

FOOD SAFETY MANAGER TRAINING MANUAL

As a food service manager, you recognize the importance of providing high quality, safe food to your customers. A multidisciplinary team of academic and food service experts designed these tools to provide a comprehensive training resource for your food service establishment. This manual and accompanying online video series are designed to provide you and your employees with the information and resources to promote a positive food safety culture.

Begin by reading short modules and watching the corresponding online video. Sections can be studied independently in short 15 to 30 minute sessions before or after a work shift or by employees outside of work. Customize the education to meet your needs. Employees can then test their knowledge with a short quiz at the end of each module. The Manager's Manual provides additional resources and answers to quiz questions to help you effectively participate in the training process. In addition, the sample Standard Operating Procedures can be used to build SOPs specific to your operation. Poster resources are valuable to reinforce safe food handling practices.

As managers, you establish the culture within your food service establishment. We hope you find the resources a valuable tool to help you continue to make food safety a priority. Whether you need help with tasks as fundamental as handwashing or following a standardized recipe or as complex as developing a food allergy plan, these training resources can help. You choose how to use the manuals and videos to train your staff and apply the policies and procedures within your restaurant.

Thank you for making the decision to prioritize a positive food safety culture within your establishment. These materials would not have been possible without the collaboration from various academic and food service participants:

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Chapter 1: Importance of Food Safety

Chapter 1 – Module 1: Culture of Food Safety

CULTURE OF FOOD SAFETY

Learning Objectives: Following completion of Chapter 1 – Module 1, the restaurant employee will be able to:

1. Describe a positive food safety culture
2. Define and discuss three prerequisites for a positive food safety culture:
 - Standard Operating Procedures (SOPs)
 - Hazard Analysis Critical Control Point (HACCP)
 - Teamwork
3. Identify important food safety training topics
4. Describe effective methods of food safety training:
 - Demonstration
 - Posters
 - Videos

Food Safety Culture

What is culture? Culture includes the social behavior patterns that are learned by people from their family, school, and community as they grow up. Everyone first learns about food handling behaviors at home, but what is learned may not be safe when it involves preparing food in large amounts in a restaurant. In a restaurant, **food safety culture** is the food safety behaviors that are practiced every day.

What food safety cultures do customers experience in the restaurant?

- Do they see a clean dining area?
- Do they see employees who appear well-groomed in clean uniforms?
- Do they receive food on clean plates and beverages in clean glassware?
- Are hot foods served hot and cold foods served cold?
- Are kitchen work areas clean?
- Do employees work together as a team to provide the highest quality food?

A restaurant where food safety practices are followed and rewarded is the link between **knowing** and **doing**. Management should be actively involved in promoting a positive food safety culture on a daily basis. Active management includes developing training programs, establishing Standard Operating Procedures and Hazard Analysis Critical Control Points, and fostering a teamwork environment.

Promoting a Positive Food Safety Culture

Through active management, a manager promotes a positive food safety culture. In addition to training employees on important food safety practices, there are other resources available to help managers promote a positive **food safety culture**:

- Standard Operating Procedures (SOPs)
- Hazard Analysis Critical Control Points (HACCP)
- Teamwork

Standard Operating Procedures (SOPs) are practices that every restaurant should follow every day to be sure that food is kept safe. SOPs cover practices for handwashing, food storage, food preparation, food service, and cleaning the kitchen and dining areas. To be most effective, SOPs should be put in writing and available for employees to reference. SOPs related to each module are included in this manual.



FUN FACT:

HACCP was created for the space program to protect the food for astronauts.

Hazard Analysis Critical Control Point (HACCP) is a program designed to identify food safety hazards and reduce risk of foodborne illness for any foodservice operation. The U.S. Food and Drug Administration (FDA) recommends all restaurants develop a written HACCP plan. A small restaurant without a HACCP plan can still minimize risks by identifying:

- Food safety dangers and
- Safe food handling practices.

Employees can be a valuable resource in helping develop a written HACCP plan.

Teamwork *“A team is only as strong as its weakest link.”* A positive food safety culture starts at the top with the manager setting an example by following good food safety practices. Managers and employees must work together to create a positive food safety culture.

- **Managers** and **supervisors** can recognize and reward employees who follow good food safety practices.
- **Employees** can remind each other of safe work habits.

When everyone cooperates to promote food safety at a restaurant, the results will be safe food and happy customers.

Food Safety Training

Both restaurant managers and restaurant employees need training on good food handling practices. Training includes formal courses on safe food handling required by cities, counties, or states before beginning employment in a food service facility, as well as training provided inside the restaurant environment by managers, supervisors, and employees. Training is common when an employee starts a new job. Yet, training needs to be an on-going process where everyone is involved in actively improving their food safety knowledge and skills daily.

Manager Training is required in many states. Often, restaurant managers must have completed a training program, passed an exam, and received a certificate in food safety. Certification periodically requires renewal. Some certifications and the organizations that offer this type of training include:

- ServSafe® Food Protection Manager certification by the National Restaurant Association Educational Foundation
- ServSafe Allergens™ online course by the National Restaurant Association Education Foundation
- Food Safety Professional® by the National Registry of Food Safety Professionals
- Certified Professional Food Manager by Prometric

Some cities, counties, and states also offer their own certification training for managers.

Employee Training includes training required by cities, counties, or states as well as on-the-job training. In most cities and counties, individuals are required to complete a short 30-60 minute food handling course when beginning work at a restaurant (check your local regulations). Today's diverse cultural backgrounds of employees bring diverse ideas about safe food handling practices. A restaurant with a positive food safety culture trains employees often using SOPs and HACCP guidelines to ensure employees work together as a team.

Important employee training topics include:

- Handwashing
- Employee hygiene and clean clothing/uniforms
- Reporting illness
- Cross-Contamination and Cross-Contact
- Safe food temperatures for cooking, serving, cooling, and reheating
- Cleaning and sanitizing work counters and equipment
- Food allergens



Some training resources available include:

- ServSafe® Food Handler certification by the National Restaurant Association Educational Foundation
- ServSafe Allergens™ online course offered by the National Restaurant Association Education Foundation
- AllerTrain™ online course offered by The MenuTrinfo Team

Similar to manager training, some cities, counties, and states also offer their own certification training for food and beverage handlers at all levels of employment. Check with your local health department if you have any questions about training requirements and opportunities in your area.

Methods of Training

There are many methods to train employees including demonstrations, posters, workbooks, and videos.

Demonstrations may be given by a **Tell-Show-Do** method. The trainer, who might be a manager or other employee, provides training to a new employee using this method:

- **Tell** the new employee how to do a task
- **Show** the new employee how to do the task
- Have the new employee **Do** the task

During the **Tell** and **Show** steps, allow the new employee to ask questions. In the **Do** step, the new employee completes the task independently. The trainer provides feedback to let the employee know how he/she is doing throughout the process.

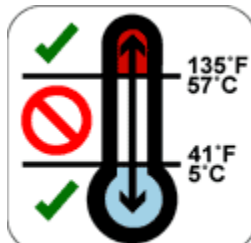
Posters are another method of training that can be used to remind employees of good food safety practices when posted in key locations. This training kit includes posters that can be printed for each lesson. Symbols on posters can provide effective training for all employees, even if English is not their first language. Here are some international food safety symbols developed by the International Association for Food Protection that can be helpful:



Do Not Work If Ill



Proper Handwashing



Temperature Danger Zone



Cook Foods Hot Enough

Videos are good methods of training if a restaurant has equipment available that uses this media. Some videos developed through government funding can be accessed at websites on the Internet. A list of video resources available online is included in Appendix A.

Food Safety Inspections

Customers rarely see inside restaurant kitchens, but health inspectors do on a regular basis. If a health inspector walked into your restaurant kitchen, they might look for answers to the following questions:

- Are work surfaces clean?
- Is equipment kept clean?
- Do employees have clean uniforms and good hygiene?
- Do employees wash their hands frequently and between each food preparation task?
- When employees are sick, do they stay home?
- Are hot foods kept hot?
- Are cold foods kept cold?
- Do employees check temperatures of hot and cold foods often?
- Is the restaurant free of rodents and insects?

In a restaurant with a positive **food safety culture**, the manager and employees will be able to answer “**Yes**” to these questions.

This manual will help you lead a positive food safety culture by providing you with knowledge on both **foodborne illness** and **allergic reactions** to food. By taking pride in the quality of food and service you provide your guests, you empower each employee to contribute to a positive food safety culture in your restaurant.

Culture of Food Safety

Module Quiz: Please make sure you have read Chapter 1 – Module 1 and watched the introductory video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. Culture includes social behavior patterns that people learn from family, school, and community as they grow up.
 - a. **True (page 1)**
 - b. False
2. Which of the following would be signs of a positive food safety culture?
 - a. Employees with clean hands and clean clothing
 - b. Hot foods are served hot
 - c. Cold foods are served cold
 - d. Clean work counters
 - e. **All of the above (page 1)**
3. Standard Operating Procedures are:
 - a. Training methods for restaurant employees
 - b. **Practices that restaurant employees should follow every day to keep food safe (page 1)**
 - c. Questions to ask during a food safety inspection
 - d. Ideas that restaurant employees have about food safety
 - e. A program designed to identify food safety hazards and reduce risk of foodborne illness
4. Hazard Analysis Critical Control Point (HACCP) is a(n):
 - a. Training methods for restaurant employees
 - b. Practice that restaurant employees should follow every day to keep food safe
 - c. Questions to ask during a food safety inspection
 - d. Ideas that restaurant employees have about food safety
 - e. **Program designed to identify food safety hazards and reduce risk of foodborne illness (page 2)**
5. Some important food safety training topics include:
 - a. Handwashing
 - b. Safe food temperatures
 - c. Food allergies
 - d. Reporting illness
 - e. **All of the above (page 2)**
6. Restaurants that have a positive food safety culture provide training often.
 - a. **True (page 2)**
 - b. False

Chapter 1 – Module 2: Foodborne Illness

FOODBORNE ILLNESS

Learning Objectives: Following completion of Chapter 1 – Module 2, the restaurant employee will be able to:

1. Explain what causes foodborne illness
2. Identify what groups of people are most likely to become ill
3. Identify symptoms of foodborne illness caused by bacteria and viruses
4. Discuss safe food handling practices that reduce risk of illness caused by bacteria and viruses
5. Identify foods that most commonly cause allergic reactions
6. Identify symptoms of allergic reactions to food
7. Discuss safe food handling practices that can prevent allergic reactions to foods

Foodborne Illness

Why is foodborne illness serious? Almost daily, the news features stories of people who have become ill from food they have eaten. The Centers for Disease Control and Prevention (CDC) estimates that nearly one in six Americans get sick from foodborne illness each year. Of the 48 million people impacted by foodborne illness annually, 128,000 are hospitalized and 3,000 die. Contaminated foods from restaurants and delis cause over 80% of all foodborne illness cases. Symptoms of food poisoning range from mild (upset stomach) to severe (vomiting, diarrhea, fever, dehydration, and death).

Causes of foodborne illness

- Bacteria and viruses
- Parasites
- Molds, toxins, and contaminants
- Allergens

Reasons Food Becomes Unsafe

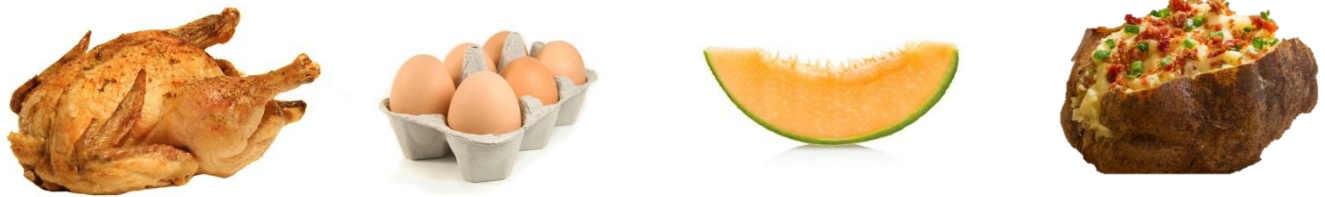
According to the U.S. Food and Drug Administration (FDA), the five most common reasons that food becomes unsafe and cause foodborne illness include the following:

- Practicing poor personal hygiene including improper handwashing
- Purchasing food from unsafe sources
- Inadequate cooking
- Improper holding (time and temperature)
- Using dirty equipment

Risk of Foodborne Illness from Bacteria, Viruses, or Parasites

Bacteria and viruses are very small organisms that cannot be seen, smelled, or tasted. Harmful organisms can be present in foods before they enter a restaurant. Other times, these very small organisms get into food accidentally, contaminating the food, when a restaurant employee does not follow safe food practices. People who eat contaminated food can become sick. The foods that most commonly contain harmful bacteria and viruses include:

- Meat: beef, poultry, fish, and shellfish
- Eggs
- Milk and dairy products
- Salads and other fresh cut leafy greens
- Whole, Ready-to-Eat fruits and vegetables
- Cooked starchy foods such as baked potatoes, pasta, rice, and beans



All of the above foods are examples of **Time/Temperature Control for Safety Foods**.

All foods should be stored, handled, prepared, and served using safe food handling practices; however, **Time/Temperature Control for Safety Foods** often require special attention and extra care. Both Standard Operating Procedures (SOPs) and Hazard Analysis Critical Control Point (HACCP) plans help minimize the risks associated with **Time/Temperature Control for Safety Foods**.

People at High Risk

People of any age can become ill from bacteria and viruses contained in food. Older people, very young children, pregnant women, and people with chronic health conditions or medical problems often suffer more severely from foodborne illness than a healthy adult. In severe cases, a person can die from an illness caused by bacteria, viruses, or parasites.

Foodborne Illness – Just a stomach ache? Not always.

Symptoms of foodborne illness caused by bacteria, viruses, or parasites include:

- Weakness
- Fever
- Nausea and vomiting
- Stomach cramps
- Diarrhea
- Kidney failure

Scenario 1: Death from Hamburgers



A few years ago, there was a foodborne illness outbreak that spread to four states with over 700 people becoming sick, 100 people requiring hospitalization, and four deaths. One child who died was a nine-year-old girl. Her kidneys and other organs failed. The bacteria causing this illness were found in hamburgers at a national chain restaurant. This bacteria caused illness because restaurant employees did not cook the hamburgers to a high enough internal temperature. To kill these bacteria, ground beef must be cooked to an internal temperature of 155°F. If you serve hamburgers at your restaurant, make sure that employees cook hamburgers long enough and check the final temperature with a thermometer. You do not want customers to become ill from something they eat at your restaurant.

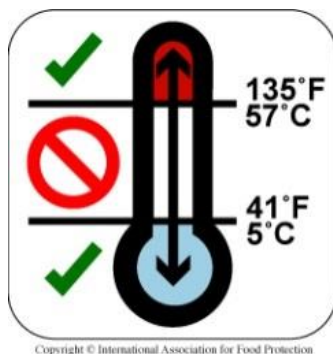
Preventing Foodborne Illness from Bacteria, Viruses, and Parasites

Harmful bacteria are often found in foods such as raw meat and poultry when the product is received at the restaurant. Harmful bacteria and viruses can also be spread to food when restaurant employees do not follow safe food handling practices. Some of these unsafe practices include the following:

- ✗ Employees handling food when they are ill
- ✗ Employees not properly washing hands before preparing or serving food
- ✗ Using dirty equipment
- ✗ Cross-Contamination
- ✗ Purchasing food from unsafe sources

Only safe food preparation methods and proper cooking can kill these bacteria so they do not make people ill. Employees in a positive food safety culture will practice behaviors to avoid these food safety hazards.

Temperature Danger Zone (TDZ)



Food temperatures are very important in preventing the growth of bacteria. The temperature range from 41°F to 135°F is known as the Temperature Danger Zone (TDZ). While this is a national standard for food safety, your city, county, or state may use different standards such as 40°F to 140°F. Check your local regulations if you are unfamiliar with the guidelines in your area. In the TDZ range from 41°F to 135°F, bacteria increase rapidly in numbers. Most harmful bacteria and viruses are killed when food is cooked to the proper internal temperature. For example, chicken should be cooked to an internal temperature of 165°F while pork needs to reach an internal temperature of 145°F. Additional information and guidelines can be found throughout this manual.

No one wants to cause a customer to become ill or die from foodborne illness. Simple steps you take can make a big difference. To reduce the risk of illness from bacteria, viruses, or parasites in food, follow these safe food handling practices:

- ✓ Wash hands often and thoroughly when preparing and serving food
- ✓ Stay home when sick
- ✓ Clean and sanitize kitchen equipment and utensils between and after each use
- ✓ Keep cold foods cold (41°F or below)
- ✓ Cook foods to high enough internal temperatures
- ✓ Hold hot foods at 135°F or higher
- ✓ Never leave food in the Temperature Danger Zone for more than 4 hours
- ✓ Reheat foods to 165°F or higher within 2 hours
- ✓ Throw away foods held at ≤135°F for 4 or more hours

Risk of Foodborne Illness from Allergic Reactions to Foods

Food allergens are very small protein particles found in food. These proteins cause allergic reactions in some people. Even the smallest amount of food protein can cause an allergic reaction. Like bacteria, viruses, and parasites, these particles cannot be seen, smelled, or tasted. There are eight foods that cause most allergic reactions; however over 200 foods have been identified as causing food allergy reactions. The eight most common food allergens are known as **The Big Eight** which include milk, eggs, soy, wheat, fish, crustacean shellfish, peanuts, and tree nuts (such as almonds, walnuts, and pecans).

THE BIG EIGHT:

- Milk
- Eggs
- Soy
- Wheat
- Fish
- Crustacean Shellfish
- Peanuts
- Tree Nuts

People at Risk

Allergic reactions to food have increased in recent years. The FDA Center for Food Safety & Applied Nutrition estimates that over one million Americans have food allergies. These include 6% of children and about 4% of adults. The Food Allergy Research & Education (FARE) organization reports that the number of individuals with food allergies is increasing. Estimates include nearly 50,000 emergency room visits, 2,000 hospitalizations, and 150 deaths each year from allergic reactions to food.

REMEMBER:

Cooking food does not kill food allergens.

Cooking food does not kill food allergens so proper handling and avoiding cross-contact of foods containing allergens is the only way to keep allergic individuals safe. The only way for an individual to prevent an allergic reaction to food is to avoid the food completely.

People of any age can have food allergies displaying a range of symptoms:

- Nausea
- Shortness of breath
- Itchy rash
- Swelling of the throat, tongue, face, eyes, hands, or feet
- Vomiting
- Diarrhea
- Stomach cramps
- Anaphylaxis

Similar to foodborne illness caused from bacteria, viruses, or parasites, in severe cases, a person can die from an allergic reaction to food.



Scenario 2: Allergy to Shellfish was Deadly

A man died after having an allergic reaction to crustacean shellfish at a restaurant in Tennessee. He knew that he was allergic to shellfish, so he ordered a chicken dinner. However, the chicken dinner that was served contained a small amount of crab meat. The man had eaten only a few bites of his dinner when he went into anaphylactic shock – within minutes of eating the food – his throat closed up, and he could not breathe. Employees called an ambulance, but he died before help arrived.

All restaurant employees, from managers to cooks to servers, must work together to make sure that customers with food allergies are not served a food that can make them ill or die. In this case, a cook was preparing shellfish (crab) and chicken using the same equipment and work counters. Small particles from the crab meat were accidentally mixed with the chicken. When this happens, it is called **Cross-Contact**. Employees at your restaurant can prevent Cross-Contact by using separate and clean equipment, utensils, and work counters to prepare foods for customers with allergies.

People who have food allergies must avoid eating foods that contain the allergen or it will cause them to become sick. When customers order foods from a restaurant, they do not expect the food to contain allergens from another food. Unfortunately, this can easily happen when employees are unaware of safe food handling practices for food allergens.

How can a customer be served food they are allergic to by accident?

- ✗ A cook substitutes ingredients in recipes without informing others
- ✗ Wait staff provide incorrect information to a customer
- ✗ Cross-Contact

Cross-Contact

Food allergens can be spread from one food to another (Cross-Contact). **Cross-Contact** can occur when employees prepare different foods without washing hands or cleaning the equipment, utensils and counters when each food is prepared. Training cooks to follow standardized recipes and avoid **Cross-Contact** by cleaning equipment, utensils, and counters thoroughly before and after preparing different foods can help prevent allergic reactions to food.

In the above case, a customer allergic to crustacean shellfish ordered the chicken dinner. He died because the chicken dinner actually contained a small amount of crab meat caused by **Cross-Contact**. The knife and cutting board were used to cut both the crab and the chicken without cleaning. The knife and cutting board contacted the crab and then transferred the allergen to the chicken.

AVOID CROSS-CONTACT:

- Wash hands and change gloves and aprons between preparing different menu items
- Wash and sanitize equipment, utensils, and counters between food items

Preventing Foodborne Illness from Allergic Reactions to Food

No one wants a customer to become ill or die from an allergic reaction to food. To prevent this from happening, restaurant employees should follow safe food handling practices:

- ✓ Wash hands and change gloves before preparing and serving an allergy free item
- ✓ Use standardized recipes
- ✓ Read food labels carefully
- ✓ Avoid adding or substituting ingredients containing common food allergens
- ✓ Train wait staff to know what ingredients are contained in menu items
- ✓ Train wait staff to ask the manager or chef if they are unsure of ingredients
- ✓ Clean kitchen equipment and utensils carefully between and after each use
- ✓ Use a separate work counter to prepare food for customers who have food allergies

Cooking food does not kill food allergens. Customers who have food allergies can be safe only if they avoid eating foods to which they are allergic.

Foodborne Illness

Module Quiz: Please make sure you have read Chapter 1 – Module 2 before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the **Employee Manual** in parenthesis.

1. Bacteria, viruses, and food allergens found in foods cannot be seen, smelled, or tasted.
a. True (page 7)
b. False
2. Older people, young children, and people with chronic health conditions have a higher risk than other people of foodborne illness caused by bacteria and viruses.
a. True (page 6)
b. False
3. In severe cases, a person can die from foodborne illness caused by:
a. Bacteria
b. Viruses
c. Food allergens
d. All of the above (page 8)
e. a. and b. only
4. Stomach cramps, vomiting, and diarrhea can be symptoms of foodborne illness caused by:
a. Bacteria
b. Viruses
c. Food allergens
d. All of the above (pages 6, 8)
e. a. and b. only
5. Having restaurant workers stay at home when they are sick can reduce risk of foodborne illness caused by:
a. Bacteria
b. Viruses
c. Food allergens
d. All of the above
e. a. and b. only (page 7)
6. Cooking foods to proper internal temperatures kills most harmful bacteria and viruses.
a. True (page 7)
b. False
7. Washing hands often and cleaning kitchen equipment and utensils carefully are important food handling practices to prevent foodborne illness caused by:
a. Bacteria
b. Viruses
c. Food allergens
d. All of the above (page 7, 9)

8. Using standardized recipes and training wait staff to know what ingredients are contained in menu items can reduce risk of foodborne illness caused by:
 - a. Bacteria
 - b. Viruses
 - c. Food allergens (page 9)**
 - d. All of the above
9. Which of the following actions by restaurant staff might result in a customer having an allergic reaction to food?
 - a. Following the standardized recipes for menu items
 - b. Using a separate work counter to prepare food for customers who have food allergies
 - c. Substituting chopped peanuts for walnuts in a recipe (page 9)**
 - d. Listing ingredients for menu items on the restaurant menu
10. A customer with a peanut allergy can eat a small amount of peanuts without becoming ill or having an allergic reaction.
 - a. True
 - b. False (page 8)**

Chapter 1 – Module 3: What To Do in Case of Illness

WHAT TO DO IN CASE OF ILLNESS

Learning Objectives: Following completion of Chapter 1 – Module 3, the restaurant employee will be able to:

1. Recognize symptoms and signs of illness that require employees to stay home from work
2. Use appropriate procedures to protect customers at self-serve buffet lines or salad bars
3. Use sanitary methods to clean up after a customer who becomes ill with vomiting or diarrhea at the restaurant
4. Provide appropriate assistance to a customer who has an allergic reaction to foods
5. Follow restaurant policy when a customer calls to report a foodborne illness

Employee Illness

Restaurant employees who are ill can spread viruses or bacteria to foods. Customers who eat these foods can then become sick. A manager can protect customers by making sure that employees are alert to signs of illness and report them immediately to the manager. Shortage of staff is never a good reason for asking a sick employee to remain on duty.

A restaurant should have strict policies that require employees to notify managers when they are ill, and the policy should require ill employees to stay home.

Employees who have the following symptoms should **not** report for work at a restaurant:

- ✗ Vomiting
- ✗ Diarrhea
- ✗ Sore Throat
- ✗ Fever
- ✗ Jaundice (yellowing of eyes and skin)
- ✗ Infected cut or boil

Managers should be alert for any of these signs and symptoms of illness:

- Vomiting and diarrhea: Employees who have these symptoms should not report for work at a restaurant. If vomiting or diarrhea occurs in the middle of a work shift, employees should be sent home. **Employees should not return to work until at least 24 hours after the vomiting and diarrhea have stopped.**
- Sore throat and fever: Employees should not handle food or beverages. They may be assigned to work in other parts of the restaurant. However, if the restaurant has many high risk customers (elderly people, those with chronic medical conditions, preschool children), these employees should be sent home and instructed **not to return to work until they no longer have a fever.**



- Jaundice (yellowing of eyes and skin): One cause of jaundice is the virus Hepatitis A. This is a serious illness which may last for weeks and can be spread to other employees and customers through food. The employee should not report for work at the restaurant and should see a doctor. If Hepatitis A is confirmed, the manager should report this illness to the local health department.
- Infected cut or boil: Employees should cover the infected part of the body with a bandage. If the cut is on the hand, they should also wear a disposable glove.

Bacteria that can easily be spread to food by employees who are ill include *Salmonella*, *Shigella*, and *E. coli*. Viruses that can be easily spread to food by employees are Norovirus and Hepatitis A. *Staphylococcus aureus* is a bacterium that can be easily spread to food from employees who have infected cuts or boils. When cooked foods have been contaminated with this bacterium and then improperly cooled and reheated, the bacteria may grow and form toxins in the food.

The FDA has identified 5 main food pathogens:

- Norovirus
- *Salmonella*
- *E. coli* 0157:H7
- *Shigella*
- Hepatitis A

Check with your local health department regarding your responsibilities for reporting illnesses. Employee illness requires you to either restrict employee activities or exclude employees from work to prevent the spread of foodborne illness and promote a positive **food safety culture**. The FDA offers several decision trees and sample policies you can include as part of your Standard Operating Procedures (SOPs) that are listed in Appendix E. Additional information and an electronic version of the forms can be found at the following link: www.fda.gov

One illness can cause many people to become sick.

