tsp black pepper
6 cups skim milk

Receiving:

Check all ingredients for intact packaging and visible signs of good quality. Check to see that ingredients are appropriate temperature when purchased or delivered. Check dates for freshness where appropriate.

Storage:

Store all ingredients appropriately.

Cooking:

1. Combine cornflake crumbs and spices.
2. Dip chicken into milk and then into seasoned crumbs.
3. Place chicken onto baking pans coated with non-stick spray.
4. Bake at 350°F for one hour or until the chicken is brown and tender. Temperature should reach 180°F inside the chicken. (CCP)

Serving/Holding:

Serve immediately or hold at 140°F or above. Do not mix old product with new. (CCP)

Storing:

If food is prepared ahead for serving at a later time or stored after serving, divide into shallow pans less than 4 inches deep or divide into smaller portions and refrigerate immediately at 40°F or below to cool quickly. Store above raw foods. (CCP)

Reheating:

Reheat to 165°F or above. (CCP)

Flowchart for Cold Foods

RECEIVING INGREDIENTS

- ✓ Check condition of packaging
- ✓ Check visible signs of quality
- ✓ Check temperature



STORING INGREDIENTS

- ✓ Dry: air-tight containers, off floor
- ✓ Refrigerated: 40°F or below
- ✓ Frozen: 0°F or below



PREPARATION

- ✓ Good personal hygiene
- ✓ Clean, sanitized equipment
- ✓ Use pre-chilled ingredients
- CCP ✓ Cool quickly to 40°F or below



SERVING/HOLDING

- ✓ Serve immediately
- OR
- CCP ✓ Hold at 40°F or below

EXAMPLE: COLD FOOD

Cole Slaw

- 1-1/4 lb cabbage, chopped
- 1-1/2 cups carrots, finely shredded
- 3/4 cup onions, finely chopped
- 1/2 cup reduced fat mayonnaise
- 1/2 cup plain yogurt
- 1 tbsp sugar, granulated
- 1 tsp celery seed
- 1/2 tsp dry mustard
- 1 tbsp vinegar

Receiving:

Check all ingredients for intact packaging and visible signs of good quality. Check to see that ingredients are appropriate temperature when purchased or delivered. Check dates for freshness where appropriate.

Storage:

Store all ingredients appropriately.

Preparation:

1. Wash produce thoroughly before use. (CCP)
2. Chop or shred vegetables.
3. Pre-chill all ingredients.
4. Combine all vegetables.
5. Combine mayonnaise, yogurt, sugar, celery seed, dry mustard and vinegar. Add to vegetable mixture. Mix thoroughly.
6. Cool quickly to 40°F or below by refrigerating in shallow pans less than 4 inches deep or in small portions. (CCP)

Serving/Storing:

Serve cold. Keep dish on ice or refrigerated during serving. Place in shallow pans less than 4 inches deep and store covered in the refrigerator on the top shelf above any raw flesh food. Temperature should be at or below 40°F. (CCP)

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