Scenario 3: Outbreak Causes Restaurant Closing

A teenager who ate chicken and vegetable fajitas at a Mexican restaurant was among 200 people in a Michigan community to become ill with Norovirus infection. Symptoms of the illness included nausea, vomiting, diarrhea, headache, fever, chills, and weakness. The restaurant voluntarily closed its doors after the county health department identified their operation as the source of the Norovirus outbreak.



There are numerous ways to prevent illnesses, like Norovirus, from spreading:

- ✓ Wash hands often with soap and water; hand sanitizers can also be used, but should never take the place of handwashing
- ✓ Fruits and vegetables should be washed before preparing them
- ✓ Oysters and other shellfish should be cooked thoroughly
- ✓ Clean and sanitize surfaces
- ✓ Restaurant employees should not handle food when they are ill
- ✓ Promptly wash dirty laundry in hot water and machine dry, including aprons, towels, tablecloths, and napkins

Customer Illness

Protecting Food from Customers Who Are Ill

Customers who come to a restaurant may already be ill with a virus that could be spread to other customers. Self-service areas such as buffets and salad bars can be protected from ill customers by installing sneeze guards to protect the food.

- Sneeze guards should be located 14 inches above the counter and extend for at least 7 inches. This will prevent customers from touching, coughing, or sneezing on the food.
- Handles of utensils used by customers to portion foods on a self-serve buffet or salad bar should be wiped with a sanitizing solution frequently.



Cleaning Up from Ill Customers

Customers may become ill at the restaurant with vomiting or diarrhea that can then carry viruses or bacteria to other customers or employees. These bodily excretions often carry viruses or bacteria that can make people sick. Restaurant employees should be trained to clean up any messes quickly in a way that lessens the risks to other customers and to themselves. This may involve cleaning bathroom sinks, toilets, door handles, dining tables, floors, walls, and other surfaces.

Since there is a strong possibility that the customer's illness may be caused by a Norovirus, the restaurant employee should wear gloves and use an appropriate disinfectant. A strong chlorine bleach solution (5 to 25 tablespoons of bleach to one gallon of water) may be used for cleaning or other disinfectants recommended by the Centers for Disease Control and Prevention (CDC). Once a disinfectant solution has been used to clean an illness, it should be discarded. If employee clothing becomes soiled during the cleaning process, it should be removed immediately and then laundered with hot water and detergent. The CDC has additional resources and links available at www.cdc.gov.

Remember, when cleaning up after an ill customer:

- ✓ Respond quickly
- ✓ Wear gloves
- ✓ Use a sanitizing solution
- ✓ Remove and launder soiled clothing immediately.

Customers with Allergic Reactions to Food

Customers who become ill from an allergic reaction to a food often have symptoms starting within minutes of ingesting the food. These can include difficulty breathing and swelling of the face, lips, mouth, throat, or tongue. Immediate medical help is needed. In some cases, an allergic reaction can lead to death.



A restaurant employee who thinks a customer is having an allergic reaction to food should **call 911 to request medical help right away** and ask the customer to lay on the floor with their legs elevated. Even if the customer has an epinephrine injector (such as an EpiPen®) available to lessen the symptoms of the allergic reaction, emergency medical help should still be called.

SAMPLE TELEPHONE CALL TO 911:

This is [name of caller] calling from [name of restaurant] located at [restaurant address]. We have a customer who is having an allergic reaction. Please send help right away.

(Remain on the phone and follow any additional instructions provided by the emergency operator.)

Customer Reports of Illness



Customers who become ill from a bacterium or virus spread from food usually do not have symptoms until 12 to 36 hours after eating the food. With Hepatitis A, the onset of symptoms may be as long as 50 days after exposure. Typically, a customer who has foodborne illness caused by a bacterium or virus will contact the restaurant manager after leaving to report a suspected illness. Restaurant owners should have a policy on dealing with customers who report foodborne illness. One key individual such as the manager, owner, chef, or head cook should be assigned to handle customer complaints. Kitchen staff and wait staff should be trained to refer customer complaints about foodborne illness to this individual.

SAMPLE POLICY ON CUSTOMER REPORT OF FOODBORNE ILLNESS:

Restaurant employees will refer any customer reports of foodborne illness to the manager. The manager will complete a Foodborne Illness Customer Report Form after asking the customer the following questions:

- ✓ May I have your name and phone number to reach you?
- ✓ When did you visit our restaurant?
- ✓ What foods did you eat?
- ✓ Which employee served you?
- ✓ When did you first get sick? How soon did you have symptoms after eating the food?
- ✓ What symptoms did you have? How long did they last?
- ✓ Did you go to a doctor?
- ✓ What did the doctor tell you?

The manager thanks the customer for calling and tells the customer that he will check on this and call him back.

The manager checks with employees who prepared and served food on the day the customer ate at the restaurant. Employees who have symptoms of illness such as vomiting, diarrhea, or jaundice will be sent home.

The manager reviews food preparation and serving practices for menu items served on the day that the customer ate at the restaurant and determines if any changes are needed.

The manager calls the customer back to report on his findings.

Managers may also wish to consult with legal counsel.

What To Do in Case of Illness

Module Quiz: Please make sure you have read Chapter 1 – Module 3 and watched the corresponding video before you take the quiz. If you have any questions about the information found in Module 3, please ask your manager before you begin.

1. Restaurant workers who are ill can spread viruses or bacteria to foods, and this can cause customers who eat the food to become ill.
a. True (page 12)
b. False
2. Dan is working in the restaurant kitchen when he suddenly becomes sick with diarrhea. What should Dan do?
a. Complete his work shift
b. Tell the manager and go home right away (page 12)
c. Ask to change jobs with someone for the remainder of the shift
d. Finish working through the lunch rush and then notify his supervisor
3. Sally has a cut on her finger that is infected. She works in the kitchen making salads. What should Sally do?
a. Stay home from work until her finger is healed
b. Cover her finger with a bandage and report for work
c. Cover her finger with a bandage and put a disposable glove over that hand when working in the kitchen (page 12)
d. Wash her hands often while working in the kitchen
4. What virus(es) spread by food can cause jaundice with symptoms of yellow skin and eyes?
a. Norovirus
b. Hepatitis A (page 12)
c. Stomach flu
d. All of the above
5. When Randy, a restaurant cook, gets up in the morning he realizes that he has a very sore throat and fever. The restaurant where Randy works serves many elderly customers. What should Randy do?
a. Report for work and tell the manager as soon as the manager arrives
b. Call the manager to say he is sick and not coming to work (page 12)
c. Report for work as usual because he does not have sick leave and needs the money
d. Report for work as usual and stay on shift until a substitute can be found
6. What is the purpose of sneeze guards on salad bars?
a. Prevent customers from taking too much food
b. Prevent customers from spreading germs to food by touching, coughing, or sneezing (page 13)
c. Make the salad bar look more attractive
d. Speed customers through the salad bar line

7. A customer vomited on the bathroom floor of your restaurant during dinner hour. What should be done?
 - a. A worker should immediately clean up the mess using water and a mop.
 - b. Workers should clean up the mess when they have spare time.
 - c. **A worker should immediately clean up the mess while wearing gloves and using a sanitizing solution. (page 13)**
 - d. Ignore the problem until the dinner hour is over.
8. Customers who become ill from bacteria or viruses contained in food may not have symptoms until 8 to 12 hours after consuming the food.
 - a. **True (page 14)**
 - b. False
9. A customer says, "I think I'm having an allergic reaction," and appears to be having difficulty breathing. What should wait staff do first?
 - a. Administer CPR (cardio-pulmonary resuscitation).
 - b. Ask the customer what foods he has eaten.
 - c. **Tell the customer to lie on the floor and elevate his legs. Call 911 to request emergency help. (page 14)**
 - d. Go to a nearby pharmacy to get an EpiPen®.
10. When a restaurant employee answers the phone, a customer says, "I think I got sick from something I ate at your restaurant." What should the employee do or say?
 - a. **Refer the customer to the manager (page 14)**
 - b. Say, "We only serve good food here. I don't think our food caused the problem."
 - c. Ask, "What did you have to eat?"
 - d. Say, "I think you should see a doctor right away."

Chapter 2: Guidelines for Safe Food Practices

Chapter 2 – Module 1: Employee Cleanliness

EMPLOYEE CLEANLINESS

Learning Objectives: Following completion of Chapter 2 – Module 1, the restaurant employee will be able to:

1. Explain appropriate policies on clothing, grooming, and cleanliness for employees
2. Realize that dirty hands can spread bacteria, viruses, and food allergens to food and cause foodborne illness
3. Describe when restaurant employees need to wash hands
4. Describe adequate handwashing facilities
5. Recognize that hand sanitizers should not be used in place of proper handwashing
6. Wash hands in an appropriate manner
7. Avoid bare hand contact with Ready-to-Eat foods
8. Describe appropriate ways to handle Ready-to-Eat foods
9. Organize work to reduce frequency of needed handwashing
10. Recall Standard Operating Procedures that help employees stay clean

Policies on Clothing, Grooming, and Cleanliness

First impressions are important. If customers see a clean restaurant with employees who are neatly dressed with good personal grooming, they are likely to think, “Here’s a restaurant serving quality food.” A positive food safety culture includes written policies for appropriate dress, grooming, and cleanliness. The policies then become part of the training process for employees from their first day on the job.



Policies include many of the following:

- Type of clothing to be worn, such as plain t-shirt, slacks, uniform, or chef’s coat
- Clean hair and hair restraints (hair nets or caps)
- No jewelry on arms and hands except a plain band, such as a wedding ring
- Clean clothing (not dirty or wrinkled)
- No beards or facial hair
- Fingernails kept short and clean; no fingernail polish or fake fingernails
- Policy on earrings and other facial piercings

Guidelines for most of these policies are included in state and local health department regulations. Many of these policies are related to food safety or employee safety.

- Hair needs to be restrained so that it does not fall into food
- Jewelry could collect food particles and harbor germs
- Jewelry may become loose and fall into a food product
- Jewelry can be a work safety hazard; necklaces, bracelets, watches, and earrings (or other jewelry in facial piercings) could get caught in equipment
- Dirt and germs can accumulate under long fingernails
- Fingernail polish or fake fingernails could chip and fall into food
- Dirty clothing can harbor germs that spread to food



Handwashing

Washing hands often is one of the most important things that employees can do to prevent foodborne illness. Since hands touch a lot of different things, they may be contaminated with germs or small food particles that contain food allergens.

When Handwashing Is Needed

The FDA Food Code states that restaurant employees shall wash hands at the following times:

- ✓ Before starting work
- ✓ Before putting on clean, disposable gloves
- ✓ After using the bathroom
- ✓ After touching raw meat, poultry or seafood
- ✓ After clearing tables or busing dirty dishes
- ✓ After handling dirty dishes, utensils or equipment
- ✓ After removing garbage
- ✓ After smoking, eating, drinking, coughing, or sneezing
- ✓ After touching the hair, face, or body
- ✓ After using a telephone or cell phone
- ✓ After handling money at the cash register

Although most restaurant employees have been trained on the importance of handwashing and when to wash hands, many fail to wash hands when needed. A nationwide survey of full-service restaurants showed that employees failed to wash hands when needed about 75% of the time.

Handwashing Facilities and Method

Restaurant employees need handwashing sinks conveniently located near the kitchen food preparation area. **Employees should not wash their hands in the same sink that is used for food preparation or washing dishes.** Employees should not stack boxes or carts in front of the handwashing sink. This could prevent another employee from washing his or her hands.



Each handwashing sink should have the following:

- ✓ Hot and cold running water
- ✓ Soap
- ✓ Disposable paper towels, heated air dryer, or a clean, unused cloth towel
- ✓ Waste basket

Water should be at least 100°F (lukewarm), but water that is slightly warmer may be more effective in removing soil from hands. Any kind of soap may be used. As an added precaution, employees can use the same paper towel used to dry their hands to turn off the faucet. When washing hands in the bathroom, employees can also use a paper towel to open the door on their way out rather than touching the door handle with their clean hands.

The recommended method for handwashing is:

- ✓ Rinse hands under clean, warm running water
- ✓ Apply soap and rub hands and fingers together for at least 10-15 seconds
- ✓ Rinse with clean, warm running water
- ✓ Dry hands with either disposable paper towels, heated air dryer, or a clean, unused cloth towel



WASH HANDS FOR 20 SECONDS

The entire handwashing process should take about 20 seconds – about as long as it takes to sing the “Happy Birthday” song or the “Alphabet Song” twice. Give it a try!

Placing a poster showing the proper handwashing steps on the wall above each handwashing sink will remind employees of the right way to wash hands. Several handwashing posters are available online including the following developed by the University of Nebraska-Lincoln Extension: <http://food.unl.edu>



HAND SANITIZERS

CAUTION: Alcohol-based hand sanitizers should **not** be used in place of proper handwashing. They should be used only in addition to proper handwashing or in an emergency situation when water is not available. Effective hand sanitizers should contain at least 60% alcohol. Although these hand sanitizers reduce the number of germs on hands, they do **not** eliminate all types of germs, and they do **not** eliminate food allergens.

Handling Ready-to-Eat Foods

Different states have different regulations regarding bare hand contact with **Ready-to-Eat (RTE)** foods. Restaurant managers should be aware of what their state requires. RTE foods include salads, fruits and vegetables that are served raw, sandwiches, deli meats and cheeses, baked goods, and any cooked food that will not receive further cooking or reheating before being served to a customer.

Ready-to-Eat foods should never be handled with bare hands. There are several different ways that restaurant employees can safely handle RTE foods.

- ✓ Tongs
- ✓ Spatulas
- ✓ Forks, spoons, or “spoodles”
- ✓ Deli paper
- ✓ Disposable gloves



REMEMBER:

Gloves should always be worn when handling Ready-to-Eat foods. Never use bare hands on RTE foods.

Disposable Gloves

If disposable gloves are used, employees should carefully wash and dry hands before putting on gloves. They should also make sure to change gloves and wash hands often. One of the main problems with use of disposable gloves is that employees fail to change gloves between tasks. If employees go to the bathroom, they will need to wash and dry hands and put on new gloves. If they switch from handling Time/Temperature Control for Safety Foods

(such as raw meat, poultry, or seafood) to handling Ready-to-Eat foods (such as salads, raw fruits and vegetables, or sandwiches) they need to wash and dry hands and put on new gloves.

Any situation that would require washing hands also requires a change of gloves:

- ✓ Wash and dry hands before putting on gloves
- ✓ Change gloves often:
 - Before handling Ready-to-Eat foods
 - Before handling allergen-free menu items
 - After using the bathroom
 - After talking on the phone
 - After handling raw foods or other Time/Temperature Control for Safety Foods

Improving the Flow of Work (And Helping Keep Hands Clean)

In most restaurants, managers and employees could improve the flow of work by reviewing and revising job descriptions and activities for each employee. Work activities should be arranged so that one employee does not have to switch back and forth between jobs that can get hands dirty to jobs that require clean hands. Organizing the flow of work will save employees time and also reduce the risk that employees with dirty hands will spread bacteria, viruses, or food allergens to food, equipment, and work counters.

Some examples of organizing work activities include:

- The employee who places soiled dishes in a dishwashing machine should not be the same employee who removes clean dishes at the other end of the dishwasher.
- An employee who is preparing meat, poultry, or seafood should prepare all of these menu items at one time and then switch to preparing fresh vegetables. Or one employee should be assigned to prepare meat, poultry, or seafood while another prepares fresh vegetables and salads at a different work counter.
- An employee who is preparing sandwiches with wheat bread at one work counter should not prepare sandwiches with wheat-free (or gluten-free) bread at the same counter. A separate counter and utensils should be set up for this purpose.

Reminding Employees to Wash Hands

Here are some ways that managers can remind employees to wash hands more often:

- ✓ Managers can be role models – a manager should make sure that employees see him/her washing hands often in the kitchen
- ✓ Posters that encourage handwashing can be placed at kitchen handwashing sinks and in the bathroom
- ✓ Short training lessons can remind employees of the importance of handwashing
- ✓ A buddy system can be used so that employees can remind each other to wash hands when needed
- ✓ Managers can recognize employees who have good work habits with verbal praise, gift cards, or “Employee of the Month” recognition

STANDARD OPERATING PROCEDURES: EMPLOYEE CLEANLINESS

Employees, supervisors, and managers can stay clean and avoid spreading bacteria, viruses, or food allergens to foods by following these Standard Operating Procedures:

- Wash hands frequently, especially when:
 - Beginning work
 - Switching between food preparation tasks
 - Changing gloves
 - After using the toilet
- Change gloves often, especially when:
 - Switching between tasks
 - Switching between raw and cooked foods
 - Preparing “allergen-free” foods
- Do not work preparing or serving food when ill
- Wear a hair net or cap to restrain hair
- Do not wear any jewelry except for a plain ring
- Avoid bare hand contact with Ready-to-Eat food

Employee Cleanliness

Module Quiz: Please make sure you have read Chapter 2 – Module 1 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. Which of the following would not be appropriate dress or grooming for a restaurant worker?
 - a. Hair net or cap
 - b. A watch, bracelet, or necklace (page 17)**
 - c. Short, clean fingernails
 - d. Uniform or chef's coat
2. All of the following can be spread to food by workers with dirty hands. Which of them can make people sick?
 - a. Bacteria
 - b. Viruses
 - c. Food allergens
 - d. All of the above (page 18)**
 - e. None of the above
3. When do restaurant workers need to wash hands?
 - a. Before starting work
 - b. After using the bathroom
 - c. After eating food
 - d. After answering a cell phone call
 - e. All of the above (page 18)**
4. A cook has just coughed and sneezed. Where should he wash his hands?
 - a. The restroom
 - b. Kitchen handwashing sink that has hot and cold running water, soap, and paper towels (page 18)**
 - c. The food prep sink
 - d. The dishwashing sink
 - e. Any of the above
5. All of the following are considered Ready-to-Eat food except:
 - a. Raw vegetables, fruits, or salads
 - b. Sandwiches
 - c. Frozen chicken nuggets (page 20)**
 - d. Baked cookies or cakes
6. Which of the following is not a requirement for adequate handwashing facilities in a restaurant kitchen?
 - a. Hot and cold running water
 - b. Any kind of soap
 - c. Alcohol-based hand sanitizer (page 18)**
 - d. Disposable paper towels or heated air dryer

7. The entire handwashing process should take about _____ seconds.
 - a. 5
 - b. 10
 - c. **20 (page 19)**
 - d. 30

8. Which of the following is not an appropriate way for restaurant workers to safely pick up and serve Ready-to-Eat foods to customers?
 - a. **Bare hands (page 20)**
 - b. Tongs
 - c. Spatulas
 - d. Deli paper
 - e. Disposable gloves

9. If disposable gloves are used to handle food, workers should first wash and dry hands before putting on the gloves.
 - a. **True (page 20)**
 - b. False

10. Which of the following might increase risk of spreading bacteria, viruses, or food allergens that could make customers sick?
 - a. One worker scrapes dirty plates and dishes to put in the dishwasher, while another worker removes and stores clean dishes at the other end.
 - b. **One worker prepares all sandwiches at a work counter without cleaning between different types of sandwiches. (page 21)**
 - c. One cook prepares meat, poultry, and seafood, while another cook prepares salads at a different counter.
 - d. One worker who does not work preparing food handles the cash register and answers the kitchen telephone.

Chapter 2 – Module 2: Maintaining Clean Food Service Facilities

MAINTAINING CLEAN FOOD SERVICE FACILITIES

Learning Objectives: Following completion of Module 2, the restaurant employee will be able to:

1. Explain the difference between cleaning and sanitizing
2. Discuss general guidelines for using chemical sanitizers
3. Realize why clean work areas are needed for allergen-free foods
4. Describe appropriate methods of washing and sanitizing in a three-compartment sink
5. Describe appropriate methods of washing and sanitizing in a dishwasher
6. Explain why a manager should control insect and rodent pests in a restaurant
7. List practices that can help control insect and rodent pests in a restaurant

Maintaining Clean Food Service Facilities

Keeping work surfaces that come in contact with food clean and sanitized help prevent the spread of bacteria and viruses that can cause foodborne illness. It also helps to prevent Cross-Contact between foods containing allergens and other foods.

Cleaning and Sanitizing

Employees need to understand the difference between cleaning and sanitizing.

- **Cleaning** is removing visible food particles and other soil from surfaces. In a restaurant, various types of detergents and other cleaning products are used for cleaning. Work surfaces should be cleaned first and then sanitized.
- **Cleaning** can remove most bacteria, viruses, and food allergens from surfaces.
- **Sanitizing** involves using heat or chemicals to kill harmful organisms that could cause foodborne illness. Effective sanitizers should kill 99.99% of the harmful organisms.
- **Sanitizing** kills almost all of the remaining bacteria and viruses, but sanitizers do not kill food allergens.

FDA Food Code

The FDA Food Code states that food-contact surfaces and utensils should be cleaned in-between working with different types of raw meat, poultry, and fish or when switching from working with these foods to preparing raw fruits and vegetables. If high risk foods are prepared in the kitchen, food-contact surfaces should be cleaned and sanitized at least every 4 hours.

Chemical Sanitizers

In restaurants, solutions of chemical sanitizers are commonly used to sanitize work counters and equipment. The three types chemical sanitizers used most often to kill harmful bacteria and viruses are chlorine bleach, iodine, and quaternary ammonium compounds.

Chemical Sanitizer	Chlorine bleach (5% sodium hypochlorite solution)	Iodine	Quaternary ammonium compounds
Common Concentration	1 to 4 Tbsp in 4 gal of water (50-200 ppm)	1.5 to 25 ppm	200 to 400 ppm
Water Temperature	75° to 115°F	75°F	75°F
Contact Time	≥7 seconds	≥30 seconds	≥30 seconds
Advantages	<ul style="list-style-type: none"> • Inexpensive • Works in hard water • Kills many kinds of bacteria 	<ul style="list-style-type: none"> • Inexpensive • Works in hard water • Kills many kinds of bacteria 	<ul style="list-style-type: none"> • Odorless • Non-staining • Non-corrosive • Does not irritate skin • Not affected by presence of food • Heat stable
Disadvantages	<ul style="list-style-type: none"> • Ineffective at hot water temperatures and when too much food soil is present • Deteriorates in storage • Too much can corrode aluminum and stainless steel • Irritating to skin 	<ul style="list-style-type: none"> • Ineffective at hot water temperatures and when too much food soil is present • Deteriorates in storage • Too much can corrode aluminum and stainless steel • Irritating to skin 	<ul style="list-style-type: none"> • Incompatible with some detergents and hard water salts • Does not kill all types of bacteria • Leaves a film on surfaces

Table 1: Chemical Sanitizer Guidelines (Refer to dishwasher manuals or cleaning supply labels for additional information.)

Guidelines for Using Chemical Sanitizers

Chemical sanitizers are affected by the concentration, temperature, the contact time, and the presence of food particles. Employees should be trained to follow manufacturer's directions concerning the concentration of the sanitizer in water.

- Most chemical sanitizers work best between 55° and 120°F
- Chlorine bleach is inactivated by water temperatures above 120°F
- Chemical sanitizers become less effective when exposed to air, detergents, and food particles
- Chemical sanitizing solutions can be tested for strength using paper test strips supplied by companies that sell the sanitizers; each type of chemical sanitizer uses different paper test strips
- Hard water and food particles reduce the effectiveness of chemical sanitizer solutions, so they should be tested frequently

REMEMBER:

Sanitizers only reduce the number of bacteria and viruses

– **not** food allergens.

In most restaurants, employees keep a container of chemical sanitizer solution on work counters along with a clean wipe rag that can be soaked in sanitizer solution and used to wipe up food spills.

- The wipe rags should be changed every 4 hours or as often as they become dirty.
- Replace sanitizer solution when it becomes dirty or decreases in concentration.
- Employees should test the solution frequently with a paper test strip. The paper strip will change color if the concentration is strong enough.



Cutting boards and equipment such as slicers and food processors should be cleaned and sanitized after being used with high risk foods such as meat, poultry, and fish. Sanitizer solution can also be placed in spray bottles and used to spray work counters and equipment.

Clean Work Areas for Allergen-Free Foods

Today many customers may request foods that are free of allergens contained in common foods such as milk, eggs, soy, wheat, fish, crustacean shellfish, peanuts, or tree nuts (The Big Eight). Food allergens are very small proteins that cannot be seen. ***Thorough cleaning of food counters and equipment is the only way to make sure that food can be prepared free of these allergens.*** If possible, it is best to have a separate work counter and equipment to prepare allergen-free food. Even a small amount of **Cross-Contact** with a food allergen can make a customer who has a food allergy very ill.

- ✓ Clean and sanitize preparation areas using disposable paper towels
- ✓ Clean and sanitize tables, menus, condiments, etc., before seating customers

Some equipment cannot be easily cleaned and made allergen-free, such as fryers, toasters, grills, and waffle irons. Use dedicated equipment or alternative cooking methods for allergen-free foods. For example:



- Dedicate a toaster for gluten-free bread
- Place a piece of aluminum foil on the grill to cook a hamburger patty

Dishwashing

Dishes and utensils may be washed either in a three-compartment sink or a dishwashing machine.

Three-Compartment Sink

The steps in dishwashing when using a three-compartment sink are as follows:

SCRAPE → WASH → RINSE → SANITIZE → AIR DRY

- **SCRAPE:** Before washing, scrape and remove food particles from pans.
- **WASH:** The first compartment is used for manually washing pans or utensils using detergent and water that is at least 110°F.
- **RINSE:** The second compartment with water at a temperature of at least 110°F is used for rinsing the pans.
- **SANITIZE:** The third compartment is used for sanitizing, either by heat or a chemical solution. When heat is used for sanitizing, the water in the third sink compartment must be at a temperature of at least 171°F, and the pans must remain immersed in the hot water for at least 30 seconds. (Note that some state health departments may require that the hot water temperature used for sanitizing be 180°F.)
- **AIR-DRY:** After sanitizing, the pans should be air-dried on a clean drain board. Pans should be completely dry before they are stored.



Dishwashing Machines

Many types and sizes of dishwashing machines are used in restaurant operations. Employees and managers should check wash water and rinse water temperatures of a dishwashing machine on a regular basis.

Dishwashing machine temperatures guidelines:

(Check with your local health department for specific requirements.)

- For a stationary rack, single temperature machine, the hot water sanitizing rinse should be at least 165°F
- For other heat sanitizing dishwashers, the final rinse temperature should reach 180°F

Dishwashers that use chemical sanitizers can clean and sanitize dishes at much lower water temperatures, thus saving on energy costs. One should follow manufacturer's directions when using these dishwashing machines.

Pest Management

There are three reasons that restaurants operators should control pests such as cockroaches, flies, mice, and rats:

- Pests spread bacteria that can cause illness
- Customers will get a bad impression if they see evidence of any of these pests
- A health inspector who finds evidence of a large number of pests in a restaurant can close the operation

Insect and rodent pests are attracted to a restaurant foodservice kitchen because they can often find food, water, and shelter. This happens when food is not stored properly, food scraps are left on the counters, floors, or garbage cans are not covered tightly. In older buildings, there are often cracks in walls or door and window openings where pests can gain entry and make a home.

Restaurant managers and employees can control these insect and rodent pests by preventing them from entering the building, removing nesting and breeding sites, and maintaining clean and sanitary facilities that do not provide food and water to pests. Here are some practices that can help.



Prevent Entry

- Inspect food deliveries for pests when they are received
- Use self-closing doors
- Install air curtains at doorways
- Repair cracks in walls and floors
- Fill openings around drain pipes and vents
- Make sure that window openings are tightly screened

Remove Nesting and Breeding Sites

- Store food or boxes containing food on racks or pallets at least 6 inches off the floor
- Clean the kitchen and dining area thoroughly each day

Remove Food and Water Sources

- Make sure all food is stored in refrigerators, freezers, or containers with tight-fitting lids
- Inspect food inventory frequently and discard any food that is infested with pests
- Clean food scraps off the floor and under equipment daily
- Store garbage cans away from food preparation areas
- Clean grease traps regularly
- Eliminate sources of moisture such as leaky plumbing

Following the above practices will ensure that pests such as cockroaches, flies, mice, and rats do not make themselves at home in your restaurant.

Licensed Pest Control Operator

If the above control methods fail to keep pests out, various sprays, baits, and traps can be used to kill and control insects and rodents in a foodservice facility. However, one should realize that if these control methods are poisonous to insects and animals, they could also be toxic for humans. Therefore, the person using these methods of pest control should be trained. Agricultural departments in most states have programs that license individuals as Pest Control Operators (PCOs) based on education and experience. A restaurant manager can sign a contract with a licensed PCO who will provide regular inspections and use appropriate pest control methods when needed.

STANDARD OPERATING PROCEDURES: MAINTAINING CLEAN FOOD SERVICE FACILITIES

- Clean and sanitize food contact surfaces regularly
 - Between working with raw and cooked foods
 - At least every 4 hours
- Food allergens are NOT removed with sanitation solution alone
- Use disposable or single-use towels when cleaning for food allergens
- Clean the work area and utensils before preparing allergy-free foods
 - Have a dedicated work area for allergy-free foods when possible
- Use chemical or heat sanitizers
 - Chemical sanitizers: chlorine bleach, iodine, and quaternary ammonia
 - Heat sanitation requires high temperatures:
 - For manual washing: at or above 171°F
 - For stationary rack dish machines: at or above 165°F
 - For all other dish machines: at or above 180°F
- Scrape loose food particles from dishes before washing
- When using a three-compartment sink:
 - scrape, wash, rinse, sanitize, and air-dry
- Develop and follow a Pest Management Plan
 - Prevent entry of pests
 - Remove nesting and breeding sites
 - Remove food and water

Maintaining Clean Food Service Facilities

Module Quiz: Please make sure you have read Chapter 2 – Module 2 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. _____ is removing visible food particles and other soil from surfaces.
 - a. **Cleaning (page 25)**
 - b. Sanitizing
 - c. Rinsing
 - d. Scrubbing
2. _____ means using heat or chemicals to kill harmful organisms that could cause illness.
 - a. Cleaning
 - b. **Sanitizing (page 25)**
 - c. Rinsing
 - d. Scrubbing
3. Which of the following is a common sanitizer used in foodservice operations to kill bacteria?
 - a. Chlorine
 - b. Iodine
 - c. Quaternary Ammonium
 - d. **All of the above (page 26)**
4. While sanitizing kills bacteria responsible for foodborne illness, sanitizing does **NOT** destroy food allergens.
 - a. **True (page 26)**
 - b. False
5. Wipe rags and sanitizer solutions used to sanitize food-contact surfaces should be replaced at least every _____ hours.
 - a. 2
 - b. 3
 - c. **4 (page 26)**
 - d. 5
6. The correct order of steps when washing pans in a three-compartment sink is:
 - a. **Scrape food particles from pans, wash, rinse, sanitize, air dry (page 27)**
 - b. Scrape food particles from pans, wash, sanitize, rinse, air dry
 - c. Scrape food particles from pans, rinse, wash, sanitize, air dry
 - d. Scrape food particles from pans, sanitize, wash, rinse, air dry

7. For a stationary rack, single temperature machine, the hot water sanitizing rinse should be at least _____.
 - a. 155°F
 - b. 165°F (page 28)**
 - c. 175°F
 - d. 185°F
8. Pests such as cockroaches, flies, mice, and rats spread bacteria that can cause illness.
 - a. True (page 28)**
 - b. False
9. To avoid giving pests homes for nesting and breeding, one should store food and boxes containing food at least _____ inches off the floor.
 - a. 2
 - b. 4
 - c. 6 (page 28)**
 - d. 8
10. Which of the following practices will help control pests in a restaurant?
 - a. Clean kitchen and dining areas thoroughly each day
 - b. Install air curtains at doorways
 - c. Repair cracks in walls and floors
 - d. Store garbage cans away from food preparation areas
 - e. All of the above (page 28, 29)**

Chapter 2 – Module 3: Safe Food Temperatures

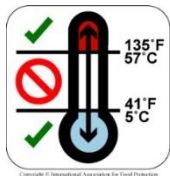
SAFE FOOD TEMPERATURES

Learning Objectives: Following completion of Module 3, the restaurant employee will be able to:

1. Identify points in food flow where temperatures should be checked
2. Identify the Temperature Danger Zone (TDZ)
3. Explain why color is not a reliable indicator of doneness in cooked foods
4. Describe five common types of thermometers and their appropriate uses
5. Explain how to use food thermometers to measure temperatures of thick and thin foods
6. Explain why thermometer accuracy is important
7. Take appropriate action if refrigerator temperatures are not $\leq 40^{\circ}\text{F}$
8. Take appropriate action if oven temperatures are inaccurate
9. Discuss why food thermometers should be washed and sanitized after each use
10. Describe two methods used to calibrate thermometers
11. List Standard Operating Procedures for using food thermometers

Safe Food Temperatures

This module focuses on reducing risk of foodborne illness caused by bacteria by ensuring safe food temperatures. While food allergens can make people who have food allergies very ill, their presence in food is not affected by hot and cold food temperatures. Temperature control is especially important for **Time/Temperature Control for Safety Foods (TCS)** such as meat, poultry, fish, eggs, and dairy products.



The **Temperature Danger Zone (TDZ)** between 41°F and 135°F is most favorable to the growth of bacteria. It is important that TCS foods spend as little time as possible in this temperature range.

FDA INSPECTION

When the FDA inspected a national sample of full service restaurants, they found that over half of the restaurants failed to maintain proper holding times and temperatures placing customers at risk.

Flow of Food

From receiving to food preparation to food service there are a number of times when food temperatures should be checked:

- Receiving of refrigerated foods ($<41^{\circ}\text{F}$ for most foods)
- Preparation of hot foods to the proper internal temperature
 - Ranging from 145°F to 165°F depending on the food item
- Cooling of hot foods for refrigerated storage
 - to 70°F in 2 hours and
 - to 41°F in an additional 4 hours
- Cold holding of refrigerated food at $<41^{\circ}\text{F}$
- Hot holding of cooked food at $\geq 135^{\circ}\text{F}$
- Reheat left overs to $\geq 165^{\circ}\text{F}$

Measuring Food Doneness

Thermometers are the only reliable way to measure the temperature of a food. Cooks sometimes think that they can tell when a food has reached the proper doneness just by looking at the color of the food. However, **color is not a reliable indicator of doneness**. Research has shown that foods such as a ground beef patty may look brown on the outside, but still be undercooked on the inside. Unless a ground beef patty has reached an internal temperature of 160°F at the center of the patty, it could still contain bacteria that could make people sick. Restaurant employees should not assume a food is done. They should take the time to insert a thermometer into the food and measure the internal temperature.



Selecting the Right Thermometer

There are several types of thermometers that can be used to measure food temperatures in restaurants. Selecting the right thermometer for the job is important for getting an accurate measurement of temperature. Table 2 shows several types of thermometers commonly used in restaurants and describes their uses.

One of the most common dial thermometers used in restaurants is the bimetallic-stemmed thermometer (pocket thermometer). These thermometers are inexpensive, easy to use, and accurate if they are calibrated frequently. It takes between 15 to 20 seconds to obtain an accurate temperature reading with these thermometers.

Two types of digital thermometers often used in restaurants are thermocouples and thermistors. These thermometers are more expensive than bimetallic-stemmed thermometers. Various types of probes are available for thermocouple thermometers. The type of probe used depends on the type of food or equipment where temperature is to be measured.

- **Immersion probes** are usually used to test the temperature of liquids such as soups, sauces, and frying oils.
- **Penetration probes** are used to measure the internal temperature of food such as hamburger patties or chicken breasts.
- **Surface probes** can be used to measure the temperature of flat cooking equipment such as griddles.

Other thermometers are designed for specific uses.

- **Refrigerator thermometers** are used in refrigerators to check air temperatures. Air temperatures of refrigerators should be $\leq 40^{\circ}\text{F}$. Bacteria can grow rapidly in refrigerated foods if the temperature is above 41°F . A refrigerator not maintaining proper temperature may need repairs.
- **Oven thermometers** are placed in ovens to check oven temperatures. If oven temperatures do not match the oven setting, then baking temperatures and/or times can be adjusted. For example, if an oven is set for a 350°F temperature, but an oven thermometer shows that it is actually 345°F , then the cook can increase the oven setting to 355°F to achieve an actual temperature of 350°F in the oven. This is important because foods might be undercooked at the lower temperature.

Types of Thermometers Commonly Used in Restaurants

The thermometers shown in the table below are the types of food thermometers most commonly used in restaurants.





Type	Picture	Uses	Placement
Pocket Thermometer		<ul style="list-style-type: none"> Measures internal temperature of foods at end of cooking time Measures food temperatures during receiving, cold holding, and hot holding 	<ul style="list-style-type: none"> Place 2 to 3 inches deep into food Best for deep and thick foods such as roasts, combination dishes (such as lasagna), and soups
Thermocouple with Probe, Digital Thermometer		<ul style="list-style-type: none"> Measures food temperatures near end of cooking period 	<ul style="list-style-type: none"> Place probe at least 1/4 inch deep in food Measures both thick and thin foods, including hamburger patties, pork chops, and chicken breasts
Refrigerator, Dial Thermometer		<ul style="list-style-type: none"> Measures air temperature of refrigerator, which should be $\leq 40^{\circ}\text{F}$ 	<ul style="list-style-type: none"> Place or hang on refrigerator shelf
Oven, Dial Thermometer		<ul style="list-style-type: none"> Measures oven temperatures between 100° to 600°F 	<ul style="list-style-type: none"> Place or hang on oven rack

Table 2: Thermometers commonly used in restaurants and their applications

In addition to these commonly used thermometers, there are several other types of thermometers available for use in restaurants. Check with your local restaurant supply company.



Thermometer Placement

Food thermometers and thermocouples are designed to measure the internal temperature of foods near the end of cooking time. They are not designed to remain in food while it is cooking. Thermometers will give correct temperature readings only if they are properly placed in the food. Foods cook from the outside in, making the center of the food the coolest.

- Thermometers should be placed in the thickest part of the food.
- Insertion of the thermometer in fat or gristle or near bone will cause an inaccurate reading.
- With irregularly shaped foods such as a roast, insert the thermometer in several places.
- Insert thermometers sideways for thin items such as hamburger patties or chicken breasts.

Preventing Cross-Contamination and Cross-Contact

- **Cross-Contamination** occurs when germs are accidentally spread from one food to another. Small amounts of bacteria and viruses grow rapidly and can cause unintentional illness.
- **Cross-Contact** occurs when food allergens are spread between foods. The smallest amount of a food allergen can make a sensitive customer ill.



Cross-Contamination or **Cross-Contact** could easily happen if food thermometers are not cleaned between uses. To avoid cross-contamination and cross-contact, a food thermometer should be **washed, rinsed, and sanitized each time** it is used to test a food temperature. Most food thermometers should be washed carefully by hand and not immersed in water.

Thermometer Calibration

Over time, thermometers may begin to give inaccurate readings. This can increase risk of foodborne illness for customers. Calibration means adjusting a thermometer to give accurate temperature readings. Most pocket thermometers and digital thermometers can be calibrated.

When the thermometer is placed in a food, accuracy is critical. If a thermometer is out of adjustment and not properly calibrated, it will give inaccurate information. An improperly calibrated thermometer might read 165°F for cooked chicken when the actual temperature is lower. In that case, the food has not reached the proper internal temperature to prevent foodborne illness.

- ✓ Thermometers that are scaled in Fahrenheit should be accurate to within $\pm 2^{\circ}\text{F}$ for measuring food temperatures.
- ✓ To ensure accuracy, calibration should be done weekly.

There are two basic methods to check accuracy of food thermometers and adjust them to correct readings:

- **Ice-Point Method** uses crushed ice and water to check the freezing point (32°F)
- **Boiling-Point Method** uses boiling water to check the boiling point (212°F)

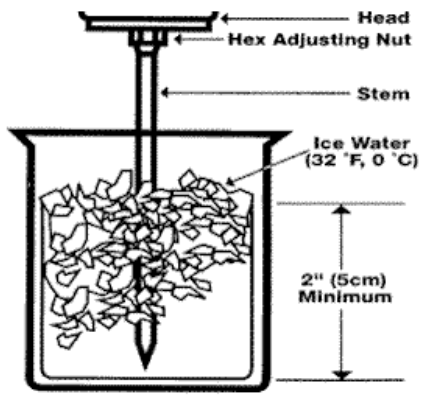
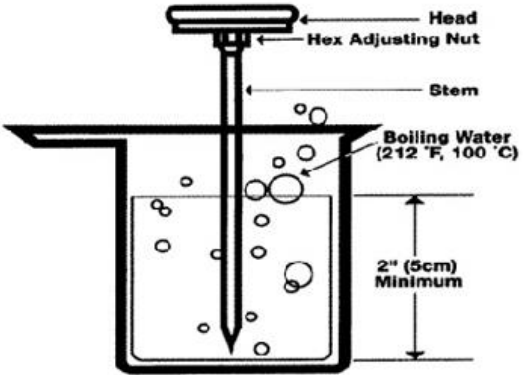
<p>Ice-Point Method</p> <ul style="list-style-type: none"> • Fill a large glass with crushed ice • Add cold water to the top of the ice and stir well • Insert thermometer stem at least 2 inches into the ice water mixture • Wait at least 30 seconds before reading the thermometer temperature • Without removing the thermometer stem from the ice water, hold the adjusting nut under the head of the thermometer and turn the thermometer head so it reads 32°F. 	
<p>Boiling-Point Method</p> <ul style="list-style-type: none"> • Bring a pot of clean water to a rolling boil on a range. • Immerse the thermometer stem at least 2 inches into the boiling water. • Wait at least 30 seconds before reading the thermometer temperature. • Without removing the thermometer stem from the hot water, hold the adjusting nut and turn the head of the thermometer so the temperature reads 212°F. 	

Table 3: Thermometer calibration techniques
 Pictures obtained from: <http://www.fsis.usda.gov>

STANDARD OPERATING PROCEDURES: SAFE FOOD TEMPERATURES

- Insert food thermometers at end of cooking period to check internal temperatures of Potentially Hazardous Foods or food products containing meat, poultry, and eggs
- Every restaurant should have a working thermometer
- Wash, rinse, and sanitize food thermometers between each use
- Check and calibrate food thermometers for accuracy weekly
- Use refrigerator thermometers to ensure refrigerator temperature is $\leq 40^{\circ}\text{F}$
- Use oven thermometers to ensure that oven temperatures are accurate

Safe Food Temperatures

Module Quiz: Please make sure you have read Chapter 2 – Module 3 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. At which of the following points in food flow should food temperatures be checked with a thermometer?
 - a. Receiving of refrigerated foods
 - b. End cooking temperature of hot foods
 - c. Cold holding of refrigerated foods
 - d. Hot holding of foods
 - e. All of the above (page 33)**
2. High risk foods should spend as little time as possible in the Temperature Danger Zone. What is the temperature range for the Temperature Danger Zone?
 - a. below 41°F
 - b. 0°F to 32°F
 - c. 41°F to 135°F (page 33)**
 - d. above 140°F
3. The best way to tell if a food such as meat or poultry has cooked long enough is:
 - a. When it has a brown color
 - b. When it has cooked the length of time stated in the recipe
 - c. Check tenderness with a fork
 - d. Check the internal food temperature with a thermometer (page 34)**
4. When checking temperatures of thin foods like hamburger patties, pork chops, or chicken breasts, place the thermometer:
 - a. On the surface of the meat
 - b. Into the center of the meat from the side (page 36)**
 - c. Into the center of the meat from the top
 - d. A thermometer is not needed.
5. Air temperatures of refrigerators should be _____ or lower.
 - a. 32°F
 - b. 35°F
 - c. 40°F (page 35)**
 - d. 45°F
6. A cook is using a pocket thermometer to test the internal temperature of a beef roast. How deep should the thermometer be inserted in the roast?
 - a. 1/4 inch
 - b. 1/2 inch
 - c. 1 inch
 - d. 2 to 3 inches (page 35)**

7. A food thermometer should be washed, rinsed, and sanitized between uses for each food.
 - a. **True (page 36)**
 - b. False
8. How often should food thermometers be calibrated?
 - a. Daily
 - b. **Weekly (page 36)**
 - c. Monthly
 - d. Yearly
9. When using the Ice-Point Method to calibrate a pocket thermometer, the temperature should be adjusted to read _____.
 - a. **32°F (page 37)**
 - b. 41°F
 - c. 135°F
 - d. 212°F

Chapter 3: Knowing the Menu

Chapter 3 – Module 1: Time/Temperature Control for Safety Foods

TIME/TEMPERATURE CONTROL FOR SAFETY FOODS

Learning Objectives: Following completion of Module 1, the restaurant employee will be able to:

1. Identify foods and beverages that are high risk for containing bacteria and viruses that can cause foodborne illness
2. Identify foods and food ingredients that are high risk for causing foodborne illness through allergic reactions to food ("The Big Eight")
3. Identify Standard Operating Procedures that keep foods safe

Time/Temperature Control for Safety Foods

Any food can become contaminated and unsafe. However, some foods are more likely to be sources of bacteria and viruses that can spread foodborne illness than others. Many of the foods that are susceptible to bacterial growth are low-acid foods that contain high amounts of moisture. The FDA Food Code specifically identifies **Time/Temperature Control for Safety Foods**. Module 3.1 of the 2009 FDA Food Code has more specific details.

POTENTIALLY HAZARDOUS FOODS

FDA Food Code

The FDA Food Code specifically identifies Potentially Hazardous Foods that are more likely to support growth of organisms that cause foodborne illness. These foods are meat, poultry, fish, eggs, dairy products, and cooked plant foods such as rice and baked potatoes. The Food Code also lists raw seed sprouts, cut melons, cut leafy greens, cut tomatoes, and garlic-in-oil mixtures.

The Big Eight

Some people have allergic reactions to certain foods. The CDC lists **The Big Eight** which contribute to most allergic reactions to food: milk, eggs, soy, wheat, fish, crustacean shellfish, peanuts, and tree nuts.

Ready-to-Eat (RTE) Foods

At high risk for contamination by viruses are Ready-to-Eat foods that do not receive further cooking before being served to customers. These include salads, vegetables, and fruits that are served raw. Sandwiches, deli meats, and cheeses, are also Ready-to-Eat food items. Any cooked food that will not receive further cooking before being served to a customer falls into the Ready-To-Eat category.



Table 4: Potentially Hazardous Foods

It is estimated that viruses cause over one-half of all foodborne illnesses every year in the U.S. Viruses do not grow in foods, but they can be spread to foods by employees who are ill and do not wash hands properly. Foods that are at high risk for contamination by viruses are Ready-to-Eat (RTE) foods that do not receive further cooking before being served to customers.

Other sources of bacteria and viruses that cause foodborne illness include beverages such as water, raw milk, and raw fruit juices. When unclean water is used to wash raw fruits and vegetables, bacteria and viruses can be spread to these foods (an example of **Cross-Contamination**).

Bacteria and viruses can also be spread through ice. Therefore, it is important that a restaurant have a supply of both clean water and clean ice.



One virus (Norovirus) and 10 bacteria listed in Table 5 below cause over 95% of foodborne illnesses in the United States. Parasites are another cause of foodborne illness sometimes found in raw fish, fresh produce, and unclean water. The table below lists organisms by scientific name along with their common food or beverage sources. Many of the foods listed are also identified as Time/Temperature Control for Safety Foods in the FDA Food Code.

Bacteria or Virus	Food and Beverage Sources
Norovirus	<ul style="list-style-type: none"> • Salads • Fruits • Oysters • Ready-to-Eat foods
<i>Salmonella spp</i>	<ul style="list-style-type: none"> • Fresh produce • Meat and poultry • Eggs • Milk and dairy products
<i>Clostridium perfringens</i>	<ul style="list-style-type: none"> • Meats • Gravies and stews containing meat • Mexican foods • Vegetables
<i>Campylobacter spp</i>	<ul style="list-style-type: none"> • Undercooked poultry • Raw milk • Unpasteurized cheeses • Unclean water
<i>Staphylococcus aureus</i>	<ul style="list-style-type: none"> • Meat and meat products, poultry and egg products • Salads (egg, tuna, chicken, potato, pasta) • Cream-filled bakery products • Sandwich fillings • Milk and dairy products
Enterohemorrhagic and Shiga-producing <i>E.coli</i> (O157:H7 and other strains)	<ul style="list-style-type: none"> • Raw or undercooked ground beef • Fresh produce • Raw milk • Unpasteurized fruit juice • Unclean water
<i>Shigella</i>	<ul style="list-style-type: none"> • Raw produce and Salads • Milk and dairy products • Poultry
<i>Yersinia enterocolitica</i>	<ul style="list-style-type: none"> • Meats • Oysters, fish, and crabs • Raw milk
<i>Bacillus cereus</i>	<ul style="list-style-type: none"> • Meats • Milk • Vegetables • Fish
<i>Vibrio parahaemolyticus</i>	<ul style="list-style-type: none"> • Raw or improperly cooked oysters
<i>Listeria monocytogenes</i>	<ul style="list-style-type: none"> • Raw milk and unpasteurized cheeses • Ice cream • Raw vegetables • Raw poultry and meats • Hot dogs and Deli meats

Table 5: Bacteria and viruses and their common food and beverage sources

Norovirus

What is Norovirus?

Norovirus is a virus that is the most common cause of foodborne illness in the U.S. today. It causes about 21 million illnesses a year, and about 5 million of these illnesses are spread through food. It can be spread from one person to another, on contact surfaces such as door handles, through the air, or through food. Food can easily be contaminated by an employee who is ill. Some food may be contaminated when it is purchased such as oysters that come from contaminated water, or fruits and vegetables that have been contaminated in the field. Norovirus can stay on restaurant furniture and kitchen counters for many days. Many people who become ill from Norovirus think that they have stomach flu. Although most people who become ill from Norovirus recover within two days, people who are at high risk such as the elderly, those with other illnesses, and preschool children could become ill and die.

Ways to Prevent Norovirus from Spreading:

- Restaurant employees should wash hands often with soap and water. Alcohol-based sanitizers can be used in addition, but should not substitute for handwashing.
- Fruits and vegetables should be washed before preparing them. Cook oysters and other shellfish thoroughly before serving them. Norovirus can survive temperatures as high as 140°F.
- Clean and disinfect surfaces such as kitchen work counters and dining room tables. If Norovirus might be present, a highly concentrated sanitizer should be used. This might be chlorine bleach (5 to 25 tablespoons of bleach per gallon) or another commercial disinfectant. Quaternary ammonium compounds are **NOT** effective against Norovirus.
- Restaurant employees should not work handling food when they are ill. Many local and state health departments require that food handlers with Norovirus illness not work until 2 or 3 days after they recover.
- Wash dirty laundry promptly in hot water and machine dry. This may include employee aprons along with kitchen towels, dining room tablecloths, and napkins.

High Risk Foods for Food Allergens

People who have food allergies may become very ill from eating a food to which they are allergic. There are eight common food allergens that cause the most food allergy reactions (**The Big Eight**). Table 6 lists these allergens along with common food sources and ingredients that might contain these allergens. This is only a partial list. Over 200 foods have been identified as causing allergic reactions to foods. Restaurant managers should read food labels carefully and consult their food suppliers or food manufacturers to gain more knowledge about food ingredients. It is important to give customers with food allergies accurate information.

Food Allergen	Common Food Sources	How It Might Be Listed on the Label
Milk	Milk, cheese, yogurt, ice cream, pudding, custard, cream, butter, pudding, milk chocolate candy	Casein, curds, ghee, lactalbumin, lactoferrin, lactose, whey, milk solids
Eggs	Eggs, mayonnaise, meringue, macaroni, pasta, baked goods	Egg powder, dried eggs, egg solids, albumin, globulin, lecithin, lysozyme, ovalbumin
Soy	Edamame, miso, natto, tamari, tempeh, tofu, soy sauce, baked goods, soups, cereals, deli meats	Vegetable broth, gum, oil, or starch, hydrolyzed vegetable protein (HVP), textured vegetable protein (TVP), monosodium glutamate (MSG)
Wheat	Baked goods, pasta, couscous, cereals, breaded and battered foods, soups, ale and beer	Bran, durum, germ, gluten, malt, starch, bulgur, cracker meal, flour, semolina, spelt, triticale, starch
Fish	Fish, anchovies, surimi (imitation seafood), caviar, Caesar salad dressing, sushi, sashimi, tempura	Fish oil, steak sauce, Worcestershire sauce, fish sauce, fish flavoring
Crustacean Shellfish	Abalone, clams, crab, crawfish, lobster, oysters, scallops, shrimp, cockle, mussels	Agar, alginic acid, alginate, fish or shellfish flavoring
Peanuts	Peanuts, baked goods, candy, cereal, granola, whole grain breads, sauces, salad dressings	Peanut butter, peanut flour, peanut oil, hydrolyzed plant or vegetable protein
Tree Nuts	Almonds, Brazil nuts, cashews, chestnuts, filberts, hazelnuts, hickory nuts, macadamia nuts, pecans, pine nuts, pistachios, walnuts	Nut butters, nut pastes, nut oils, hydrolyzed plant or vegetable protein

Table 6: **The Big Eight** Food Allergens and common foods and ingredients. Adapted from the Food Allergy Research and Education “How to Read a Label” information sheet.



International Association for Food Protection Food Allergen Icons

STANDARD OPERATING PROCEDURES: TIME/TEMPERATURE CONTROL SAFETY FOODS

Restaurant employees need to use appropriate food handling practices to keep foods safe. Both time and temperature influence the growth of bacteria that have spread to food. When food is stored, cooked, and held at appropriate temperatures, restaurant employees can prevent the growth of most harmful bacteria.

- Keep cold food cold ($\leq 41^{\circ}\text{F}$) including menu items that will not receive further cooking before being served to customers, such as:
 - Salads and menu items that include raw or cooked vegetables, eggs, poultry, fish, and cooked grains (pasta, rice, barley)
 - Cut fruits, such as melons
 - Sandwiches containing meat, poultry, or fish
 - Deli meats and soft cheeses
 - Milk
- Keep hot foods hot ($\geq 135^{\circ}\text{F}$) including menu items that have been cooked to appropriate temperatures but need to be held hot before being served, such as:
 - Cooked meat, poultry, and fish
 - Cooked eggs
 - Cooked vegetables
 - Combination food dishes (casseroles, stews, stuffing)
- Do not allow Time/Temperature Control Safety Foods to remain in the Temperature Danger Zone (between 41°F and 135°F) for longer than 4 hours
- Cool hot leftover foods to $\leq 41^{\circ}\text{F}$ as quickly as possible before storing in a refrigerator; the cooling process should not take over 4 hours
- Label cooked leftovers or Ready-to-Eat foods with the date when they are put into cold storage and discard after a set period of time; many restaurants have a policy of throwing out leftover foods after 3 days in refrigerated storage
- Check refrigerators often to make sure they keep foods at 41°F or colder, and if temperatures are above 41°F , check the temperature setting; otherwise, refrigerators should be repaired or replaced
- Avoid Cross-Contamination of foods during preparation and service; clean and sanitize equipment, cutting boards, and utensils between food items
- Avoid Cross-Contact between foods that contain common food allergens and other foods
 - Carefully clean the counter and equipment after each use
 - Set aside a separate kitchen counter and equipment to prepare foods that will be free of food allergens

Time/Temperature Control for Safety Foods

Module Quiz: Please make sure you have read Chapter 3 – Module 1 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. Which of the following are high risk foods that may spread bacteria and viruses causing foodborne illness?
 - a. Raw leafy greens
 - b. Cut tomatoes and melons
 - c. Baked potatoes
 - d. Raw alfalfa sprouts
 - e. **All of the above (page 41, 43)**
2. Which of the following are among **The Big Eight** high risk foods for food allergens?
 - a. Milk
 - b. Eggs
 - c. Peanuts
 - d. Soy
 - e. **All of the above (page 41, 45)**
3. Bacteria and viruses can be spread through ice?
 - a. **True (page 42)**
 - b. False
4. Viruses can spread easily when Ready-to-Eat foods come in contact with a sick employee. Which of the following is NOT an example of a Ready-to-Eat food?
 - a. Salad
 - b. **Raw eggs (page 41)**
 - c. Sandwiches
 - d. Cheeses
5. Unclean water, raw milk, and raw fruit juice can contain bacteria or viruses that cause foodborne illness.
 - a. **True (page 42)**
 - b. False

Chapter 3 – Module 2: Food Ingredients and Recipes

FOOD INGREDIENTS AND RECIPES

Learning Objectives: Following completion of Module 2, the restaurant employee will be able to:

1. Read a food label to determine ingredients and possible food allergens
2. Discuss why it is important to know food ingredients of all menu items
3. Name “The Big Eight” common food allergens
4. Recognize ingredients that contain “The Big Eight” food allergens
5. Explain why it is important to follow manufacturer’s instructions when preparing convenience food products
6. Discuss advantages of standardized recipes
7. Explain why recipe substitutions and additions can increase the risk of foodborne illness
8. List Standard Operating Procedures related to ingredients and recipes

Knowing Ingredients

All restaurant managers and chefs should know the ingredients contained in menu items served at their restaurant. Usually this information can be obtained from food labels. The U.S. Food and Drug Administration (FDA) requires all packaged food products to have an ingredient list on the food label. Ingredients are listed in order of amount according to weight. In addition, the Food Allergen Labeling and Consumer Protection Act (FALCPA) requires that packaged food products to identify any of **The Big Eight** food allergens on the product label. The example of the ingredient label for mushroom soup shows that it contains **wheat, milk, and soy** as food allergens.

SAMPLE INGREDIENT LIST

Cream of Mushroom Condensed Soup

Ingredients: Water, Mushrooms, Soybean Oil, Modified Corn Starch, Wheat Flour. Contains less than 2% of Salt, Cream, Whey Powder (Milk), Soy Protein Concentrate, Monosodium Glutamate, Color, Maltodextrin, Autolyzed Yeast Extract, Disodium Phosphate, Natural Flavor, Garlic Powder.

Contains: Wheat, Milk, Soy



When packaged food contains an allergen from The Big Eight, the FALCPA labeling law requires that the specific type of nut (such as almond, cashew, pecan, or walnut), type of fish (such as bass, flounder, or cod), or type of crustacean shellfish (such as crab, lobster, or shrimp) be listed on the label.

The Food Allergy Research & Education (FARE) organization has developed the “How to Read a Label” resource included in Appendix C. Common names for foods and ingredients that contain each of **The Big Eight** food allergens are presented in a concise format to share with employees or post in the kitchen for easy reference.

Knowing ingredients in menu items is important. Individuals with food allergies must avoid foods containing specific proteins. ***Even the smallest amount of an allergen can cause an adverse reaction to food.*** Customers with food allergies trust the restaurant manager and chef to know the ingredients in each menu item and to prepare food that is allergen-free. Therefore,

restaurant employees must carefully check ingredient labels and recipes for each menu item. Customers or employees may have questions about what ingredients are contained in a food product. Most food labels list a toll free telephone number of the food manufacturer if the label is unclear.

Although **The Big Eight** food allergens account for about 90% of allergic reactions to food, there are many other food ingredients that could cause allergic reactions. Over 200 food items have been identified as causing allergic reactions to foods. In some countries, sesame seeds, celery, and mustard are recognized as common food allergens, but in the U.S., these food allergens are not required to have specific labeling as allergens. Also, food additives such as sulfites, monosodium glutamate (MSG), and color additive Yellow No. 5 can cause severe health reactions in some individuals.

Convenience Food Products

Many restaurants today serve a number of pre-prepared, convenience items that only need to be fried, grilled, or baked before being served to customers. Most of these items will come with instructions from the food manufacturer concerning preparation methods. When preparing these products, restaurant employees should be sure to follow the manufacturer's instructions.



Instructions for a frozen breaded shrimp product might read

- ✗ "Fry 10 lbs of shrimp in deep fat fryer at 350°F for approximately 5 minutes."
- ✗ If the fryer temperature is only 300°F, the shrimp are not likely to reach doneness in 5 minutes.
- ✗ If 20 lbs of shrimp are added at one time to the fryer, the shrimp are not likely to reach doneness in 5 minutes.

Serving undercooked seafood increases risk of foodborne illness for customers.

Standardized Recipes

Standardized recipes are written recipes that list specific ingredients, equipment, and methods with exact measures and instructions. Standardized recipes also include portion size and yield. When followed, standardized recipes will give a consistent product each time the recipe is prepared, no matter who is the cook. Chefs and cooks must be trained to follow standardized recipes. Adding extra ingredients or substituting one ingredient for another puts customers at risk for an allergic reaction to food.

STANDARDIZED RECIPES

Standardized recipes are an important tool for managers who wish to continuously serve high quality food safely to customers.

As a manager:

- ✓ Write down standardized recipes for everyone to follow
- ✓ Translate standardized recipes into the language the kitchen staff understands
- ✓ Train staff on the importance of following standardized recipes
- ✓ Check ingredient labels and notify the staff when substitutions have to be made

Train the kitchen staff:

- ✗ Do not add extra ingredients
- ✗ Do not substitute ingredients that are common food allergens
- ✓ If a substitution must be made, check with the manager and notify the staff of any possible food allergy interactions

Example of Standardized Recipe for Meat Loaf (25 servings – Portion: 4 oz)

Ingredients	Weight	Measure	Instructions
Ground beef	5 lb		Mix all ingredients in large bowl, or use mixer with flat beater.
Ground pork	1 lb		
Bread crumbs, soft	6 oz	6 slices	
Onions, finely chopped	3 oz	½ cup	
Eggs	9 oz	6 each	
Salt		1 Tbsp	
Black pepper		½ tsp	
			Press mixture into half size counter pan (12 x 10) or (6.5 x 20).
Ketchup or barbecue sauce*	1 lb	2 cups	Spread ketchup or barbecue sauce over top of meat loaf.
			Bake at 325°F for about 75 minutes, until internal temperature reaches 180°F.
			Hold meat loaf for service at temperature of 135°F or higher.
Food Allergy Warning: This recipe contains eggs and wheat.			

Recipe 1: Meat Loaf. Recipe obtained from the National Food Service Management Institute.

*It is important to check the ingredient labels of the ketchup and barbeque sauce for possible food allergens.

Food safety can be built into standardized recipes by stating exact cooking and holding temperatures for recipes that have high risk food ingredients such as meat, poultry, fish, shellfish, eggs, and dairy products.

The standardized recipe for meat loaf above states specific cooking instructions:

- ✓ Oven temperature (bake at 325°F)
- ✓ Approximate cooking time (about 75 minutes)
- ✓ Final internal temperature (180°F), to be tested with a thermometer

The recipe also provides additional food safety information:

- ✓ Hold meat loaf for service at temperature of 135°F or higher
- ✓ Common food allergens: eggs and wheat

Cooking and holding foods at proper temperatures ensures that the final food product will not contain bacteria or viruses that cause foodborne illness. Although cooks have been trained in safe cooking methods, these recipe instructions can serve as an additional food safety reminder.

Avoiding Recipe Substitutions and Additions

One of the keys to success when using standardized recipes is following the recipe exactly as it is written with no substitutions or additions. Substitutions or additions create a significant risk for customers with food allergies. The only way for an individual to prevent an allergic reaction to food is by avoiding the food or foods to which they are allergic.

Recipe substitutions occur when:

- The kitchen runs out of an ingredient
- The manufacturer changes the formulation of a product

Additions occur when chefs or cooks decide to be creative to change or complete a dish by:

- Adding a new ingredient or flavor
- Adding a sauce
- Adding a garnish

When substitutions or additions are made, the information provided to customers may be inaccurate or incomplete, thus placing customers at risk for unknowingly consuming food allergens and suffering an allergic reaction to food. When substitutions cannot be avoided, customers with food allergy concerns should be notified that an ingredient substitution has been made.

Scenario 4: Recipe Change Causes Death from Food Allergy

A man who had a food allergy to peanuts ordered an eggroll at a Chinese restaurant. The waitress assured him that the eggroll had not been fried in peanut oil. However, she did not know that the eggroll recipe had been changed to include peanut butter to make it taste better. When the man began having difficulty breathing, his wife asked to speak to the manager. The manager disclosed that peanut butter was an ingredient in the eggroll. Although the man was taken to a nearby urgent care center, he went into anaphylactic shock and died. This case shows how recipe changes and inaccurate information place customers with food allergies at risk.



When the ingredients and cooking methods remain uniform, customers can be assured that menu items are safe to consume.

In addition to the risk for allergic reaction to food, substitutions also increase the risk for foodborne illness. For example, bone-in chicken breasts require additional cooking time when substituted for boneless chicken breasts. Although a seemingly simple substitution, the chef must realize the substitution, alter the cooking time and temperature, and check the internal temperature of the final product. Otherwise, undercooked chicken could be served to customers posing a significant risk for foodborne illness.

STANDARD OPERATING PROCEDURES: FOOD INGREDIENTS AND RECIPES

- Read ingredient lists on food labels carefully to identify food allergens
- Contact the food manufacturer if there are questions about ingredients in a food product
- Follow standardized recipes
- Avoid ingredient substitutions and additions to standardized recipes
- Obtain manager's approval if it is necessary to change an ingredient in a recipe

Food Ingredients and Recipes

Module Quiz: Please make sure you have read Chapter 3 – Module 2 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. Where can one find a list of ingredients contained in a packaged food product?
 - a. Invoice
 - b. Food label (page 48)**
 - c. Menu
 - d. Purchase order
2. Federal law requires that **The Big Eight** food allergens be listed by common names on food labels of packaged food products.
 - a. True (page 48)**
 - b. False
3. Ingredients are listed on a food label in order of:
 - a. Weight (page 48)**
 - b. Volume
 - c. Cost
 - d. Alphabet
4. A restaurant cook is about to prepare frozen breaded chicken patties, a convenience product. The best advice for cooking these patties is:
 - a. Check a cookbook for time and temperature
 - b. Cook until they look done
 - c. Ask another cook for help
 - d. Follow the manufacturer's directions (page 49)**
5. An advantage of standardized recipes is that they allow cooks to:
 - a. Add different ingredients
 - b. Use different cooking methods
 - c. Obtain the same quality and yield of product (page 49)**
 - d. All of the above
6. A cook notices that the distributor has delivered a different brand of soy sauce. What should the cook do?
 - a. Use the new soy sauce in recipes as before
 - b. Check the food label for any ingredient changes before using (page 51, 52)**
 - c. Return the soy sauce to the distributor
 - d. Omit soy sauce from recipes
7. To improve food safety, what information can be added to standardized recipes?
 - a. Final cooking temperatures
 - b. Hot or cold holding temperatures
 - c. Food allergens contained in the recipe
 - d. All of the above (page 50)**

Chapter 3 – Module 3: Menu Labeling

MENU LABELING

Learning Objectives: Following completion of Module 3, the restaurant employee will be able to:

1. Describe two types of menu labeling that can provide food safety information to consumers
2. Identify which customers are at high risk for foodborne illness
3. Discuss how Consumer Advisory Labels on menus disclose and warn customers of raw or undercooked ingredients and the associated risks
4. Recognize The Big Eight food allergens that should be labeled on menus
5. Describe three ways that restaurants can label food allergens on menus

Knowing Foods: Menu Labeling

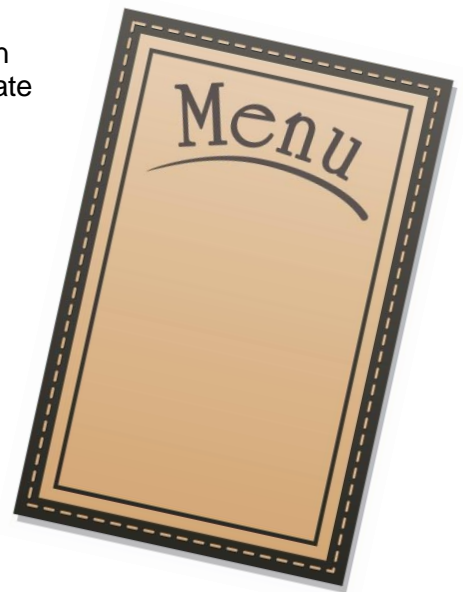
The menu is both a resource for the customer and a communication tool for the restaurant. Menus should be designed to provide accurate and useful information about the foods served at the restaurant. Written menus often provide descriptive wording that indicates preparation methods and ingredients.

Appropriate descriptive information about menu items can help customers make the right choices. Some examples are:

- Blackened Red Fish served with Jambalaya and Grilled Fresh Vegetables
- Fried Catfish, Hush Puppies, and Country Coleslaw

In addition, there are two types of menu labeling that can provide more food safety information to consumers:

- Consumer Advisory Labeling
- Food Allergy Menu Labeling



Consumer Advisory Menu Labeling

Details about food safety are not usually explained on the restaurant menu. However, certain items such as raw or undercooked eggs, meat, poultry, or seafood present a high, natural risk of exposure to bacteria that can cause foodborne illness. Some individuals, such as the elderly, infants and preschool children, pregnant women, and those with medical conditions, are especially at risk of foodborne illness from these foods. The FDA Food Code provides guidelines for labeling these high risk foods so that customers are informed of the possible danger of consuming these raw or undercooked food items.

According to the FDA Food Code, restaurants must disclose to customers when high risk foods are served raw or undercooked and also provide an additional warning. Many state and city health codes also have this requirement. This information may be included in descriptive menu wording or provided to the customer in brochures, table tents, or placards.

Some examples of menu disclosure wording provided in the FDA Food Code include:

- Oysters on the Half-Shell (raw oysters)
- Caesar Salad (made with raw eggs)
- Hamburgers (cooked to order)

Raw or undercooked menu items can also be disclosed through the use of an asterisk beside the menu item that is linked to a footnote as in the following example:

Oysters on the Half-Shell*

****These items are served raw or undercooked.***



In addition to disclosing that foods are being served raw or undercooked, restaurants are also responsible for providing a safety reminder to consumers. A typical reminder might be:

*****Consuming raw or undercooked meats, poultry, seafood, shellfish, or eggs may increase your risk of foodborne illness, especially if you have certain medical conditions.***

Restaurant managers may refer to the FDA Food Code for additional examples of appropriate wording for disclosure and reminders.

Food Allergy Menu Labeling

Customers with food allergies rely on the information provided by menus and employees at a restaurant to help them eat safely. The only way for a customer with a food allergy to avoid an allergic reaction to food is to avoid all foods containing the allergen protein. Therefore, it is important that the restaurant have accurate information about each menu item and ingredient. Inaccurate or incomplete information places customers with food allergies at risk. The FDA Food Code and many state and local regulations require a restaurant to have a manager on duty with knowledge about food safety and food allergens. Placing information about food allergens on menus is an excellent way to inform customers about the food allergens contained in restaurant foods.

REMEMBER:

Inaccurate or incomplete information places customers with food allergies at risk.

There are several ways that restaurants can provide food allergen information to customers through their menus.

- **Develop separate allergen menus:** For customers who are allergic to any of **The Big Eight** food allergens (milk, eggs, soy, wheat, fish, crustacean shellfish, peanuts, and tree nuts), provide menus that include only foods that people with these allergies can safely consume.
 - Example: If a customer says, “I am allergic to shellfish,” the customer can be handed a menu that only includes those food items that do not contain shellfish. Thus, the customer can order foods that are allergen-free. Many chain restaurants have developed such menus that are available in their restaurants and online.



- **Provide detailed descriptions** of menu items that include ingredients. The description should provide the main ingredients including those that contain food allergens.

- Examples of detailed menu descriptions:

Asian Stir Fry with chicken, rice, mushrooms, sliced water chestnuts, celery, soy sauce, ginger, and assorted spices

Clam Chowder with clams, potatoes, onions, bacon, milk, and cream in a wheat-thickened sauce

Deluxe New York Style Cheesecake made with cream cheese, eggs, sugar, wheat flour, butter, milk, and lemon flavoring

- **Label menu items with warning messages** concerning common food allergens. This allows customers with food allergies to determine which menu items are safe to eat.

- Examples of detailed menu descriptions:

Beef Vegetable Stir Fry (contains **peanuts** and **soy**)

Clam Chowder (contains **shellfish**, **wheat**, and **milk**)

Italian Sausage Lasagna (contains **egg** and **dairy** products)

If a restaurant places food allergen information on menus, then recipes and ingredient labels should be checked frequently for any changes or substitutions and menus updated accordingly. Effectively using menus to communicate food allergen information to customers can be an important part of any food safety program.



STANDARD OPERATING PROCEDURES: MENU LABELING

- Know the items on the menu, identifying ingredients that are Potentially Hazardous Foods or those that may cause an allergic reaction to food
- Place Consumer Advisory Menu Labels as appropriate
- Know different ways to inform customers of possible risks:
 - Develop separate allergen-free menus
 - Provide detailed descriptions of ingredients on the menu
 - Label menu items with warning messages

Menu Labeling

Module Quiz: Please make sure you have read Chapter 3 – Module 3 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. Which of the following people would be at high risk for foodborne illness if they eat raw or undercooked eggs, meat, poultry, or seafood?
 - a. Pregnant women
 - b. School age children
 - c. People age 65 and older
 - d. **All of the above (page 54)**
2. Which of the following menu items would be a high risk food for people who have chronic health conditions?
 - a. Grilled catfish fillets
 - b. **Oysters on the half-shell (page 54, 55)**
 - c. Deep fat fried shrimp
 - d. Broiled flounder
3. Many state and city health codes require restaurants both to disclose raw or undercooked menu items to customers and to remind them of the risk of foodborne illness when eating these foods.
 - a. **True (page 54)**
 - b. False
4. When people have an allergy to peanuts, what is the best way that they can remain safe when eating out?
 - a. Eat only a small amount of foods containing peanuts
 - b. Eat only at chain restaurants
 - c. **Avoid eating all foods containing peanuts (page 55)**
 - d. Order restaurant foods for home delivery
5. Restaurants should use food allergy menu labeling to:
 - a. Comply with state and federal laws
 - b. Make the menu appear more attractive to customers
 - c. Sell more menu items
 - d. **Inform customers what food allergens are contained in menu items (page 55)**

Chapter 4: The Flow of Food Safety

Chapter 4 – Module 1: Purchasing and Receiving Foods

PURCHASING AND RECEIVING FOODS

Learning Objectives: Following completion of Chapter 4 – Module 1, the restaurant employee will be able to:

1. Explain the importance of purchasing foods from a reliable supplier
2. Describe good receiving practices
3. Explain when products should be rejected
4. Identify procedures for accepting food substitutions
5. Identify recommended receiving temperatures for various foods
6. Comply with regulations regarding shellfish identification tags
7. Explain the First-In First-Out (FIFO) method of inventory rotation
8. Discuss appropriate procedures for transferring foods to other containers for storage
9. Identify recommended food storage temperatures and times
10. Discuss how to handle a food recall
11. Identify Standard Operating Procedures related to receiving and storage

PURCHASING FOOD PRODUCTS

Restaurants purchase their food products from a food distributor, food broker, or discount retailer. These companies can promote food safety by following Hazard Analysis Critical Control Point (HACCP) programs and Standard Operating Procedures (SOPs). Restaurant managers should verify that the suppliers of their food products have a positive food culture:

- ✓ Have clean, sanitary facilities
- ✓ Follow good food safety practices
- ✓ Maintain temperature control of food products

Restaurant managers should inspect delivery trucks and tour the facilities of suppliers from whom they purchase products. Selecting suppliers with good food safety practices is a critical first step to providing safe food to customers.

Good Receiving Practices

Good receiving practices are an important part of food safety:

- ✓ Schedule food deliveries during non-peak business hours, when employees have time to inspect, date label, and properly store products
- ✓ Inspect deliveries for accuracy, quality, cleanliness, and safety (temperature)
- ✓ Rotate inventory on **First-In First-Out (FIFO)** basis
- ✓ Immediately store refrigeration and freezer items

Preparing for a Food Delivery

Good receiving practices are an important part of food safety. Many restaurants train one or two employees to be in charge of receiving food deliveries.

- ✓ **Schedule deliveries during NON-PEAK business hours:**
 - Food deliveries should be scheduled during less busy hours of operation when employees have time to inspect and quickly store the food products.
- ✓ **Identify the difference between acceptable and unacceptable products:**
 - These employees must be able to recognize products that are acceptable versus products that should be rejected.
- ✓ **Organize storage areas prior to delivery:**
 - Before a food order arrives, refrigerator, and freezer space should be organized so that the newly delivered food can be quickly stored. All storage areas (refrigerators, freezers, or dry storerooms) should have shelving or pallets so that food products can be stored at least 6 inches off the floor. This ensures that water spills will not damage products.
- ✓ **Rotate inventory in FIFO:**
 - Inventory should be rotated so that new items are stored behind current inventory on a **First-In First-Out** inventory management system.

Inspecting Food Orders

To promote food safety, employees who are receiving food deliveries should check product accuracy, quality, cleanliness, and food temperatures.

Product Accuracy

Each item should be compared against the purchase order form and invoice for accuracy. The employee receiving the food order must determine with the manager whether product substitutions are appropriate. Some products can be easily substituted without significant changes in food preparation or service.



- ✓ When a supplier substitutes Macintosh Apples for Granny Smith Apples, this should pose no risk to customers.
- ✗ However, if walnuts were substituted for almonds to use on the nut-crusted trout, this change may place guests with food allergies at risk. When this happens, the manager and all restaurant employees should be notified.

Also, when different brands of products are substituted, ingredient labels should be examined for food allergens and compared with the ingredient label of the product previously used at the restaurant. For example a different brand of soy sauce may contain wheat, causing health risks for customers with wheat allergy or gluten intolerance. If a substituted product cannot be safely used at the restaurant, then it should be **rejected and returned** to the supplier.

REMEMBER:

Contact the manager if the supplier makes a product substitution. If a product cannot be safely substituted, it should be reject and returned to the supplier.

Product Quality

- ✓ **Expiration Dates:** Employees should check expiration dates of milk, eggs, and other perishable foods to be sure they have not passed the expiration date.
- ✓ **Signs of spoilage:** Fresh fruits and vegetables should be checked to make sure they are in good condition with no spoilage.
- ✓ **Intact Packaging:** Packaged foods should have packaging intact with no tears or punctures.
- ✓ **Cans free of dents, rust, swelling:** Canned products should not have dents, rust, flawed seals or seams, or swollen sides or ends.

Any products that do not meet standards should be rejected and returned to the supplier for credit or replacement products.

Cleanliness

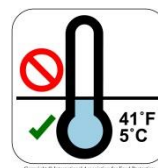
- ✗ **Reject food and cartons with signs of insects or shipped in dirty crates:** Employees should check the cleanliness of food products and the cartons and crates in which they are packed. There should be no evidence of insects or pests. Food that is contaminated with insects or pests, or is shipped in dirty crates should be rejected.

Correct Temperatures

Temperatures of refrigerated food items should be checked upon delivery. Most refrigerated products should be received at 41°F or less. Employees can check the temperature of fresh meat, poultry, and fish by putting a clean, sanitized thermometer between packaged items. **Do NOT puncture the food packaging.** Employees should reject refrigerated products that are delivered at temperatures above 41°F.

- ✗ **Reject refrigerated items received above 41°F.**

- ✓ **Accept refrigerated foods received below 41°F.**



Frozen foods should be received solidly frozen. It is not possible to insert a thermometer into frozen foods; however, these foods should be examined for signs of thawing and refreezing, such as large ice crystals or ice on the bottom of cartons. If there are signs of thawing and refreezing, reject the food.

- ✗ **Reject frozen food items with signs of thawing and refreezing.**
- ✓ **Accept frozen food items solidly frozen.**

Type of Food	Recommended Receiving Temperature
Refrigerated high risk foods (meat, poultry, fish)	41°F or lower
Frozen foods	Frozen solid
Raw shell eggs	Air temperature of 45°F or lower
Milk	45°F (Cool to 41°F within 4 hours)
Live shellfish*	Air temperature of 45°F (Cool to 41°F within 4 hrs)
Shucked shellfish (shells removed)*	45°F or lower (Cool to 41°F within 4 hours)

Table 7: Refrigerated and frozen food receiving temperatures

*These products require Shellfish Identification Tags.

Shellfish and Fish

It is especially important that restaurants purchase shellfish and fish from a reliable supplier. Shellfish and fish are sometimes contaminated by toxins that can make people very ill. These toxins **cannot be destroyed by cooking or freezing**. Therefore, the only way to protect customers from these toxins is to purchase from a supplier who makes sure that their shellfish and fish come from safe sources. Suppliers must also ensure that they keep seafood at appropriate temperatures to prevent bacterial growth.

Harvester Tag:

DEALER NAME
CITY, STATE, ZIP CODE
ADDRESS
COUNTRY, STATE, & CERT. NO. IF OTHER THAN ABOVE

HARVEST DATE
HARVEST LOCATION
TYPE OF SHELLFISH
QUANTITY OF SHELLFISH

THIS TAG IS REQUIRED TO BE ATTACHED UNTIL CONTAINER IS EMPTY AND THEREAFTER KEPT ON FILE FOR 90 DAYS.

RETAILERS, INFORM YOUR CUSTOMERS
Thoroughly cooking foods of animal origin such as raw eggs, fish, shell poultry, or shellfish reduces the risk of foodborne illness. Shellfish with certain health conditions may be at higher risk if these foods are consumed raw or undercooked. Consult your physician or public health official for further information.

Dealer Tag:

DEALER NAME
CITY, STATE, ZIP CODE
ADDRESS
COUNTRY, STATE, & CERT. NO. IF OTHER THAN ABOVE

HARVEST DATE
HARVEST LOCATION
TYPE OF SHELLFISH
QUANTITY OF SHELLFISH

THIS TAG IS REQUIRED TO BE ATTACHED UNTIL CONTAINER IS EMPTY AND THEREAFTER KEPT ON FILE FOR 90 DAYS.

RETAILERS, INFORM YOUR CUSTOMERS
Thoroughly cooking foods of animal origin such as raw eggs, fish, shell poultry, or shellfish reduces the risk of foodborne illness. Shellfish with certain health conditions may be at higher risk if these foods are consumed raw or undercooked. Consult your physician or public health official for further information.

Shellfish Identification Tags: Federal regulations require that shellfish sold to restaurants and other foodservice operations must be packed in containers that contain source identification tags. These tags identify the harvester or dealer who cleaned, shipped, or reshipped the shellfish. Tags must also provide information about the type and quantity of shellfish and the date and location of harvesting. The identification tags must be kept on the container until all the shellfish have been served and then kept on file at the restaurant for another 90 days.

Pictures retrieved from:

<http://www.fda.gov/downloads/Food/GuidanceRegulation/FederalStateFoodPrograms/UCM350004.pdf>

Food Storage

Inventory Rotation and Date Marking

After food items are received, inspected, and accepted, restaurant employees can use a permanent marker to label each carton or item with the delivery date (Example: month-date-year). New products should always be stored behind older products. This method of inventory rotation is called **First-In First-Out (FIFO)**. All storage areas (dry storeroom, refrigerator, and freezer) can be organized according to FIFO. This method ensures that the chef or cook uses the oldest product first.

- ✓ **Label with name of food and date received.** If foods are removed from the original package and placed into a different container, the container should be labeled with both the name of the food and the date.
 - Example: Wheat Flour 08-14-2014
- ✓ **Wash and sanitize food containers to avoid Cross-Contact.** When dry foods such as flour, sugar, rice, or beans are removed from the original package and placed in storage containers, these containers should be washed and sanitized. Simply wiping containers with a clean cloth and rinsing with water does not remove food allergens. Food allergens can be spread by Cross-Contact if storage containers are not properly washed and sanitized.
 - Example: Wheat flour might be stored in a container and later used to store rice. If the container is not properly cleaned, the rice will then contain food allergens from the wheat. This places customers with food allergies at risk.

Food Storage Temperatures

After foods have been delivered and inspected, it is important to store them as soon as possible. Frozen foods and refrigerated high risk foods (meat, poultry, fish, shellfish, eggs, and milk products) should be moved into storage quickly so that food temperatures do not rise into the **Temperature Danger Zone** (41°F to 135°F).



- ✓ **Refrigeration Temperature Storage:** 32° to 40°F
- ✓ **Freezer Temperature Storage:** 0° to -20°F

The following table shows recommended storage temperatures and times for some foods that are at high risk for bacterial growth causing foodborne illness. Employees should especially be aware of high risk foods that should be stored only 1 to 2 days at refrigeration temperatures. This includes fresh fish and shellfish, ground meat, stew meat, and fresh poultry (whole, pieces, or ground).

Food Product	Recommended Refrigeration (32°F to 40°F) Storage Time	Recommended Freezer (0°F or below) Storage Time
Dairy Products Milk Cheese, soft, unripened (i.e. cottage, ricotta)	3 days 7 days	Does not freeze well
Eggs in shell * store at 40°F	21 days	Does not freeze well
Fresh Fish and Shellfish	1 to 2 days	3 to 6 months
Fresh Meat Ground meat or stew meat (beef, pork, lamb) Lamb roasts & chops Roasts (beef, pork, veal) Steaks (beef, pork, veal) Chops (beef, pork, veal)	1 to 2 days 2 to 3 days 3 to 5 days 3 to 5 days 3 to 5 days	3 to 4 months 4 to 6 months 4 to 12 months 6 to 12 months 4 to 6 months
Fresh Poultry (whole) Fresh Poultry (pieces, or ground)	1 to 2 days 1 to 2 days	12 months 9 months
Cooked Meat or Poultry	3 to 4 days	2 to 6 months
Soups and Stews	3 to 4 days	2 to 3 months
Processed Meats Lunch meats (opened package) Lunch meats (unopened package) Bacon Smoked breakfast sausage (links or patties) Hot dogs (opened package) Hot dogs (unopened package) Ham, cooked, spiral-cut Ham, cured (cook before eating) Ham, cooked, whole	3 to 5 days 14 days 7 days 7 days 7 days 14 days 3 to 5 days 5 to 7 days 7 days	1 to 2 months 1 to 2 months 1 month 1 to 2 months 1 to 2 months 1 to 2 months 1 to 2 months 3 to 4 months 1 to 2 months

Table 8: Refrigeration and freezer storage guidelines



Thermometers should be placed in the warmest part of each refrigerator and freezer. Check freezer and refrigerator temperatures at least twice a day. It is important to keep refrigerated and frozen foods at the proper temperature because bacteria can grow rapidly at temperatures above 41°F. If a refrigerator malfunctions and foods remain in the **Temperature Danger Zone** (41°F to 135°F) for 4 hours or longer, the foods should be discarded.

✓ **Freezer Temperature**

Below 0°F

✓ **Refrigeration Temperature**

Below 40°F

Food Recalls

When a food manufacturer finds that an unsafe food product has been sold to retail food operations, they can issue a Food Recall. A **Food Recall** is a corrective action by a company to take food products that pose a health hazard to consumers off the market. These hazards might include the following:

- ✗ Harmful levels of bacteria
- ✗ Food allergens not listed on food labels
- ✗ Chemical contaminants
- ✗ Physical contaminants such as broken glass or metal fragments

In recent years, Food Recalls have been issued for foods such as ground beef, pork products, alfalfa sprouts, peanut products, shell eggs, and raw spinach because they were found to contain harmful levels of bacteria.

Other Food Recalls were issued for foods that contained food allergens not listed on the ingredient label, such as peanuts in cookies, egg in cheese spread, or soy or wheat in meat and poultry products. These foods could cause allergic reactions for customers with food allergies.

Restaurant managers who wish to receive notices of food recalls and alerts through email can sign up for alerts (www.foodsafety.gov/recalls/alerts). Meat, poultry, and egg products that are recalled can be identified by the establishment number assigned to the plant by U.S. Department of Agriculture (USDA) inspectors. Other recalled food products that are regulated by the FDA can be identified by the brand name, Universal Product Code (UPC), production codes and dates, type of packaging, and weight.

When a manager becomes aware of a Food Recall:

- ✓ Remove the product from the food preparation area
- ✓ Immediately clean the preparation area
- ✓ Mark “Do Not Use”
- ✓ Place in a secure area of a refrigerator or dry storeroom

The manager should also:

- ✓ Instruct all food service employees not to use the Food Recall product
- ✓ Report the quantity of food product to the supplier
- ✓ Follow additional instructions on disposal of the product



Scenario 5: Major Food Recall of Shell Eggs



In 2010, restaurant customers in three states became ill. The FDA linked the illnesses to shell eggs produced by two large companies. The eggs, marketed under more than two dozen brand names, were found to be contaminated with *Salmonella*, a bacteria causing foodborne illness. The outbreak caused over 2,000 people to become sick. FDA announced plant numbers, product codes, package sizes, and brand names in an effort to withdraw the eggs from the market and protect customers. The major food recall resulted in over 500 million shell eggs being recalled nationwide. The eggs were thought to be contaminated because of crowded, unsanitary conditions on the chicken farms where these eggs originated. However, illness from *Salmonella* can be prevented when eggs are cooked to proper temperatures. The outbreak underscores the importance of not serving undercooked or raw eggs.

STANDARD OPERATING PROCEDURES: PURCHASING AND RECEIVING FOODS

- Schedule deliveries during less busy hours of operation
- Check food deliveries
 - Product accuracy,
 - Product quality, and
 - Cleanliness
- Notify the manager of product substitutions that involve food allergens
- Check temperatures of refrigerated and frozen foods at time of receiving
- Store refrigerated and frozen foods quickly to maintain temperatures
- Reject food items that do not meet standards
- Date and label all received food items
- Keep shellfish identification tags on file for at least 90 days after last shellfish is served
- Label with date and name of food when foods are removed from original packaging and placed in another container
- Clean and sanitize food storage containers between uses
- Rotate food in inventory on a First-In First-Out (FIFO) basis
- Be alert for Food Recalls
- Remove any recalled food items from the food preparation area and immediately clean the area

Purchasing and Receiving Foods

Module Quiz: Please make sure you have read Chapter 4 – Module 1 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. The best way to avoid having customers become ill from toxins contained in shellfish or fish is to:
 - a. Freeze seafood for 12 hours before cooking
 - b. Cook seafood to 145°F or higher
 - c. Purchase seafood from a reliable supplier (page 62)**
 - d. All of the above
2. Restaurants should prepare for a food delivery by:
 - a. Scheduling the delivery at less busy hours of operation
 - b. Training one or more workers how to receive a food order
 - c. Organizing refrigerator and freezer space to make room for the new food delivery
 - d. All of the above (page 59)**
3. Which of the following products should be rejected during the receiving process?
 - a. Milk that is past the expiration date
 - b. Cantaloupe melons that have moldy spots
 - c. Canned fruit in cans that are rusted and dented
 - d. All of the above (page 60)**
4. Most refrigerated foods should be received at or below a temperature of _____.
 - a. 0°F
 - b. 32°F
 - c. 41°F (page 61)**
 - d. 45°F
5. Milk, raw shell eggs, and shellfish can be safely received at a temperature of 45°F, but should be cooled to 41°F within 4 hours.
 - a. True (page 61)**
 - b. False
6. Shellfish identification tags should remain on file at the restaurant until _____ days after the last shellfish from that container are cooked and served.
 - a. 30
 - b. 60
 - c. 90 (page 62)**
 - d. 120
7. The FIFO method of inventory rotation means that:
 - a. New products are stored behind older products (page 60)**
 - b. New products are stored in front of older products
 - c. New products are stored near older products
 - d. Products are arranged in alphabetical order

8. Which of the following food products should be stored for only 1 to 2 days at refrigerator temperatures of 32° to 40°F?
 - a. Packaged lunch meat
 - b. Raw shell eggs
 - c. Ground beef (page 63)**
 - d. Beef roast

9. Which of the following foods could be subject to a food recall?
 - a. Ground beef containing harmful levels of bacteria
 - b. Cookies containing egg that is not listed on the ingredient label
 - c. Tomato sauce containing glass fragments
 - d. All of the above (page 64)**

10. Which of the following is the best action to take when a recall is issued for a product?
 - a. Serve the food product to customers as soon as possible
 - b. Donate the food product to an animal shelter
 - c. Label the product “Do Not Use,” store in a safe area, and call the food supplier for instructions on disposal (page 64)**
 - d. Allow restaurant workers to take the food product home

Chapter 4 – Module 2: Preparing Foods Safely

PREPARING FOODS SAFELY

Learning Objectives: Following completion of Module 2, the restaurant employee will be able to:

1. Identify the Critical Control Point, Critical Limit, and Corrective Action for cold Ready-to-Eat foods
2. Prepare the cold food prep area
3. Inspect ingredients
4. Avoid cross-contamination of bacteria and viruses while preparing cold Ready to Eat foods
5. Avoid cross-contact of food allergens while preparing cold Ready-to-Eat foods
6. Identify HACCP guidelines within standardized recipes for cold foods
7. Properly store and date mark completed food products

Preparing Foods Safely

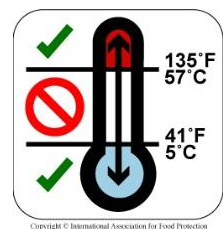
HACCP Guidelines

Hazard Analysis and Critical Control Point (HACCP) guidelines are used to keep foods safe. HACCP guidelines include:

- Critical Control Points
- Critical Limits
- Corrective Action

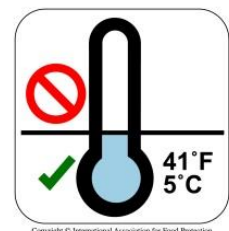
Critical Control Point (CCP) is the point during food preparation where actions can be taken to eliminate or reduce the risk of a food safety hazard. For example, when holding food on a buffet line, the food must be kept at the right temperature to prevent it from going bad (prevent quality and food safety issues).

Critical Limit is the actual measurement or value to which a biological, chemical, or physical parameter must be controlled. For example, cold foods must be kept below 41°F, and hot foods must be kept above 135°F. Remember, foods kept in the **Temperature Danger Zone** (41°F to 135°F) for 4 hours or longer are unsafe.



Corrective Action describes what should be done if a **Critical Limit** is not met. For example, if the food is not kept at the proper temperature, it must be discarded.

Cold **Ready-to-Eat (RTE)** foods such as salads, lunch meats, cheeses, and raw fruits and vegetables do not undergo additional cooking before being served to customers. Therefore, according to **HACCP** guidelines, cold holding is the only **Critical Control Point** that can prevent growth of harmful bacteria in these foods. These cold RTE foods must be kept at cold temperatures below 41°F.



The temperature of 41°F is considered the **Critical Limit** for cold holding of RTE foods.

If temperatures of these foods rise above the **Critical Limit** of 41°F and they remain in the **Temperature Danger Zone** (41°F to 135°F) for 4 hours or longer, they must be discarded.

Critical Control Point	Critical Limit	Corrective Action
Cold Holding	Below 41°F	Discard food if held above 41°F for 4 hours or longer
Hot Holding	Above 135°F	Discard food if held below 135°F for 4 hours or longer

Table 9: Critical Control Points for Hot and Cold Holding

Discarding a salad on a buffet line with a holding temperature of 45°F is an example of a **Corrective Action**, or what must be done if your **Critical Limit** is not met. To prevent throwing away food, employees must limit the time that **Time/Temperature Control for Safety Foods** are in the **Temperature Danger Zone** during receiving, preparation, display, and serving.

Cross-Contamination

Cross-Contamination happens when bacteria from Time/Temperature Control for Safety Foods (TCFs) is transferred to another food either through direct or indirect contact.

- **Direct contact** can happen through food drippings or splashes from Time/Temperature Control for Safety Foods such as raw beef, chicken, or fish.
- **Indirect contact** can happen from an employee's unwashed hands, by used gloves, or through the use of dirty cutting boards, sinks, counter tops, or equipment. For example, using a cutting board to cut raw meat and then to cut bread transfers bacteria from the raw meat to the bread. Color coded cutting boards and utensils can be used as a tool to prevent cross-contamination.



Scenario 6: Bare Hand Contact Causes Foodborne Illness Outbreak

A restaurant in Fayetteville, NC, was linked to at least 100 cases of foodborne illness occurring in May 2013. Among the sanitation violations found by investigators was bare hand contact with Ready-to-Eat foods.



Cross-Contact

Cross-Contact happens when food allergens are transferred from one food to another food. As you learned in previous chapters, even the smallest amount of food allergen can cause an adverse reaction. **Cross-Contact** between foods containing allergens and foods being served as free of a specific food allergen must be avoided.

For example, if an employee first prepares a salad with nuts and then, without washing his/her hands and changing gloves, prepares a nut-free salad for a customer with a nut allergy, **Cross-Contact** has occurred. The food product **cannot** be fixed by removing the allergen, such as by taking the nuts off of the salad.



Another example is using a toaster to toast regular bread and then later gluten-free bread. If a mistake is made and a food product does come in contact with a food allergen, the food must be marked as containing that food allergen or thrown away.

Employees should wash hands with soap and water and put new gloves on before working with food that is being served as free of a specific food allergen. Utensils, equipment, and surfaces must be cleaned and sanitized between uses. Another option is to designate a special work area for preparing specific allergen-free foods.



Standardized Recipes

Following standardized recipes ensures standards are met for cost, quality, food allergens, and food safety. Standardized recipes should include procedures for the following:

- Pre-chill shelf-stable ingredients
- Limit the time that high risk foods are in the **Temperature Danger Zone**
- Contain food allergen warnings

If food substitutions must be made, employees must get a manager's approval, document the changes, and be sure that food safety and food allergen standards are met. Examples of standardized recipes for Cold Food Production and Hot Food Production are included in the modules corresponding to Cold and Hot Food Preparation.

STANDARD OPERATING PROCEDURES: PREPARING FOODS SAFELY

- Develop and follow HACCP guidelines
 - Identify Critical Control Points (CCP)
 - Establish Critical Limits (CL)
 - Take appropriate Corrective Action when CL are not met
- Minimize the time food spends in the Temperature Danger Zone (41°F to 135°F)
- Maintain temperatures below 41°F for Ready-to-Eat foods
- Wear disposable gloves when handling Ready-to-Eat Foods
- Avoid Cross-Contact of food allergens
- Wash hands thoroughly before preparing an allergy-free food
- Change gloves before preparing an allergy-free food
- Clean and sanitize the work area and utensils before preparing an allergy-free item

Preparing Foods Safely

Module Quiz: Please make sure you have read Chapter 4 – Module 2 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. _____ is what must be done if a Critical Limit is not met.
 - a. HACCP
 - b. Critical Control Point
 - c. Critical Limit
 - d. **Corrective Action (page 69)**
2. _____ is the point during food preparation where actions can be taken to eliminate or reduce the risk of a food safety hazard.
 - a. HACCP
 - b. **Critical Control Point (page 69)**
 - c. Critical Limit
 - d. Corrective Action
3. _____ guidelines are used to keep foods safe.
 - a. **HACCP (page 69)**
 - b. Critical Control Point
 - c. Critical Limit
 - d. Corrective Action
4. _____ is the actual measurement or value to which a biological, chemical, or physical parameter must be controlled.
 - a. HACCP
 - b. Critical Control Point
 - c. **Critical Limit (page 69)**
 - d. Corrective Action
5. Using a cutting board to cut raw meat, then using it to cut bread will transfer bacteria to the bread, is an example of:
 - a. Direct Contact
 - b. **Indirect Contact (page 70)**
 - c. Cross-Contact
 - d. None of the above
6. A dessert was accidentally sent out with nuts sprinkled over it for a customer who is allergic to nuts. Which action should be taken?
 - a. The nuts should be removed and sent back to the customer.
 - b. **A new dessert without nuts should be made for the customer. (page 71)**
 - c. Nothing; the customer can remove them.
 - d. All restaurants should be nut-free.

7. Standardized recipes should include which of the following procedures:
 - a. Pre-chilling instructions for shelf stable ingredients
 - b. Time frame that high risk foods are allowed in the TDZ
 - c. Food allergen warnings
 - d. All of the above (page 71)**
8. If food substitutions must be made in a standardized recipe, a manager's approval is not necessary as long as the employee has compared the food label ingredients.
 - a. True
 - b. False (page 71)**
9. Employees should wash hands with soap and water and put new gloves on before working with food that is being served as free of a specific food allergen.
 - a. True (page 71)**
 - b. False
10. Cold holding is the only Critical Control Point that can prevent growth of harmful bacteria in Ready-to-Eat foods.
 - a. True (page 70)**
 - b. False

Chapter 4 – Module 3: Preparing Cold Foods Safely

PREPARING COLD FOODS SAFELY

Learning Objectives: Following completion of Chapter 4 – Module 3, the restaurant employee will be able to:

1. Identify the Critical Control Point, Critical Limit, and Corrective Action for cold Ready-to-Eat foods
2. Prepare the cold food prep area
3. Inspect ingredients
4. Avoid cross-contamination of bacteria and viruses while preparing cold Ready to Eat foods
5. Avoid cross-contact of food allergens while preparing cold Ready-to-Eat foods
6. Identify HACCP guidelines within standardized recipes for cold foods
7. Properly store and date mark completed food products

Ready-to-Eat (RTE) Foods

Cold **Ready-to-Eat (RTE)** foods such as salads, lunch meats, cheeses, and raw vegetables and fruits are not cooked before they are served to customers. Therefore, the only way to keep them safe is to hold them at the right cold temperature, below 41°F.

During cold food preparation, employees should do the following things:

- ✓ Delay removing Time/Temperature Control for Safety Foods from the refrigerator as long as possible
- ✓ Work quickly
- ✓ Return food to the refrigerator immediately

Cold Food Prep Area

Cold Ready-to-Eat (RTE) foods must be prepared in a clean and sanitized work area that is used only for RTE foods. This includes a sink that is used only for washing produce. The area must also be protected from splashes by other food preparation. If the area must be used to prepare other types of food, then RTE foods should be prepared during an assigned time, and the entire area, including the sink, must be cleaned and sanitized before being used. All equipment and utensils that will touch the RTE food must also be cleaned and sanitized.

Employees must properly wash hands before beginning, and utensils and/or disposable gloves must be worn. Employees should not use their bare hands when preparing RTE foods. Gloves should be worn for all tasks, with the exception of washing produce.



Utensils that are used to prepare the food should be kept either in the food with their handles staying above the food or on a clean portion of the counter top during preparation. When employees taste the food product, they must use a clean (disposable) spoon every time and not lean over the food while tasting it.

Ingredients

The safety and quality of a menu item begins with properly selecting and inspecting ingredients. The restaurant should purchase ingredients from a reliable supplier, verify that they have been stored at the correct temperatures during shipment, and store them properly before use. During cold food preparation, fresh produce should be washed, and all ingredients should be inspected.



Wash Produce

Employees should thoroughly wash **all** produce under cold running water in a sink that has been cleaned and sanitized. Do not use soap or disinfectants to wash produce. Firm produce, such as melons and cucumbers, should be scrubbed with a clean produce brush. Employees should use a clean cloth towel or paper towel to dry the produce. Food items that are sold as pre-washed or Ready-to-Eat do not need to be washed again.

Inspect Ingredients

Employees should inspect all ingredients before using them.

- Bruised or damaged areas on produce should be cut away
- All pre-packaged food expiration dates should be checked and discarded if past expiration
- Canned foods should be inspected and thrown away if:
 - A can is dented or heavily rusted
 - They have been stored at a temperature over 100°F
 - They have been frozen and improperly thawed
- Wipe pre-packaged food containers and the lids of cans to clean before opening them
- When opening the can, if it hisses loudly or food bursts out of the can, the item should be thrown away
- All foods should be inspected for mold and either thrown away or the mold cut away according to the mold guidelines below



MOLD GUIDELINES

- Food must be thrown away if mold is found on meat or poultry; cooked grains or pastas; soft, crumbled, shredded, or sliced cheeses; yogurts; sour creams; jams and jellies; breads; baked goods; nuts and nut butters; legumes; and soft fruits and vegetables.
- Mold can be cut off if it is found on hard cheeses or firm fruits and vegetables. Cut at least 1 inch around and below the mold. Do NOT cut through the mold; this will get mold on the knife.
- Some cheeses are made using molds; some salamis have a thin, white mold coating; and dry, cured country hams normally have surface mold. These items are exceptions and are safe as long as they do not have an additional mold on them.

Unique ingredients

- Raw sprouts and raw eggs should not be used for cold RTE foods. Washing sprouts does not remove the bacteria; therefore, they must be cooked.
- Pasteurized eggs can be used in place of raw eggs for traditional recipes such as Caesar salad, hollandaise sauce, and mayonnaise.
- Sushi, which contains raw fish, requires specific and strict guidelines in order to destroy parasites:
 - Freezing and storing the fish at or below -4°F for a minimum of 7 days
 - Freezing and storing the fish at or below -31°F for a minimum of 15 hours
 - Freezing the fish at or below -31°F and storing at or below -4°F for a minimum of 1 day



Customers must be informed that consuming raw animal foods increases their risk of foodborne illness.



Storage and Date Marking

Finished cold food products should be placed in the refrigerator immediately. Employees should avoid **Cross-Contamination** by storing Ready-to-Eat foods **above** raw meat, fish, and poultry in the refrigerator. If a finished food product contains high risk ingredients and will be held for more than 24 hours, it must be date marked.

Date Marking

Date marking is labeling the food with the date that the food must be eaten by. If the food is not eaten by this date it must be thrown away. Prepared food products may not be held for more than a total of 7 days from the day of preparation at or below 41°F.

Scenario 7: Improper Storage Leads to *Salmonella* Outbreak

A Las Vegas restaurant closed in May 2013 due to a *Salmonella* outbreak that resulted in 200 cases of foodborne illness. A health inspector found improper cooling, holding, and storing of high risk foods, including the storing of raw animal products above Ready-to-Eat foods.

Standardized Recipes

The following recipe is an example of a cold food standardized recipe. Notice some of the ingredients are described as “chilled,” meaning that these ingredients should be stored in the refrigerator before use. Items that are shelf stable and typically stored in dry storage, such as unopened mayonnaise, should be placed in the refrigerator to chill before being used for cold food preparation. Items that are pre-cooked, such as pasta, should be cooled according to hot food preparation safety guidelines and stored in the refrigerator before use. Prepared cold foods must be cooled to 41°F within 4 hours.

This recipe also uses shallow pans which will decrease the amount of time it takes for the finished product to cool to 41°F. Employees should note the **Critical Control Point, Critical Limit**, and Food Allergy Warning stated on the recipe.

Sample Cold Food Recipe			
Chicken or Turkey Salad (50 servings – Portion: 1/2 cup)			
Ingredients	Weight	Measure	Instructions
Cooked chicken or turkey, chilled, chopped	6 lb 6 oz	1 gal 1 qt	1. Combine chicken or turkey, celery, onions, pickle relish, pepper, and dry mustard. Add salad dressing or mayonnaise. Mix lightly until well blended. Spread 5 lb 7 oz (approximately 3 qt ½ cup) into 2 shallow pans (12" x 20" x 2 ½") to a product depth of 2" or less.
Fresh celery, chilled, chopped	1 lb 5 oz	1 qt 1 cup	
Fresh onions, chopped	12 oz	2 cups 2 Tbsp	
Sweet pickle relish, chilled, undrained	15 oz	1 ¾ cups	
Ground black or white pepper		2 tsp	
Dry mustard		1 Tbsp 1 ½ tsp	
Salad dressing or mayonnaise, chilled	1 lb 9 ½ oz	3 ¼ cups	
			2. CCP: Cool to 41°F or lower within 4 hours. Cover. Refrigerate until service.
			3. Portion with No. 8 scoop (1/2 cup).
Food Allergy Warning: This recipe contains eggs.			

Recipe 2: Cold Food, Chicken or Turkey Salad

Recipe obtained from the National Food Service Management Institute



STANDARD OPERATING PROCEDURES: PREPARING COLD FOODS SAFELY

- Wash hands before and wear disposable gloves while preparing cold foods
- Clean and sanitize all equipment and utensils that will touch RTE foods
- Use a clean and sanitized work area for cold RTE foods, including a sink that is used only for washing produce
- Wash produce under cold flowing water
- Inspect produce for bruised and damaged areas and mold
- Chill ingredients before using them to prepare cold RTE foods
- Delay removing high risk food items from the refrigerator until ready to prepare
- Inspect containers for expiration dates and damage, and wipe surfaces clean before opening them
- Avoid Cross-Contamination by using separate preparation areas, equipment, and utensils in addition to proper storage, handwashing, cleaning, and sanitizing
- Avoid Cross-Contact by using separate preparation areas, equipment and utensils in addition to proper handwashing, cleaning, and sanitizing
- Use standardized recipes and get manager approval for any necessary changes
- Note Critical Control Points and Critical Limits on standardized recipes
- Note Food Allergy Warnings on standardized recipes
- Food allergen preparation errors cannot be fixed after preparation; therefore, that food must not be served to a customer suffering from food allergies
- If a food product is held more than 24 hours, date mark the product and throw it away after a total of 7 days storage at or below 41°F

Preparing Cold Foods Safely

Module Quiz: Please make sure you have read Chapter 4 – Module 3 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. Wiping down counter tops and rinsing cutting boards is sufficient preparation of the cold food prep area.
 - a. True
 - b. False (page 75)**
2. All equipment and utensils that will touch Ready-to-Eat food must be:
 - a. Rinsed thoroughly.
 - b. Wiped clean with a paper towel.
 - c. Cleaned and sanitized. (page 75)**
 - d. No preparation is required.
3. Produce should be washed:
 - a. Using a disinfectant soap.
 - b. Only if it will not be peeled.
 - c. Under cold flowing water in any available sink.
 - d. Under cold flowing water in a designated sink. (page 76)**
4. Which of the following foods must be thrown away if mold is found?
 - a. Hard cheese
 - b. Baked goods (page 76)**
 - c. Firm fruits
 - d. All of the above
5. Ingredients are inspected during receiving and, therefore, do not need to be inspected before use.
 - a. True
 - b. False (page 76)**
6. To prevent cross-contamination in the refrigerator, store raw vegetables:
 - a. In a basket at the bottom of the refrigerator.
 - b. Above all raw meat, poultry, eggs, and fish. (page 77)**
 - c. Wherever there is room as long as the temperature is correct.
 - d. Below raw fish and eggs, but above raw meat and poultry.
7. What is the maximum number of days that a prepared food product may be held?
 - a. 3
 - b. 5
 - c. 7 (page 77)**
 - d. 9

8. If a finished food product contains high risk ingredients and will be held for more than 24 hours, the following action should be taken.
 - a. It must be thrown away.
 - b. Nothing as long as it is held in the refrigerator.
 - c. **It must be labeled with the date that the food must be consumed by or thrown away. (page 77)**
 - d. Food should not be held more than 24 hours.

Chapter 4 – Module 4: Preparing Hot Foods Safely

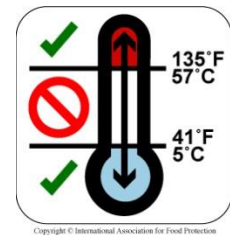
PREPARING HOT FOODS SAFELY

Learning Objectives: Following completion of Chapter 4 – Module 4, the restaurant employee will be able to:

1. Identify the Critical Control Points, Critical Limits, and Corrective Actions for hot foods
2. Prepare the hot food prep area
3. Safely prepare ingredients for cooking
4. Avoid cross-contamination of bacteria and viruses while preparing hot foods
5. Avoid cross-contact of food allergens while preparing hot foods
6. Identify HACCP guidelines within standardized recipes for hot foods

HACCP Guidelines

Hazard Analysis Critical Control Points (HACCP) guidelines, including **Critical Control Points (CCP)**, **Critical Limits**, and **Corrective Actions**, help keep foods safe. As with cold food preparation, the guidelines are designed to keep food out of the **Temperature Danger Zone** (between 41°F and 135°F) where harmful bacteria grow rapidly and may cause foodborne illness.



REMEMBER:

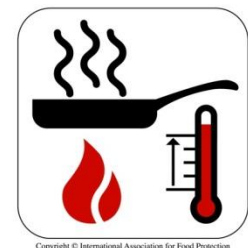
Critical Control Points (CCP) are points within a procedure where action can be taken to eliminate or reduce the risk of a food safety hazard.

Critical Limits (CL) are the boundaries within a CCP.

Corrective Action indicates how to respond when Critical Limits are not met.

When hot foods are cooked and served the same day, there are 2 CCPs:

1. Cooking
2. Hot holding



When hot foods are prepared one day, cooled, and reheated another day, there are 4 CCPs:

1. Cooking
2. Hot holding
3. Cooling
4. Reheating

CCP	Critical Limit	Corrective Action
Cooking	Food Specific Internal Temperatures (see table below)	Continue cooking
Hot Holding	135°F	Reheat to 165°F for 15 seconds
Cooling	70°F within 2 hours, 41°F within additional 4 hours	Reheat to 165°F for 15 seconds
Reheating	165°F within 2 hours and held for 15 seconds	Discard food

Table 10: HACCP Critical Control Point examples with Critical Limits and Corrective Actions

Hot Food Preparation Area

All foods must be prepared in a clean and sanitized work area with clean and sanitized equipment and utensils.

- Employees must properly wash hands before entering the preparation area
- Disposable gloves should be worn
- Utensils used to prepare the food should be kept:
 - In the food with the handle remaining above the food, or
 - On a clean portion of the countertop during preparation
- Use a clean spoon for tasting and move away from the food when tasting



Ingredients

Remember to follow basic safe food culture practices:

- ✓ Purchase food from a reliable supplier
- ✓ Inspect deliveries for cleanliness and accuracy
- ✓ Use FIFO storage rotation
- ✓ Quickly store frozen and refrigerated foods

Standardized Recipes

Following standardized recipes protects the quality of the food your restaurant serves. Below is an example of a hot food standardized recipe designed to follow **HACCP** guidelines and warn against **The Big Eight** food allergens. For example, the recipe states the **Critical Control Points** and **Critical Limits** of cooking to an internal temperature of 165°F for at least 15 seconds and hot holding at 135°F or higher.

Oven Fried Chicken (25 servings – Portion: 4 oz)			
Ingredients	Weight	Measure	Instructions
Raw chicken, cut up, thawed	24 lb 8 oz		1. Place chicken pieces in large bowl. Drizzle oil over chicken. Toss to coat thoroughly.
Vegetable oil		1 1/2 cups	
Enriched all-purpose flour	1 lb	3 3/4 cups	2. In a separate bowl, combine flour, dry milk, poultry seasoning, pepper, paprika, and granulated garlic. Mix well.
Instant nonfat dry milk	8 oz	2 Tbsp	
Poultry seasoning		1 Tbsp 1 1/2 tsp	
Ground black or white pepper		1 Tbsp	
Paprika		1 1/2 tsp	
Granulated garlic		1 Tbsp 1 1/2 tsp	3. Coat oiled chicken with seasoned flour.
			4. Bake: Conventional oven: 400°F for 45-55 minutes. Convection oven: 350°F for 30-35 minutes. CCP: Heat to 165°F or higher for at least 15 seconds.
			5. Transfer to 2 steam table pans (12"x20"x2 1/2").
			6. CCP: Hold for hot service at 135°F or higher.
Food Allergy Warning: This recipe contains milk and wheat.			

Recipe 3: Hot Food, Oven Fried Chicken

Recipe obtained from the National Food Service Management Institute



Preparing Hot Foods



Thawing

While it is safe to cook food directly from the frozen state, some recipes may require thawing ingredients before use. There are 3 safe ways to thaw food:

1. In a refrigerator
2. Under cold running water
3. In a microwave oven

REMEMBER:

Employees should never thaw high risk foods at room temperature or in hot water.

Safe Thawing Methods	
Refrigerator	Place food in a refrigerator at or below 41°F. REMEMBER: Place thawing meats below RTE foods.
	<ul style="list-style-type: none"> • Requires planning ahead and is a slower method, but does not require attention once food is placed in the refrigerator. • Foods thawed in the refrigerator may be refrozen before or after they are cooked.
Cold Running Water	Submerge under cold running water at or below 70°F.
	<ul style="list-style-type: none"> • Quicker method than in the refrigerator. • Food must be in a leak-proof plastic bag, and the water must be changed every 30 minutes. • Foods thawed under cold running water must be cooked immediately and cannot be refrozen until after they are cooked.
Microwave Oven	Follow microwave oven instructions.
	<ul style="list-style-type: none"> • Quickest method. • Food must be removed from its original package and placed in a container that is designed for microwave oven use. • Foods thawed in the microwave oven must be cooked immediately and cannot be refrozen until after they are cooked.

Table 11: Thawing frozen food guidelines.

Do Not Wash Meats or Eggs

- Poultry, beef, lamb, and veal, should not be washed before cooking.
- Washing does not remove a significant number of bacteria.
- The bacteria in the meat will be destroyed during cooking, and washing could lead to **Cross-Contamination** by transferring bacteria to the sink area.
- Shelled eggs do not need to be washed because they have already been washed by their commercial supplier.

Marinating and Brining

- Marinating and brining should be done in the refrigerator in order to avoid the **Temperature Danger Zone**.
- Store raw meats below **Ready-to-Eat** foods in the refrigerator.
- Discard the marinade or brine after use.
- Boiling a marinade will destroy the bacteria so that it can be used as a sauce if desired.

**Partial Cooking**

- Meat should **NOT** be partially cooked and then returned to the refrigerator.
- Partial cooking is safe only if the meat will be immediately transferred to a hot grill or oven to complete cooking.

REMEMBER:

Cross-Contamination occurs when bacteria from a **Time/Temperature Control Safety Food** is transferred to another food through either **Direct** or **Indirect** contact. Even a small amount of **Cross-Contamination** can cause foodborne illness.

Cross-Contact happens when food allergens are transferred from one food to another food. Just as with **Cross-Contamination**, **Cross-Contact** can be either **Direct** or **Indirect**. Food allergens can be transferred during preparation, cooking, plating, and serving. Unlike bacteria, food allergens are **NOT** destroyed by cooking.

How can bacteria and viruses be transferred by Cross-Contamination?

- ✗ Raw foods drip or splash onto already cooked or Ready-to-Eat food items
- ✗ Cutting cooked chicken on the same cutting board or with the same knife used to cut raw chicken

What safe food handling practices will prevent Cross-Contamination?

- ✓ Employees should wash hands, change gloves, and put on a clean apron between handling raw and cooked foods
- ✓ Food contact surfaces should be cleaned and sanitized between working with raw and cooked foods
- ✓ Use different colored cutting boards for raw meat, poultry, fish, fruits and vegetables



How can food allergens be transferred by Cross-Contact?

- ✗ Frying shrimp and chicken in the same frying oil. The shrimp allergens will be transferred to the chicken.
- ✗ Cooking fish and steak on the same grill surface. The fish allergens will be transferred to the steak.
- ✗ Toasting wheat bread and potato bread in the same toaster. The wheat allergens (and gluten protein) will be transferred to the wheat-free potato bread.
- ✗ Cutting pecans on the same surface, with the same knife as slicing a sandwich. The pecan allergens (tree nut) have been transferred to the sandwich.

What safe food handling practices will prevent Cross-Contact?

- ✓ Employees should wash hands, change gloves, and put on a clean apron before preparing an allergen-free menu item.
- ✓ Food contact surfaces should be cleaned and sanitized before preparing allergen-free food items.
- ✓ Use a dedicated fryer for shrimp (or other food allergen).
- ✓ Use a dedicated toaster for allergen-free breads.
- ✓ Use a separate pan or sheet of aluminum foil to grill allergen-free menu items.

When dedicated equipment is impractical, consider alternatives:

- Use a single serve fryer on the stove
- Toast allergen-free bread in the oven on a clean baking sheet
- Use aluminum foil to cook a hamburger patty on a griddle
- Let the customer know you cannot prepare the food item safely

REMEMBER:

Cooking food does not kill food allergens.

Cooking Food to Safe Internal Temperatures



Regardless of the cooking method, the only way to check that foods have reached a safe internal temperature is to use a thermometer. Insert a clean, calibrated probe thermometer into the thickest part of the food to verify the food's internal temperature.

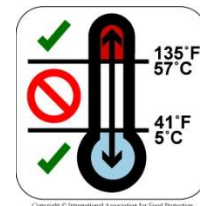
- When measuring the temperature of meat, avoid contact with bone, fat, and gristle.
- When measuring thin foods, insert the thermometer probe from the side.
- When deep fat frying, remove food from oil first before checking the temperature.

If the food has not reached the Critical Limit, the food must continue cooking until the proper internal temperature is reached.

Eggs: Eggs should not be served runny. Eggs should be cooked until the yolks and whites are firm.

Stuffed meats: When cooking stuffed meats, not only does the meat have to reach its proper internal temperature, but the stuffing must also reach an internal temperature of 165°F.

Batch Cooking: When preparing hot food items, working with smaller batches minimizes the time that food spends in the **Temperature Danger Zone**. By working with smaller amounts of food, every aspect of preparation time is decreased including preparation, cooking, and cooling.



Microwaving

Microwave ovens do not always cook food evenly, and employees must take action to avoid undercooked pockets of food where bacteria can survive. This can be accomplished by:

- ✓ Using only microwave-safe materials
- ✓ Arranging the food as evenly as possible
- ✓ Covering and retaining moisture in the food
- ✓ Stirring or rotating the food half way through cooking
- ✓ Allowing standing time after the food is cooked



As with other methods of cooking, employees should use a thermometer to check the internal temperature of the food.







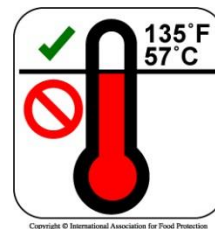
Product		Internal Cooking Temperatures
Poultry (whole or ground - duck, chicken, turkey) Stuffing, stuffed meat and dishes that include previously cooked, potentially hazardous ingredients 	165°	165°F (74°C) for 15 seconds
Microwave cooked Eggs, poultry, fish, meat		165°F (74°C) let food stand for 2 minutes after cooking
Ground meats - beef, pork, or other meat, fish 	155°	155°F (68°C) for 15 seconds
Injected meats - (including brined ham & flavor-injected roasts) 		155°F (68°C) for 15 seconds
Pork, Beef, Veal, Lamb 	145°	Steaks / Chops: cook to an internal temp. of 145°F (63°C) for 15 seconds
Fish 		Roasts: 145°F (63°C) for 4 minutes
Fresh shell eggs for immediate service 		145°F (63°C) for 15 seconds
Commercially processed ready-to-eat foods held for service	135° Temp DANGER Zone	135°F (60°C)
<div>Minimize "Danger Zone" temperatures during preparation, cooking, & cooling. After 4 hours in the "DZ" food is considered adulterated and must be discarded.</div>		<div>When cooling potentially hazardous food, the temperature must be lowered from 135°F to 70°F in 2 hours and then from 70°F to 41°F or below in the next 4 hours to prevent bacterial growth.</div>
<div>41°</div>		
Minimum Internal Cooking Temperatures		

Figure 1: provides recommended minimum internal cooking temperatures. Check with your local and state health departments for specific internal temperatures.
 Retrieved from: <http://www.cdhd.idaho.gov/eh/food/active.htm>

Hot Holding

Hold hot foods above 135°F. When hot foods will not be served immediately, they must be held at 135°F or higher. This is a **Critical Control Point (CCP)** to be included in standardized recipes. Hot holding must be done in equipment that is designed for this purpose, and temperatures must be monitored and recorded by employees. **A thermometer must be used to check the internal temperature of the food every 2 hours.**



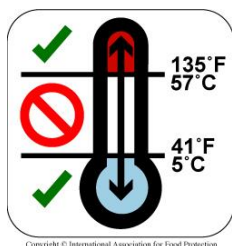
Corrective Action:

If the internal temperature falls below 135°F, and it has been:

- ✓ 2 hours or less since the last correct temperature reading (135°F or higher), **then reheat the food to 165°F for a minimum of 15 seconds.**
- ✓ More than 2 hours since the last correct temperature reading (135°F or higher), **then discard the food.**

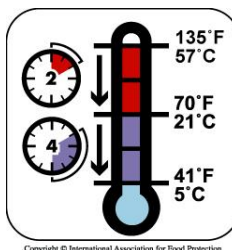


Cooling and Storage



As hot foods cool, there is potential for them to be in the **Temperature Danger Zone** for a long period of time. Food safety guidelines provide specific cooling techniques for leftovers or foods not being served immediately:

- Leftovers
- Foods stored for reheating and service later
- Prep items for use in recipes (such as chicken for chicken salad)



Regardless of the cooling method used, there are 2 time/temperature **Critical Control Points**:

1. Foods must be cooled **from 135°F to 70°F or below** within 2 hours
2. Foods must then be cooled **to 41°F or below** within an additional 4 hours

This can be accomplished by using a combination of any of the cooling methods below based on the type of food product. Cooling is a **CCP** and should be included in that standardized recipe. Use a thermometer to verify the internal temperature. If the food is not cooled according to the above guidelines, the food must be reheated to 165°F for a minimum of 15 seconds and cooled again.

Cooling Methods:

- ✓ Add clean, edible ice as an ingredient.
- ✓ Divide food into smaller portions and transferring into shallow, pre-chilled pans.
- ✓ Use containers designed to allow heat transfer.
- ✓ Stir the food while the container sits in an ice bath.
- ✓ Use commercial products such as blast freezers and chillers, ice paddles, and ice wands to facilitate cooling. Follow manufacturer's instructions.

Reheating

As with cooling, reheating has the potential to keep foods in the **Temperature Danger Zone** for extended periods of time. All leftovers must be reheated within 2 hours to an internal temperature of at least 165°F and held at this temperature for at least 15 seconds as part of the **CCP** within the HACCP plan. Use a thermometer to verify the internal temperature of the thickest part of the food. Food should be reheated no more than once. If the food does not reach 165°F within 2 hours, the food must be discarded.

REMEMBER:

All leftovers must be reheated within 2 hours to an internal temperature of at least 165°F and held for at least 15 seconds.



STANDARD OPERATING PROCEDURES: PREPARING HOT FOODS SAFELY

- Prepare hot foods in a clean and sanitized work area, using clean and sanitized equipment and utensils, with washed hands and disposable gloves
- Thaw high risk foods in the refrigerator, under cold flowing water, or in a microwave oven
- Avoid Cross-Contamination by using separate preparation areas, equipment, and utensils in addition to proper storage, handwashing, cleaning, and sanitizing
- Avoid Cross-Contact by using separate cooking oils, cooking surfaces, equipment, and utensils in addition to proper handwashing, cleaning, and sanitizing
- Use a thermometer to verify that cooked foods have reached their specific safe internal temperature as set by the restaurant's local laws and regulations
- Use batch cooking to minimize the time that foods spend in the Temperature Danger Zone
- Hot hold cooked foods at 135°F or higher when food will not be served immediately
- Cool foods from 135°F to 70°F or below within 2 hours and then to 41°F within an additional 4 hours
- Reheat foods from 41°F to 165°F or higher within 2 hours

Preparing Hot Foods Safely

Module Quiz: Please make sure you have read Chapter 4 – Module 4 and watched the corresponding videos (Parts 1 and 2) before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. Which of the following are safe methods for thawing high risk foods?
 - a. In a microwave oven
 - b. In the refrigerator
 - c. Under cold running water
 - d. **All of the above (page 85)**
2. Cooking foods to a high temperature kills food allergens.
 - a. True
 - b. **False (page 87)**
3. Which of the following is an example of a Critical Limit during the cooking process?
 - a. Proper equipment temperature.
 - b. The food's color.
 - c. **The internal temperature held for at least 15 seconds. (page 83)**
 - d. Cooking does not have a CCP.
4. It is okay to use the same utensils, cutting boards, and surface preparation area for raw chicken and cooked chicken.
 - a. True
 - b. **False (page 86)**
5. When hot foods will not be served immediately, they must be...
 - a. Held at 165°F or higher.
 - b. **Held at 135°F or higher. (page 83, 90)**
 - c. Held at the foods specific cooking internal temperature.
 - d. Hot foods must be served immediately.
6. Batch cooking can be used to help minimize the time that foods are in the Temperature Danger Zone.
 - a. **True (page 88)**
 - b. False
7. The Critical Limit for cooling hot foods is...
 - a. **to cool from 135°F to 70°F or below within 2 hours and then to 41°F or below within an additional 4 hours. (page 83, 90)**
 - b. to cool from 135°F to 41°F or below within 4 hours.
 - c. to cool from 135°F to 70°F or below within 4 hours.
 - d. to cool from 165°F to 70°F or below within 2 hours and then to 41°F or below within an additional 4 hours.

8. Which of the following methods are safe for cooling foods?
 - a. Adding clean, edible ice as an ingredient
 - b. Stirring food while the container sits in an ice bath
 - c. Dividing food into smaller portions, transferring into shallow, pre-chilled pans
 - d. **All of the above (page 91)**

9. If stuffed meat is cooked to the safe internal temperature of the meat, the stuffing will be safely cooked as well.
 - a. True
 - b. **False (page 88)**

10. When reheating, foods must be heated from 41°F or below to 165°F or higher within...
 - a. 4 hours.
 - b. 1 hour.
 - c. **2 hours. (page 83, 91)**
 - d. 6 hours.

Chapter 4 – Module 5: Safely Serving Customers

SAFELY SERVING CUSTOMERS

Learning Objectives: Following completion of Chapter 4 – Module 5, the restaurant employee will be able to:

1. Describe different methods of serving foods
2. Describe ways of preventing employees from spreading bacteria and viruses to Ready-to-Eat foods
3. Discuss practices that keep the dining room clean
4. Describe how to prevent Cross-Contact of food allergens during service
5. Describe safe food handling practices for buffets and salad bars
6. Discuss food safety practices for take-out foods
7. Identify Standard Operating Procedures that reduce risk of foodborne illness from bacteria, viruses, and food allergens

Serving Styles

After foods are prepared safely, restaurant employees may serve meals to customers in several different ways. Some of these ways include table service, counter service, cafeterias, buffets, and salad bars. Restaurants may also sell take-out foods that are transported and consumed off-site.

- **Table or counter service** is when the wait staff takes customer orders and brings plates of prepared food to the table or counter.
- **Cafeterias, buffets, and salad bars** typically allow customers to self-serve portions of foods on their plates.
- **Take-out** foods sold to customers are packaged in a container that will maintain food temperatures.

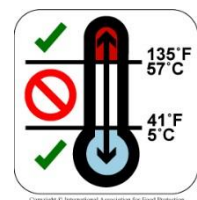


With any of these styles of service, there is the risk that bacteria, viruses, or food allergens could be spread to foods and cause foodborne illness for customers.

Buffets and Salad Bars

Special food handling rules apply to buffets and salad bars. Sneeze guards can be used to prevent customers from touching, coughing, or sneezing on the food. Employees should wipe off handles of ladles, dippers, and other serving tools used by customers with a sanitizer solution at least every 2 hours.

- ✓ When a pan of food runs out on a buffet or salad bar, it should be replaced with an entirely new pan of food.
- ✗ Employees should never add newly prepared foods on top of foods that were previously served. This might allow food to remain in the **Temperature Danger Zone** for 4 hours or longer.





Customers should use a clean plate each time they visit a cafeteria line, buffet, or salad bar. If customers return to the buffet or salad bar with a dirty plate, they might spread their germs to the clean food being served.

Buffets and salad bars pose special hazards for customers with food allergies. To reduce the risk of customers having allergic reactions to foods follow these rules:

- All foods on a buffet or salad bar should be labeled and especially those foods that contain ingredients from any of **The Big Eight** food allergens.
- Each type of food should have its own labeled serving utensil, for example “Soup Ladle.”

Take-Out Foods

When customers buy take-out meals, it may be 60 minutes or longer before they actually consume the food. Therefore, foods sold for take-out need to be packaged in containers that can retain hot and cold temperatures. Packaging foods at a temperature above 135°F or below 41°F reduces the time take-out food spends in the **Temperature Danger Zone**.

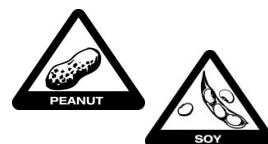


Assisting Customers with Food Allergies

Knowing Food Ingredients

The manager, chef, or head cook should be aware of **hidden ingredients**. For example, milk or milk products may be contained in hot dogs, canned tuna, or margarine.

- **Eggs** can be an ingredient in bagels, pretzels, and pasta.
- **Nuts** can be found in barbecue sauce, bouillon, and chili.
- **Wheat** protein is found in many processed foods.



Safe Foods for Customers with Food Allergies

Customers with food allergies will be safer if they avoid menu items with many ingredients such as soups, stews, casserole dishes, marinades, sauces, and breaded meats. Be cautious – desserts may also contain many ingredients including tree nuts and peanuts.

Cross-Contact spreads food allergens.

- Buffets allow for Cross-Contact between serving utensils
- Fryers transfer allergens from one food to another.
*Peanut and Soybean frying oil can cause an allergic reaction in highly sensitive customers.
- Grilling different foods cause Cross-Contact between foods

Labeling Menus

Menus help inform customers about high risk foods:

- that contain undercooked or raw ingredients and
- that contain common food allergens.

High Risk Foods for Food Allergens

Customers who have a food allergy can experience a serious reaction if exposed to the food allergen. **The only way to stay safe is to avoid eating the foods to which they are allergic.** One of the best ways to inform customers about common food allergens in menu items is to print these ingredients on the menu. The menu should especially list **The Big Eight** food allergens (milk, eggs, soy, wheat, fish, crustacean shellfish, peanuts, and tree nuts) that cause most food allergy reactions.

THE BIG EIGHT:

- Milk
- Eggs
- Soy
- Wheat
- Fish
- Crustacean Shellfish
- Peanuts
- Tree Nuts

High Risk Foods for Bacteria

When meats, poultry, seafood, shellfish, or eggs are served raw or undercooked, they may cause foodborne illness. Foods that are sometimes made with raw eggs include Caesar salad, some sauces, eggnog, and egg-fortified beverages. Fried eggs are often served “over easy” with undercooked yolks. Beef patties or steaks may be served as “rare” and not fully cooked. In many places, local health rules require a Consumer Advisory posting to warn customers that they are at risk of foodborne illness when eating these foods.

It may take some time for a manager to review the restaurant menus and label foods that contain common food allergens. However, this action could prevent a customer from ordering and consuming a food that resulted in an allergic reaction.

In a restaurant, waiters are the last line of defense in the process of providing safe food to customers.



Scenario 8: Chinese Restaurant Linked to Peanut Allergy Death

Recently, a seventh-grade student in Chicago died because of an allergic reaction to peanuts from food served at a school party.

A teacher ordered food from a Chinese restaurant. He warned the restaurant staff that some of the children had allergies to peanuts. The teacher said that he asked restaurant staff to make sure that no peanut products, such as oils and sauces, would be used to prepare the food. However, one student with an allergy to peanuts suffered an anaphylactic reaction and died after eating the food.

Later, testing of food samples showed that the food contained high amounts of peanut residue. This is an example of poor communication between restaurant employees who prepare the food and those who take the orders.

Serving Customers

Wait staff must make sure that they correctly receive the customer's food order and correctly give it to kitchen staff. If they give wrong information to customers who ask about food ingredients, the customer may become ill or even die. The wait staff should never guess what allergens may be in foods on the menu. If you do not know, do not guess; ask the manager or head chef to relay the proper information to the allergic customer. Aside from that, the restaurant may be sued.

REMEMBER:

Never guess what allergens may be in foods on the menu.

Special Attention to Food Orders for Customers with Food Allergies



When a customer with a food allergy places an order for a meal, this order should be flagged so that kitchen employees are aware of the food allergy. This can be done by using a red marker to alert the cooks that special care must be taken in preparing this food order. When the meal is ready for the customer:

- ✓ The waiter should carry the order separately to the table and
- ✓ The waiter should verify with the customer that the order is correct.
- ✗ Food Allergy Orders should **NOT** be mixed on a tray with other food items.



All of the staff at a restaurant must work together as a team to ensure that a customer with a food allergy receives a safe food order. The manager, chef, or head cook may also come to the table to discuss safe choices of menu items with the customers.

How to Safely Manage Food Orders for Customers with Food Allergies



The Customer
After explaining he has a
food allergy, the customer
asks,

“What is safe to eat?”

The Order is Flagged

The Waiter



**The Manager /
Chef**

- Answers questions
- Checks labels
- Checks recipes



The Kitchen



The Waiter

Recommends
avoiding

- Buffet foods,
- Items with sauces,
- Items with marinades,
- Soups and Stews.

- Washes hands,
changes gloves and
apron,

- Uses clean
equipment, utensils,
and work surfaces,

- Avoids Cross-
Contact

- Announces Order is
ready

- Checks the order

- Brings order to
customer
separately

- Asks the customer
to check the order.

Figure 2: How to serve food safely.

STANDARD OPERATING PROCEDURES: SAFELY SERVING CUSTOMERS

- Post a Consumer Advisory Label notice on the menu or wall if serving raw or undercooked meat, poultry, seafood, shellfish, or eggs
- Label menus with wording that includes food allergen ingredients
- Have one individual on duty (manager, chef, or head cook) who knows what ingredients are included in menu items; wait staff should never guess what ingredients are in the foods
- Train wait staff to flag orders for customers with food allergies
- Know “The Big Eight” food allergens
- Deliver food orders for customers with food allergies separately from other orders
- Check food orders for customers with food allergies carefully to ensure they receive what they ordered
- Wash hands frequently
- Label foods and utensils on a buffet or salad bar
- Avoid spreading food allergens by Cross-Contact
- Do not allow employees who are ill to prepare or serve food
- Avoid touching Ready-to-Eat foods or ice with bare hands; use gloves or utensils
- Avoid touching the rims of plates or edges of glasses when serving foods
- Clean tables, chairs, and booths in dining area with sanitizer solution
- Install sneeze guards for buffets and salad bars
- Require customers to use a clean plate each time they visit a buffet or salad bar
- Keep cold foods cold $\leq 41^{\circ}\text{F}$
- Keep hot foods hot $\geq 135^{\circ}\text{F}$
- Keep high risk foods out of the Temperature Danger Zone (41°F to 135°F)
- Throw out any food that has been in the Temperature Danger Zone 4 hours or longer

Safely Serving Customers

Module Quiz: Please make sure you have read Chapter 4 – Module 5 and watched the corresponding video before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

1. The only way customers with food allergies can stay safe is by avoiding eating foods to which they are allergic.
a. True (page 97)
b. False
2. For which of the following foods should restaurant post a Consumer Advisory?
a. Fried eggs “over easy” (undercooked)
b. Rare hamburgers
c. Raw oysters
d. Raw marinated fish
e. All of the above (page 97)
3. A customer asks the waiter if a stir fry menu item contains peanuts, and the waiter is not sure. The best response would be:
a. I don’t think it does
b. No – it doesn’t list peanuts on the menu
c. It probably does
d. I don’t know, but let me check with the manager (page 98)
4. Which of the following types of menu items would be considered an unsafe choice for customers with food allergies?
a. Buffet meals
b. Soups
c. Stews
d. Breaded meats
e. All of the above (page 97, 99)
5. Every restaurant should have at least one person on duty (manager, chef, or head cook) who knows what ingredients are contained in menu items.
a. True (page 96)
b. False
6. When a customer with a food allergy places an order for a meal, this order should be flagged so that kitchen employees are aware of the food allergy.
a. True (page 98)
b. False
7. Hot dogs, canned tuna, and margarine often contain _____ as a hidden ingredient.
a. Eggs
b. Milk or milk products (page 96)
c. Wheat
d. Tree nuts

8. Customers should use a dirty plate each time they revisit a salad bar to save the kitchen time on dishwashing.
 - a. True
 - b. False (page 96)**
9. A customer who has an allergy to tree nuts orders a green salad. When the waiter picks up the order in the kitchen, he notices that the salad has been garnished with almonds. What should the waiter do?
 - a. Request that kitchen staff make a new salad (page 99)**
 - b. Brush off the almonds and serve to the customer
 - c. Serve the salad and tell the customer to remove the almonds
 - d. Serve the salad and explain that the kitchen workers made a mistake
10. Which of the following is a possible source of Cross-Contact?
 - a. Buffet Lines
 - b. Fryers
 - c. Grills
 - d. All of the above (page 96)**

Chapter 5: Gluten in Foods

Chapter 5 – Module 1: Gluten in Foods

GLUTEN IN FOODS

Learning Objectives: Following completion of Module 1, the restaurant employee will be able to:

1. Explain why people with Celiac Disease and gluten sensitivity need to avoid gluten
2. State what level of gluten the FDA has proposed for gluten-free foods
3. Describe the maximum levels of gluten contained in foods that are certified to be gluten-free
4. Determine whether a food is gluten-free by reading food labels
5. Recognize what grains and grain products to avoid for a gluten-free diet
6. Recognize foods that are naturally gluten-free
7. Suggest some possible menu choices for a gluten-free menu
8. Explain why cooks should not make substitutions for gluten-free menu items
9. Describe how to avoid cross-contact that could spread gluten to gluten-free foods



Celiac Disease and Gluten Sensitivity

Gluten is a protein found in wheat, rye, and barley. When individuals who have **Celiac Disease** eat foods that contain gluten, they may have stomach bloating and pain, diarrhea, vomiting, constipation, or other symptoms. This can result in poor absorption of nutrients, poor growth in children, weight loss, and damage to the intestinal tract. Celiac Disease is not a food allergy, and it does not cause death by anaphylaxis.

However, it is a genetic disease that can have serious health

effects. The National Institutes of Health (NIH) estimates that 3 million Americans (about 1 in 100) have Celiac Disease. Another 6% of Americans who do not have Celiac Disease are estimated to be sensitive to gluten. People who have gluten sensitivity may also experience stomach bloating, pain, diarrhea, constipation, and other symptoms when they eat gluten. The only way that people who have Celiac Disease or gluten sensitivity can avoid uncomfortable symptoms is to avoid consuming foods that contain wheat, rye, and barley or other foods that have been cross-contaminated by gluten.

Gluten-Free Food Labeling

U.S. Government Proposal on Gluten-Free Labeling

The Food Allergen Labeling and Consumer Protection Act (FALCPA) requires food labels to clearly identify wheat and other common food allergens in the ingredient list. In 2013, the U.S. FDA developed rules for the use of the term “gluten-free” on food labels. Foods must contain less than 20 parts per million (ppm) of gluten for labeling foods as “gluten-free.” World-wide, The Codex Alimentarius Commission has also defined gluten-free as containing less than 20 ppm of wheat, barley, or rye.



Gluten-Free Certification by Other Organizations

Independent testing organizations test food products for gluten and provide a separate certification.




Organization Name	Website	Maximum Gluten Level Allowed	Certification Logo
Gluten-Free Certification Organization	www.gfco.org	≤ 10 ppm	
National Foundation for Celiac Awareness NFCA	www.celiaccentral.org	≤ 10 ppm	
Celiac Support Association	www.csaceliacs.org	≤ 5 ppm	

Table 12: Organizations with Gluten-Free certification programs.

Gluten-Free Foods and Menus

Safe Grains and Grains to Avoid

The following table gives examples of grains and legumes or starchy alternatives that can be safely consumed by individuals on a gluten-free diet and grains and grain products that should be avoided. Oats are not listed as a safe grain because they are often milled in the same processing plants as wheat and are likely to be cross-contaminated with gluten. The FDA has proposed that oats could be allowed in gluten-free foods if they test at less than 20 ppm of gluten.

Safe Grains and Grain Alternatives	Grains to Avoid	Other Wheat Products to Avoid	Other Foods To Avoid (Check Labels)
✓ Amaranth Arrowroot Buckwheat Cassava Corn Flax Legumes Millet Nut flours Potatoes Quinoa Rice Soy Tapioca Teff Wild rice	✗ Wheat einkorn, emmer, spelt, & kamut Barley Rye Triticale wheat and rye hybrid grain	✗ Durum flour Enriched flour Farina Graham Flour Hydrolyzed wheat protein Self-rising flour Semolina Wheat bran Wheat germ Wheat starch	✗ Breading and coating mixes Couscous Croutons Cereals Chips/Potato chips French fries Gravy Imitation bacon Imitation seafood Marinades Matzo Modified food starch Panko (<i>Japanese bread crumbs</i>) Pasta Rice mixes Processed lunch meats Sauces Soups Soy sauce Tortilla chips

Table 13: List of grains and foods related to gluten. Always read labels carefully.

Gluten-Free Menus

Many restaurants are developing special menus for consumers who desire gluten-free foods. A gluten-free menu does not have to be expensive. Some foods are naturally gluten-free:

- ✓ All fresh fruits and vegetables
- ✓ raw meat, chicken, and fish
- ✓ Milk, butter, and cheese
- ✓ Eggs
- ✓ Peanuts and tree nuts

Juices that are 100% fruit or vegetable are gluten-free, as are wines and hard liquor. However, **most beer is not gluten-free** because it is usually made from barley.

Restaurant managers who wish to provide a gluten-free menu to customers should carefully review their menu items and decide which of these items are naturally gluten-free. It is possible

to purchase gluten-free pasta and gluten-free baked items such as breads, cakes, and cookies. These foods are prepared from a combination of various flours or starches such as rice, potato, corn, or tapioca. Usually a small amount of xanthan gum or guar gum is added to give stability. These products will be considerably more expensive than pastas and baked items prepared from wheat. Baked items can also be prepared in-house if the restaurant has a skilled baker and separate space and equipment to set aside for gluten-free baking. In some restaurants, the cooks make all sauces “from scratch” and substitute corn starch as a thickener instead of wheat flour. To determine whether a commercial food product contains gluten, one should check the ingredient list on the food label for any ingredient containing wheat, barley, or rye. For example, modified food starch could indicate the presence of wheat. If in doubt, one should call the food broker, distributor, or manufacturer.



If a restaurant manager makes the decision to provide a gluten-free menu, the menu can be created and printed on a separate menu card. When a customer asks, “What foods do you have that are gluten-free?” the waiter can provide the gluten-free menu.

Another option is to use a gluten-free symbol on the regular menu to denote those menu items that are gluten-free. Examples of some naturally gluten-free foods that might be listed on a gluten-free menu are shown below.

Salads:	Green or Caesar Salad (no croutons)
Main Dishes:	Broiled Salmon with Wild Rice & Seasonal Vegetables Baked Chicken Breast with Red Skinned Potatoes & Seasoned Broccoli Pan-Broiled Pork Chops with Mashed Potatoes & Buttered Carrots
Desserts:	Fresh Fruit Cup (could include canned fruit) Fruit Parfait (combination of fruit and yogurt) Ice Cream (Vanilla, Strawberry, or Chocolate)

Preparing and Serving Gluten-Free Foods Safely

Avoiding Substitutions

Preparing foods for customers who request gluten-free foods is similar to preparing foods for customers with food allergies. Even though a restaurant manager has created a gluten-free menu, there is still the risk of spreading gluten to these foods through substitutions of ingredients or preparation methods. Cooks must be careful to avoid substitutions. Substitutions may have hidden ingredients that contain gluten.

For example:

- If a plain chicken breast was ordered, a breaded chicken product should not be substituted.
- If mashed potatoes were ordered, French fries should not be substituted as some French fry potato products contain wheat.

- Cooks should avoid using marinades or adding sauces to gluten-free foods, as many commercial marinade and sauce products contain wheat

Avoiding Cross-Contact

There is also the risk of spreading gluten to food items by **Cross-Contact** in the kitchen. If at all possible, it is best to have a separate work counter, equipment, and utensils to prepare gluten-free foods. If the restaurant kitchen is too small to provide a separate space, then the work counter, equipment, and utensils must be carefully cleaned before they are used to prepare gluten-free foods.

- ✗ Gluten-free foods should not be prepared using the same fryer and fry oil that is used to fry breaded items and French fries.
- ✗ Gluten-free foods should not be prepared on the same grill (griddle) or broiler pan used for breaded meat, poultry, or fish products.
- ✗ Gluten-free pasta should not be boiled in the same water used to prepare other pastas.

Kitchen employees and servers must also be careful not to spread gluten to foods by **Cross-Contact** when they handle foods.



Before preparing Gluten-Free Foods:

- ✓ Wash hands carefully
- ✓ Change gloves and aprons
- ✓ Use a designated area to prepare gluten-free foods
(If a designated prep area is not available, clean and sanitize equipment between gluten-free food preparation.)
- ✓ Use a separate, clean utensil to serve gluten-free foods
- ✓ Bring gluten-free items to the guest's table separately

All of these actions will prevent spreading gluten to foods by **Cross-Contact**.

STANDARD OPERATING PROCEDURES: GLUTEN IN FOODS

- Wash hands before preparing gluten-free foods
- Change gloves and aprons before preparing gluten-free foods
- Use a clean work counter, clean equipment, and clean utensils to prepare gluten-free foods
- Prepare gluten-free foods according to the menu and recipes with no substitutions
- Do not add commercial marinades or sauces to gluten-free foods
- Serve a gluten-free food order separately to a customer

Gluten in Foods

Module Quiz: Please make sure you have read Chapter 5 – Module 1 before you take the quiz. Correct answers are highlighted in **bold** with reference pages from the Employee Manual in parenthesis.

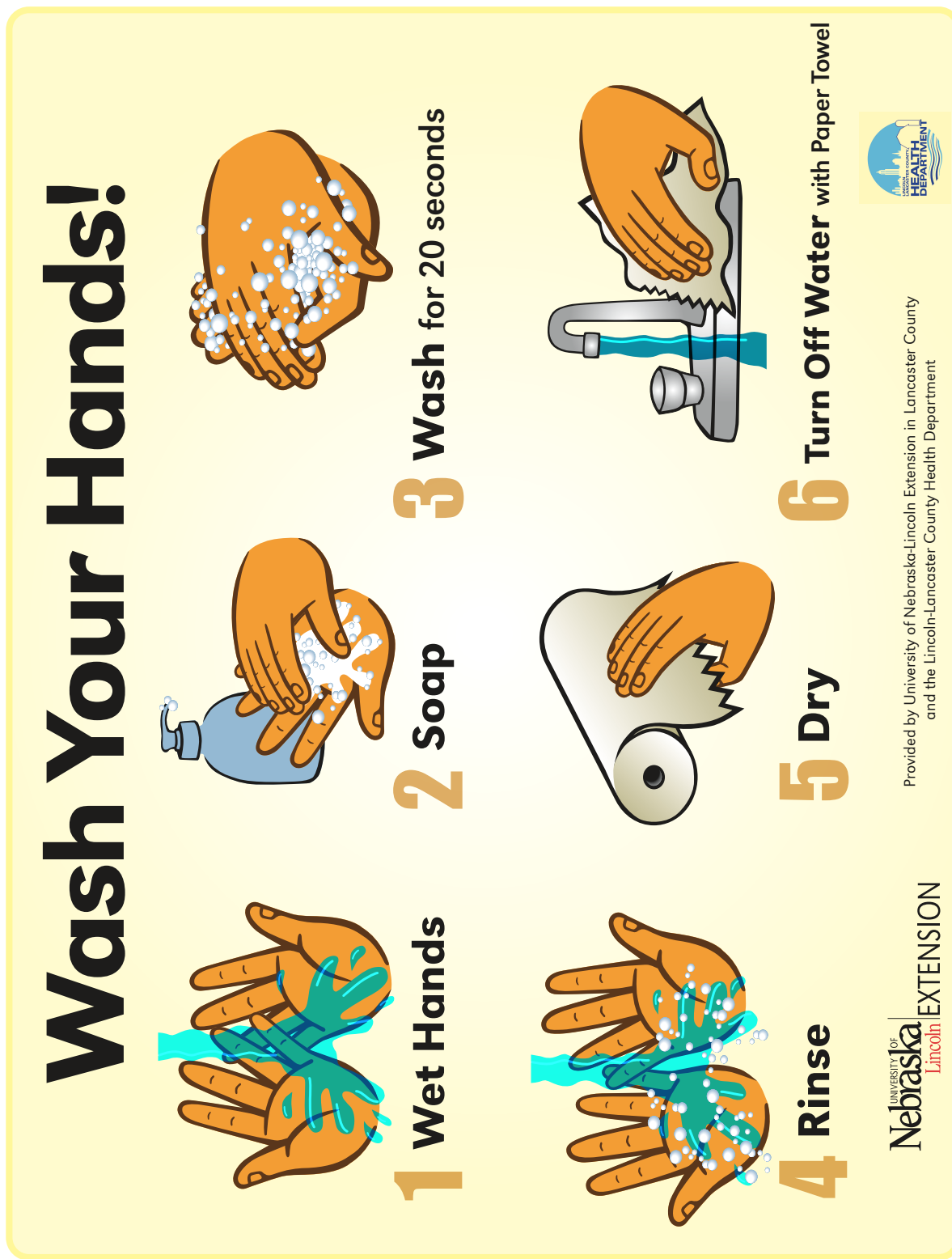
1. Gluten is:
 - a. A sugar found in all breads
 - b. A protein found in rice and corn
 - c. A protein found in wheat, barley, and rye (page 103)**
 - d. Both b and c are correct
2. Common symptoms of a person consuming gluten when they have Celiac Disease include:
 - a. Stomach pain
 - b. Diarrhea
 - c. Vomiting
 - d. All of the above (page 103)**
3. A person with gluten sensitivity who eats gluten can cause damage to their intestinal tract.
 - a. True
 - b. False (page 103)**
4. Which of the following grains is considered safe on a gluten-free diet?
 - a. Wheat
 - b. Rice (page 104)**
 - c. Rye
 - d. Barley
5. Which scenario would likely lead to Cross-Contact of gluten in a kitchen?
 - a. Regular pancakes and gluten-free pancakes are cooked on separate griddles.
 - b. French fries are fried in the same fryer as breaded shrimp. (page 105)**
 - c. Kitchen employees change gloves and aprons prior to preparing gluten-free foods.
 - d. Kitchen employees wash hands thoroughly between preparing regular pasta and gluten-free pasta.

Appendix A: Web Site Resources

Food Allergy Research and Educations Website (FARE)	www.foodallergy.org
Food Allergy Research and Resource Program (FARRP)	www.farrp.org
National Restaurant Association	www.restaurant.org
Centers for Disease Control and Prevention	www.cdc.gov
USDA Food Safety and Inspection Service FSIS Automated live chat system	www.fsis.usda.gov AskKaren.gov
FoodSafety.gov	www.foodsafety.gov
U.S. Food and Drug Administration	www.fda.gov
Recalls, Market Withdrawals, & Safety Alerts *Sign up to receive Recalls, Market Withdrawals and Safety Alerts	www.fda.gov/safety/recalls/
SafeFare: Dining Out with Food Allergies	www.safefare.org
Gluten-Free Certification Organization	www.gfco.org
National Foundation for Celiac Awareness NFCA	www.celiaccentral.org
Celiac Support Association	www.csaceliacs.org

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Appendix B: Poster Resources



<http://food.unl.edu/safety/handwashing>

Don't Let What Happened to Me, Happen to You



My name is David. One day, while at work, I started feeling sick and ran for the bathroom.



I felt better, so I returned to finish my shift. I needed the money. An order came in for a salad. I forgot to wash my hands or wear gloves.



I did not know I had germs on my hands. I passed my germs to the tomatoes . . .



. . . and to the cucumbers . . .



. . . and to the entire salad . . .



. . . and to a little girl named Ashlynn who ate the salad that I prepared.



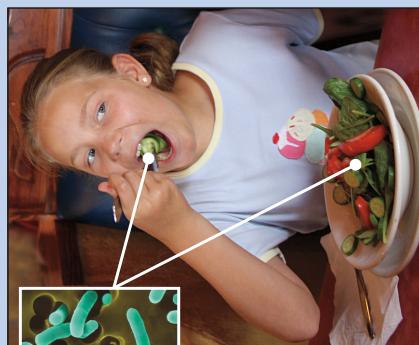
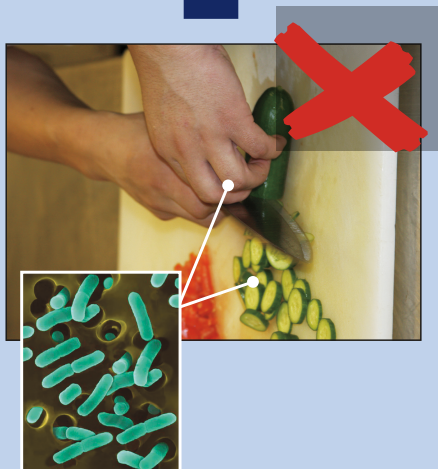
The next day, Ashlynn got so sick with stomach cramps and vomiting. In fact, dozens of people got sick because I continued to prepare food that day.



I could have prevented this from happening.

Protect People Everywhere: Wash Your Hands, Use Gloves or Utensils, and Never Work When You Are Sick.

If you wear gloves or use utensils when handling ready-to-eat foods, you keep the food and your customers safe.



Protect people from getting sick. Always wear gloves or use utensils when handling ready-to-eat foods.



FOOD ALLERGIES: KEEP YOUR GUESTS SAFE

EVERY 3 MINUTES A FOOD ALLERGY REACTION SENDS SOMEONE TO THE EMERGENCY ROOM.

THE "TOP EIGHT" COMMON FOOD ALLERGENS:



Peanuts



Tree Nuts



Fish



Shellfish



Eggs



Milk

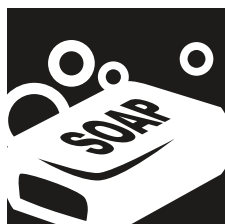


Wheat



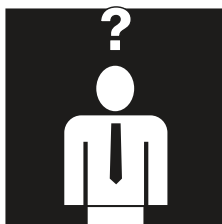
Soy

Food allergies are serious. AN ALLERGIC REACTION TO FOOD CAN CAUSE DEATH. When you are serving a person with a food allergy:



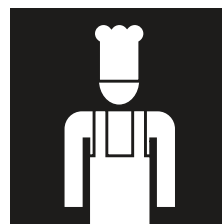
AVOID CROSS-CONTACT FROM THE START.

Clean the dining area with clean soap and water and a clean towel between each guest.



MAKE SURE YOU UNDERSTAND THE ALLERGY.

Write down the guest's allergy to record the conversation. If you have questions, ask the guest.

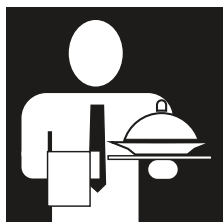


TAKE ALL FOOD ALLERGY REQUESTS SERIOUSLY.

Refer the allergy to the chef, manager or person in charge.

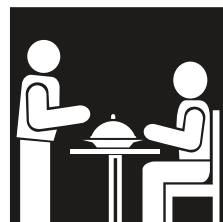


USE ONLY FRESH INGREDIENTS, INCLUDING COOKING OIL.



GET IT THERE SAFELY.

Double check with the chef to make sure you have the right meal. Don't let anyone add garnishes. Carry the special meal to the table separately.



CHECK WITH THE GUEST TO MAKE SURE THEY ARE SATISFIED WITH THEIR MEAL.

AVOID CROSS-CONTACT! All food equipment that is used in the handling and processing of allergy-safe foods must be properly cleaned and sanitized before use.

CALL 911 AT THE FIRST SIGN OF A REACTION!

Provided courtesy of:
Food Allergy Research & Education (FARE) • www.foodallergy.org
AND MenuTrinfo • www.MenuTrinfo.com • (888) 767-6368
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Appendix D: Reading a Label for Potential Food Allergens



Tips for Avoiding Your Allergen

- All FDA-regulated manufactured food products that contain a “major food allergen” (milk, wheat, egg, peanuts, tree nuts, fish, crustacean shellfish, and soy) as an ingredient are required by U.S. law to list that allergen on the product label. For tree nuts, fish and crustacean shellfish, the specific type of nut or fish must be listed.
- Read all product labels carefully before purchasing and consuming any item.
- Be aware of unexpected sources of allergens, such as the ingredients listed below.
- *Note: This list does not imply that the allergen is always present in these foods; it is intended to serve as a reminder to always read the label and ask questions about ingredients.



For a Milk-Free Diet

Avoid foods that contain milk or any of these ingredients:

butter, butter fat, butter oil, butter acid, butter ester(s)	lactalbumin, lactalbumin phosphate	<i>solids, whole</i>
buttermilk	lactoferrin	milk protein hydrolysate
casein	lactose	pudding
casein hydrolysate	lactulose	Recaldent®
caseinates (<i>in all forms</i>)	milk (<i>in all forms, including condensed, derivative, dry, evaporated, goat's milk and milk from other animals, lowfat, malted, milkfat, nonfat, powder, protein, skimmed,</i>	rennet casein
cheese		sour cream, sour cream solids
cottage cheese		sour milk solids
cream		tagatose
curds		whey (<i>in all forms</i>)
custard		whey protein hydrolysate
diacetyl		yogurt
ghee		
half-and-half		

Milk is sometimes found in the following:

artificial butter flavor	culture and other bacterial cultures	nisin
baked goods	luncheon meat, hot dogs, sausages	nondairy products
caramel candies	margarine	nougat
chocolate		
lactic acid starter		

Keep the following in mind:

- Individuals who are allergic to cow's milk are often advised to also avoid milk from other domestic animals. For example, goat's milk protein is similar to cow's milk protein and may, therefore, cause a reaction in individuals who have a milk allergy.



For a Wheat-Free Diet

Avoid foods that contain wheat or any of these ingredients:

bread crumbs	protein, instant, pastry, self-rising, soft	semolina
bulgur	wheat, steel ground, stone ground, whole wheat	spelt
cereal extract	hydrolyzed wheat protein	sprouted wheat
club wheat	Kamut®	triticale
couscous	matzoh, matzoh meal (<i>also spelled as matzo, matzah, or matza</i>)	vital wheat gluten
cracker meal	pasta	wheat (<i>bran, durum, germ, gluten, grass, malt, sprouts, starch</i>)
durum	seitan	wheat bran hydrolysate
einkorn		wheat germ oil
emmer		wheat grass
farina		wheat protein isolate
flour (<i>all purpose, bread, cake, durum, enriched, graham, high gluten, high</i>		whole wheat berries

Wheat is sometimes found in the following:

glucose syrup	soy sauce	surimi
oats	starch (<i>gelatinized starch, modified starch, modified food starch, vegetable starch</i>)	



For an Egg-Free Diet

Avoid foods that contain eggs or any of these ingredients:

albumin (<i>also spelled albumen</i>)	livetin	vitellin
egg (<i>dried, powdered, solids, white, yolk</i>)	lysozyme	words starting with "ovo" or "ova" (<i>such as ovalbumin</i>)
egg nog	mayonnaise	
globulin	meringue (<i>meringue powder</i>)	
	surimi	

Egg is sometimes found in the following:

baked goods	fried rice	meatloaf or meatballs
breaded items	ice cream	nougat
drink foam (<i>alcoholic, specialty coffee</i>)	lecithin	pasta
egg substitutes	marzipan	
	marshmallows	

Keep the following in mind:

- Individuals with egg allergy should also avoid eggs from duck, turkey, goose, quail, etc., as these are known to be cross-reactive with chicken egg.
- While the whites of an egg contain the allergenic proteins, patients with an egg allergy must avoid all eggs completely.



For a Soy-Free Diet

Avoid foods that contain soy or any of these ingredients:

edamame	soy protein (<i>concentrate, hydrolyzed, isolate</i>)
miso	shoyu
natto	soy sauce
soy (<i>soy albumin, soy cheese, soy fiber, soy flour, soy grits, soy ice cream, soy milk, soy nuts, soy sprouts, soy yogurt</i>)	tamari
soya	tempeh
soybean (<i>curd, granules</i>)	textured vegetable protein (TVP)
	tofu

Soy is sometimes found in the following:

Asian cuisine	vegetable gum
vegetable broth	vegetable starch

Keep the following in mind:

- The FDA exempts highly refined soybean oil from being labeled as an allergen. Studies show most allergic individuals can safely eat soy oil that has been highly refined (not cold pressed, expeller pressed, or extruded soybean oil).
- Most individuals allergic to soy can safely eat soy lecithin.
- Follow your doctor's advice regarding these ingredients.

Tips for Avoiding Your Allergen



For a Shellfish-Free Diet

Avoid foods that contain shellfish or any of these ingredients:

barnacle	lobster (<i>langouste</i> ,	prawns
crab	<i>langoustine</i> , Moreton	shrimp (<i>crevette</i> ,
crawfish (<i>crawdad</i> ,	<i>bay bugs</i> , <i>scampi</i> ,	<i>scampi</i>)
<i>crayfish</i> , <i>ecrevisse</i>)	<i>tomalley</i>)	
krill		

! Mollusks are not considered major allergens under food labeling laws and may not be fully disclosed on a product label.

Your doctor may advise you to avoid mollusks or these ingredients:

abalone	limpet (<i>lapas</i> , <i>opihi</i>)	sea cucumber
clams (<i>cherrystone</i> ,	mussels	sea urchin
<i>geoduck</i> , <i>littleneck</i> ,	octopus	snails (<i>escargot</i>)
<i>pismo</i> , <i>quahog</i>)	oysters	squid (<i>calamari</i>)
cockle	periwinkle	whelk (<i>Turban shell</i>)
cuttlefish	scallops	

Shellfish are sometimes found in the following:

bouillabaisse	fish stock	surimi
cuttlefish ink	seafood flavoring (e.g.,	
glucosamine	<i>crab or clam extract</i>)	

Keep the following in mind:

- Any food served in a seafood restaurant may contain shellfish protein due to cross-contact.
- For some individuals, a reaction may occur from inhaling cooking vapors or from handling fish or shellfish.



For a Peanut-Free Diet

Avoid foods that contain peanuts or any of these ingredients:

artificial nuts	goobers	nut meat
beer nuts	ground nuts	peanut butter
cold pressed, expeller	mixed nuts	peanut flour
pressed, or extruded	monkey nuts	peanut protein
peanut oil	nut pieces	hydrolysate

Peanut is sometimes found in the following:

African, Asian	baked goods (e.g.,	enchilada sauce
(especially	<i>pastries</i> , <i>cookies</i>)	marzipan
<i>Chinese</i> , <i>Indian</i> ,	<i>candy (including</i>	mole sauce
<i>Indonesian</i> , <i>Thai</i> ,	<i>chocolate candy</i>)	nougat
and <i>Vietnamese</i>), and	<i>chili</i>	
Mexican dishes	<i>egg rolls</i>	

Keep the following in mind:

- Mandelonas are peanuts soaked in almond flavoring.
- The FDA exempts highly refined peanut oil from being labeled as an allergen. Studies show that most allergic individuals can safely eat peanut oil that has been highly refined (not cold pressed, expeller pressed, or extruded peanut oil). Follow your doctor's advice.
- A study showed that unlike other legumes, there is a strong possibility of cross-reaction between peanuts and lupine.
- Arachis oil is peanut oil.
- Many experts advise patients allergic to peanuts to avoid tree nuts as well.
- Sunflower seeds are often produced on equipment shared with peanuts.
- Some alternative nut butters, such as soy nut butter or sunflower seed butter, are produced on equipment shared with other tree nuts and, in some cases, peanuts. Contact the manufacturer before eating these products.



For a Tree-Nut-Free Diet

Avoid foods that contain nuts or any of these ingredients:

almond	hickory nut	nut pieces
artificial nuts	litchi/lychee/lychee nut	pecan
beechnut	macadamia nut	pesto
Brazil nut	marzipan/almond paste	pili nut
butternut	Nangai nut	pine nut (<i>also referred</i>
cashew	natural nut extract	<i>to as Indian</i> , <i>pignoli</i> ,
chestnut	(e.g., <i>almond</i> , <i>walnut</i>)	<i>pignolia</i> , <i>pignon</i> ,
chinquapin nut	nut butters (e.g.,	<i>piñon</i> , and <i>pinyon</i>
coconut*	<i>cashew butter</i>)	<i>nut</i>)
filbert/hazelnut	nut meal	pistachio
gianduja (<i>a chocolate-</i>	nut meat	praline
<i>nut mixture</i>)	nut paste (e.g., <i>almond</i>	shea nut
ginkgo nut	<i>paste</i>)	walnut

Tree nuts are sometimes found in the following:

black walnut hull	nut distillates/alcoholic	walnut hull extract
extract (<i>flavoring</i>)	extracts	(<i>flavoring</i>)
natural nut extract	nut oils (e.g., <i>walnut</i>	
	<i>oil</i> , <i>almond oil</i>)	

Keep the following in mind:

- Mortadella may contain pistachios.
- There is no evidence that coconut oil and shea nut oil/butter are allergenic.
- Many experts advise patients allergic to tree nuts to avoid peanuts as well.
- Talk to your doctor if you find other nuts not listed here.
- * Coconut, the seed of a drupaceous fruit, has typically not been restricted in the diets of people with tree nut allergy. However, in October of 2006, the FDA began identifying coconut as a tree nut. Medical literature documents a small number of allergic reactions to coconut; most occurred in people who were not allergic to other tree nuts. Ask your doctor if you need to avoid coconut.



For a Fish-Free Diet

Fish is sometimes found in the following:

barbecue sauce	fish oil	pizza (<i>anchovy topping</i>)
bouillabaisse	fish sauce imitation fish	roe
Caesar salad	or shellfish isinglass	salad dressing
caviar	lutefisk maw, maws	seafood flavoring
deep fried items	(<i>fish maw</i>)	shark cartilage
fish flavoring	fish stock	shark fin
fish flour	fishmeal	surimi
fish fume	nuoc mam (<i>Vietnamese</i>	sushi, sashimi
fish gelatin (<i>kosher</i>	<i>name for fish sauce</i> ;	Worcestershire sauce
<i>gelatin</i> , <i>marine</i>	<i>beware of other ethnic</i>	
<i>gelatin</i>)	<i>names</i>)	

Keep the following in mind:

- If you have fish allergy, avoid seafood restaurants. Even if you order a non-fish item off of the menu, cross-contact of fish protein is possible.
- Asian cookery often uses fish sauce as a flavoring base. Exercise caution when eating this type of cuisine.
- Fish protein can become airborne in the steam released during cooking and may cause an allergic reaction. Stay away from cooking areas when fish is being prepared.



Appendix E: Clean-up after Norovirus

Clean-up and Disinfection for Norovirus ("Stomach Bug")

THESE DIRECTIONS SHOULD BE USED TO RESPOND TO ANY VOMITING OR DIARRHEA ACCIDENT

Note: Anything that has been in contact with vomit and diarrhea should be discarded or disinfected.

1 Clean up

- Remove vomit or diarrhea right away!**
 - Wearing protective clothing, such as disposable gloves, apron and/or mask, wipe up vomit or diarrhea with paper towels
 - Use kitty litter, baking soda or other absorbent material on carpets and upholstery to absorb liquid; do not vacuum material: pick up using paper towels
 - Dispose of paper towel/waste in a plastic trash bag or biohazard bag
- Use soapy water to wash surfaces that contacted vomit or diarrhea and all nearby high-touch surfaces, such as door knobs and toilet handles**
- Rinse thoroughly with plain water**
- Wipe dry with paper towels**

DON'T STOP HERE: GERMS CAN REMAIN ON SURFACES EVEN AFTER CLEANING!


2 Disinfect surfaces by applying a chlorine bleach solution

Steam cleaning may be preferable for carpets and upholstery. Chlorine bleach could permanently stain these. Mixing directions are based on EPA-registered bleach product directions to be effective against norovirus.

For best results, consult label directions on the bleach product you are using.

a. Prepare a chlorine bleach solution

Make bleach solutions fresh daily; keep out of reach of children; never mix bleach solution with other cleaners.




IF HARD SURFACES ARE AFFECTED...
e.g., non-porous surfaces, vinyl, ceramic tile, sealed counter-tops, sinks, toilets

3/4 CUP OF CONCENTRATED BLEACH + **1 GALLON WATER**

CONCENTRATION ~3500 ppm

IF USING REGULAR STRENGTH BLEACH (5.25%), INCREASE THE AMOUNT OF BLEACH TO 1 CUP.

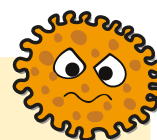


- Leave surface wet for at least 5 minutes**
- Rinse all surfaces intended for food or mouth contact with plain water before use**

3 Wash your hands thoroughly with soap and water

Hand sanitizers may not be effective against norovirus.

Facts about Norovirus



Norovirus is the leading cause of outbreaks of diarrhea and vomiting in the US, and it spreads quickly.

Norovirus spreads by contact with an infected person or by touching a contaminated surface or eating contaminated food or drinking contaminated water. Norovirus particles can even float through the air and then settle on surfaces, spreading contamination.

Norovirus particles are extremely small and billions of them are in the stool and vomit of infected people.

Any vomit or diarrhea may contain norovirus and should be treated as though it does.

People can transfer norovirus to others for at least three days after being sick.

IF CLOTHING OR OTHER FABRICS ARE AFFECTED...

- Remove and wash all clothing or fabric that may have touched vomit or diarrhea
- Machine wash these items with detergent, hot water and **bleach** if recommended, choosing the longest wash cycle
- Machine dry



Scientific experts from the U.S. Centers for Disease Control and Prevention (CDC) helped to develop this poster. For more information on norovirus prevention, please see <http://www.cdc.gov/norovirus/preventing-infection.html>.



disinfect-for-health.org

Updated March, 2015

Appendix F: Emergency Preparation Guidelines



Preparing for a Weather Emergency

Severe weather events can mean power outages, floods, and other problems that can affect the safety of food. Knowing what to do before and after a weather event can help you reduce your risk of illness. By following these guidelines, you can also minimize the amount of food that may be lost due to spoilage.

Especially in storm-prone areas, power outages can be a common problem. Power outages can occur at any time of the year and it may take from a few hours to several days for electricity to be restored to residential areas. Without electricity or a cold source, food stored in refrigerators and freezers can become unsafe. Bacteria in food grow rapidly at temperatures between 40 and 140 °F, and if these foods are consumed, people can become very sick.

Steps to follow to prepare for a possible weather emergency

- Keep an appliance thermometer in the refrigerator and freezer. An appliance thermometer indicates the temperature in the refrigerator and freezer. In the case of a power outage, it can help determine the safety of the food.
- Make sure the freezer is at 0 °F or below and the refrigerator is at 40 °F or below.
- Freeze containers of water ahead of time for ice to help keep food cold in the freezer, refrigerator, or coolers after the power is out. Freeze gel packs for use in coolers.
- Freeze refrigerated items such as leftovers, milk and fresh meat and poultry that you may not need immediately — this helps keep them at a safe temperature longer.
- Plan ahead and know where dry ice and block ice can be purchased.
- Have coolers on hand to keep refrigerated food cold if the power will be out for more than 4 hours.
- Group food together in the freezer — this helps the food stay cold longer.
- Store food on shelves that will be safely out of the way of contaminated water in case of flooding.

Steps to follow after the weather emergency

- Keep the refrigerator and freezer doors closed as much as possible to maintain the cold temperature.
- The refrigerator will keep food safe for about 4 hours if it is unopened. A full freezer will hold the temperature for approximately 48 hours (24 hours if it is half full) and the door remains closed.
- Discard refrigerated perishable food such as meat, poultry, fish, soft cheeses, milk, eggs, leftovers, and deli items after 4 hours without power.
- Food may be safely refrozen if it still contains ice crystals or is at 40 °F or below when checked with a food thermometer.
- Never taste a food to determine its safety!
- Obtain dry or block ice to keep your refrigerator and freezer as cold as possible if the power is going to be out for a prolonged period of time. Fifty pounds of dry ice should hold an 18-cubic-foot full freezer for 2 days.
- If the power has been out for several days, check the temperature of the freezer with an appliance thermometer. If the appliance thermometer reads 40 °F or below, the food is safe to refreeze.
- If a thermometer has not been kept in the freezer, check each package of food to determine its safety. If the food still contains ice crystals, the food is safe.

The Food Safety and Inspection Service (FSIS) is the public health agency in the U.S. Department of Agriculture responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged.

USDA Meat & Poultry Hotline
1-888-MPHotline
(1-888-674-6854)

Preparing for a Weather Emergency

During Snow and Ice Storms

- During a snowstorm, do not place perishable food out in the snow. Outside temperatures can vary and food can be exposed to unsanitary conditions and animals. Instead, make ice. Fill buckets, empty milk containers, or cans with water and leave them outside to freeze. Use this ice to help keep food cold in the freezer, refrigerator, or coolers.

If Flooding Occurs

- Drink only bottled water that has not come in contact with flood water. Discard any bottled water that may have come in contact with flood water.
- Discard any food that is not in a waterproof container if there is any chance it may have come in contact with flood water. Food containers that are not waterproof include those with screw-caps, snap lids, pull tops, and crimped caps.
- Discard wooden cutting boards, plastic utensils, baby bottle nipples, and pacifiers that may have come in contact with flood water.
- Undamaged, commercially prepared foods in all-metal cans and retort pouches (for example, flexible, shelf-stable juice or seafood pouches) can be saved. Follow the "Steps to Salvage All-Metal Cans and Retort Pouches" in the publication *Keeping Food Safe During an Emergency* at:

www.fsis.usda.gov/Fact_Sheets/keeping_food_Safe_during_an_emergency/index.asp

- Thoroughly wash all metal pans, ceramic dishes, and utensils that came in contact with flood water with hot soapy water. Sanitize by boiling them in clean water or by immersing them for 15 minutes in a solution of 1 tablespoon unscented, liquid chlorine bleach per gallon of drinking water.

To Remove Odors from Refrigerators and Freezers

If food has spoiled in a refrigerator or freezer and odors from the food remain, they may be difficult to remove. The following procedures may help but may have to be repeated several times.

- Dispose of any spoiled or questionable food.
- Remove shelves, crispers, and ice trays. Wash them thoroughly with hot water and detergent. Then rinse with a sanitizing solution (1 tablespoon unscented, liquid chlorine bleach per gallon of water).
- Wash the interior of the refrigerator and freezer, including the door and gasket, with hot water and baking soda. Rinse with sanitizing solution as above.
- Leave the door open for about 15 minutes to allow free air circulation. For more information about removing odors, see

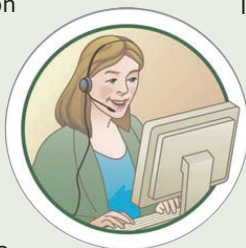
www.fsis.usda.gov/PDF/Removing_Odors_from_Refrigerators_and_Freezers.pdf

When in Doubt, Throw it Out!

Food Safety Questions?

Call the USDA Meat & Poultry Hotline

If you have a question about meat, poultry, or egg products, call the USDA Meat and Poultry Hotline toll free at **1-888-MPHotline (1-888-674-6854)**; TTY: 1-800-256-7072.



The Hotline is open year-round Monday through Friday from 10 a.m. to 4 p.m. ET (English or Spanish). Recorded food safety messages are available 24 hours a day. Check out the FSIS Web site at **www.fsis.usda.gov**.

Send E-mail questions to **MPHotline.fsis@usda.gov**.

Ask Karen!

FSIS' automated response system can provide food safety information 24/7.

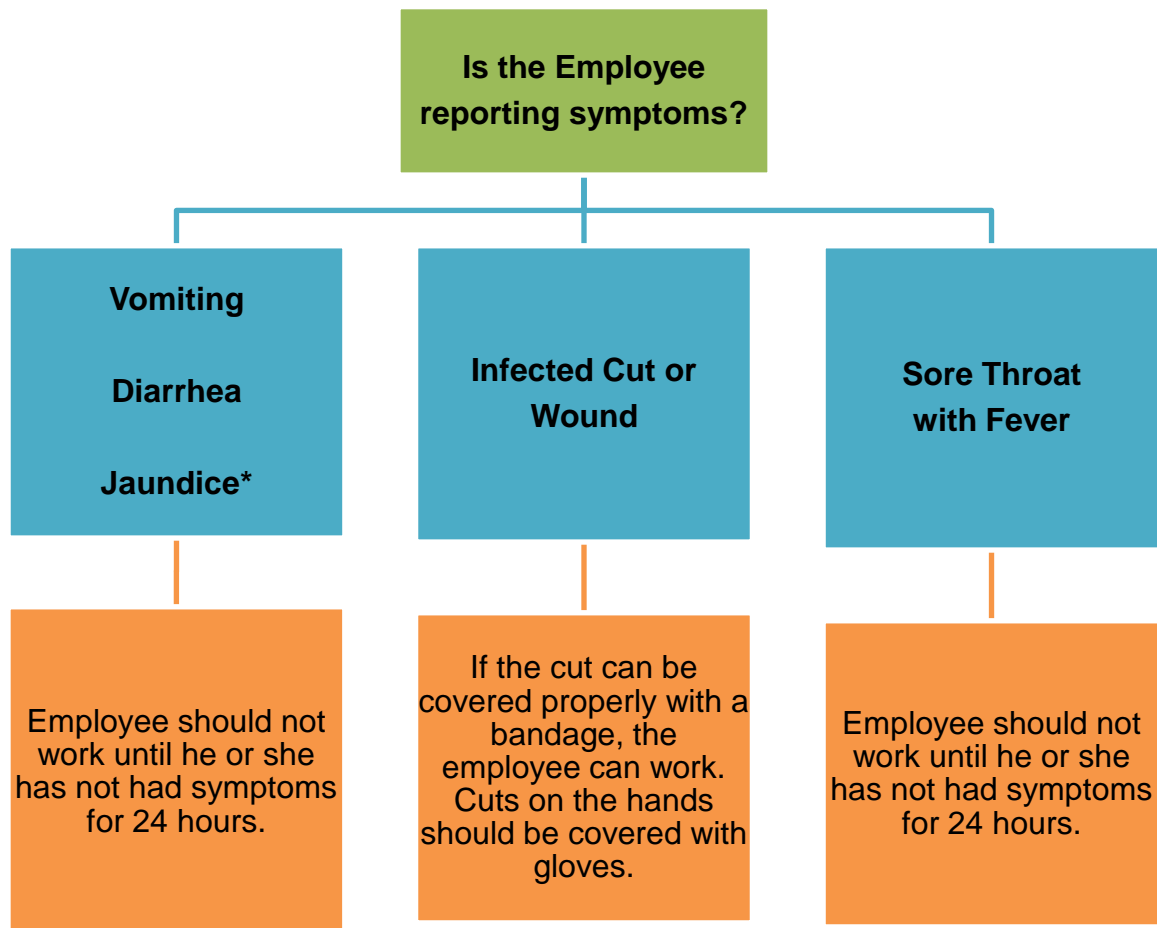


AskKaren.gov

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Appendix G: Employee Illness Guidelines and Flowcharts



*Jaundice and other diagnoses should be evaluated separately and reported to the local health department. Additional guidelines are available through the Food and Drug Administration. If you work with a highly susceptible population (elderly, sick, pre-school aged children, or patients receiving medical care) additional precautions may apply because foodborne illness may be more severe for those individuals.

Adapted from: 2-201.11 / 2-201.12 Decision Tree 1.

When to Exclude or Restrict a Food Employee Who Reports a Symptom and When to Exclude a Food Employee Who Reports a Diagnosis with Symptoms Under the Food Code

Available at

<http://www.fda.gov/downloads/Food/GuidanceRegulation/RetailFoodProtection/IndustryandRegulatoryAssistanceandTrainingResources/UCM184335.pdf>

Glossary of Terms

- **Allergen:** Any substance that causes an allergic reaction. Common allergens include dust, animal dander, insect bites, food, and medications.
- **Allergic reaction to food:** Illness caused by ingesting food naturally containing proteins to which an individual is allergic. Symptoms range from an itchy rash, nausea, shortness of breath, swelling, to an anaphylaxis and death.
- **The Big Eight:** Eight foods that cause most of the allergic reactions from food which include milk, eggs, soy, wheat, fish, crustacean shellfish, peanuts, and tree nuts.
- **Boiling-point method:** uses boiling water to check the calibration (accuracy) of the thermometer at the boiling point (212°F)
- **Cleaning:** removing food particles and other soil that can be seen on surfaces by using detergents.
- **Consumer advisory menu labeling:** labels included on menus that disclose and warn customers of raw or undercooked ingredients and associated risks.
- **Corrective action:** what should be done if a critical limit is not met.
 - For instance: A cook checks the temperature of a chicken breast on the grill. The minimum internal temperature of the chicken breast has not reached the Critical Limit of 165°F. The Corrective Action would require additional cooking time until the minimum internal temperature reaches 165°F.
- **Critical control point (CCP):** the point during food preparation where action can be taken to eliminate or reduce the risk of a food safety hazard.
- **Critical limit (CL):** the actual measurement or value to which a biological, chemical or physical parameter must be controlled (ex. Temperature).
- **Cross contact:** the accidental transfer of food allergens from one food to another by employee failing to adhere to food safety practices.
- **Cross contamination:** accidental transfer of food pathogens (bacteria or viruses) from one food or food contact surface to another food.
- **Date marking:** labeling the food with the date that the food must be eaten by. Food not eaten by this date must be thrown away.
- **First in First Out (FIFO):** inventory management system so for food rotation so the items are used in the order they are received.
- **Food allergy:** An immune response caused by eating a specific food item. The most common causes of food allergies in the United States are milk, eggs, soy, wheat, fish, crustacean shellfish, peanuts and tree nuts (The Big Eight).

- **Food allergy menu labeling:** labels included on menu that identify potential food allergens.
- **Foodborne illness:** illness caused by ingesting food contaminated by bacteria, viruses, parasites, and other pathogens.
- **Foodborne pathogen:** Bacteria, viruses, or parasites that are transmitted to people through food.
- **Food recall:** corrective action by a company or governmental agency to remove food products from the market that pose a health hazard to consumers.
- **Food safety culture:** food safety behavior in a restaurant.
- **Hazard Analysis Critical Control Points (HACCP):** a program designed to identify food safety hazards and reduce risk of foodborne illness for any foodservice operation.
- **Ice-point method:** uses crushed ice and water to check the calibration (accuracy) of the thermometer at the freezing point (32°F)
- **Time/Temperature Control for Safety Foods (TCF):** are foods that commonly contain harmful bacteria and viruses or are easily contaminated from other foods and require special attention and extra care.
- **Ready-to-Eat foods (RTE):** foods that will not receive additional cooking before being served to customers such as salads, sandwiches, baked goods etc....
- **Sanitizing:** using heat or chemicals to kill harmful organisms that could cause foodborne illness. Kill remaining bacteria after cleaning (99.99%); however, do NOT kill food allergens.
- **Standard Operating Procedures (SOP):** guidelines that each restaurant develops for employees to follow.
- **Standardized recipes:** written recipes that list ingredients, equipment and methods with exact measures and instructions.
- **Temperature Danger Zone (TDZ):** temperature range from 41° F – 135°F commonly associated with increased potential for bacterial growth.
- **Thermometer calibration:** verifying the accuracy of temperature reading and adjusting the thermometer, as needed using either the ice-point method or boiling-point method.