**FOOD SAFETY**

Before employees are permitted to work with food, safety programs should have taken place instructing the proper implementation of personal hygiene, food service and preparation, and managerial practices. Managerial practices include constantly checking food stations and workers to ensure the necessary practices are being observed. Management should also never admit fault in the case of a foodborne illness outbreak. Instead, management should work to discover the initial culprit and immediately eradicate said cause.

1. **Personal Hygiene**
2. **Hand washing**

When done properly, hand washing is one of the most effective ways food handlers must do to prevent foodborne illnesses. To make sure washing is effective, follow this procedure:

1. Use hot water.
2. Apply bar or liquid soap. Antibacterial soap is not necessary.
3. Scrub vigorously for 10–15 seconds, making sure to wash in between fingers and under nails.
4. Rinse thoroughly.
5. Use paper towel to turn off faucet.
6. Dry hands on a clean paper towel or with a hand dryer.
7. If in a restroom, open door with a paper towel.

Hand washing should occur frequently, and should always be done in the following instances:

1. After using the restroom
2. Before putting on gloves
3. After handling a soiled or dirty dishes or utensils
4. After touching money
5. After touching raw meat
6. Before food preparation
7. **Gloves**

Depending on your role in the food service industry, you may be required to wear gloves. Make sure the gloves you are provided with fit comfortably. They should be changed frequently, and also in the following instances:

1. Before beginning a new task
2. Before handling ready-to-eat food (such as an apple or bag of chips).
3. After handling raw meat or seafood
4. Whenever they are dirty or damaged
5. **Appearance**

As a member of the food service industry, you are also expected to keep a neat and clean appearance. This means trimmed nails, clean clothing, and loose or long hair fastened securely back. Artificial nails and finger nail polish are typically not allowed, and many employers do not allow jewelry (though some make an exception for a plain wedding band). If you have an injury or sore on your arm or hand, the affected area should be covered with a bandage and a finger cot and/or glove. If the injury is oozing or infected, you should not handle food.

1. **Food Service and Preparation**
2. **The Flow of Food**

As food comes in and out of your establishment, it requires safe handling and preparation. While it may seem simple enough to receive and store food, you must ensure that all received food is stored properly and is within its safe use dates. As food enters and leaves an establishment, it must constantly be monitored for freshness and safety.

1. **Purchasing, Receiving, and Storing**

When purchasing food, always be sure to purchase from reputable establishments. While it may be tempting to ship food in from unapproved areas, or to go for the cheapest food option, adhering to safety guidelines while producing and storing food is pivotal. Read company statements and practices before deciding to purchase with that particular entity, and make sure safe practices are being followed.

When food is being received, it must adhere to all federal and state guidelines. In addition, you must ensure that all food is delivered at safe temperatures. Here are some guidelines to keep in mind:

1. 41 degrees or colder for cold foods.
2. 45 degrees or lower for live shellfish, milk, and eggs.
3. 135 degrees or hotter for hot food.
4. All frozen foods must remain frozen during delivery

No matter which type of food you are handling, it should always be promptly stored after being received. Proper food storage has been touched on, but can be restated here: cold foods should be stored at 41 degrees Fahrenheit or lower, while hot foods must be stored at 135 degrees Fahrenheit or higher. Failure to do so will likely result in the introduction of foodborne illness due to bacterial contamination.

1. **Food Storage**

When storing food, make sure it is properly labeled with the name and expiration date. Ensure that refrigerators and freezers are not overloaded and that the food that will expire first is nearest to the front so it will be consumed first. When you are done using any food that needs temperature-controlled storage, return it as quickly as possible to its proper place to prevent bacterial growth.

**Storage Order:** Wrap or cover food. Store raw meat, poultry, and seafood separately from ready-to-eat food. If raw and ready-to-eat food cannot be stored separately, store ready-to-eat food above raw meat, poultry, and seafood. This will prevent juices from raw food from dripping onto ready-to-eat food.

1. **Preparation**

As mentioned above, proper food preparation is essential in delivering safe, high quality food. When preparing food, be sure to use only high-quality metal and plastic utensils, and be sure to properly clean and sanitize all preparation surfaces and utensils. When cooking, vegetables and fruits should be cooked to 135 degrees Fahrenheit or higher, while meats should be cooked to a range of 145 to 165 degrees Fahrenheit or higher. Before cooking, food should be thawed via cool water, a refrigerator, or a microwave. Any food cooked in a microwave should be cooked to 165 degrees Fahrenheit.

1. **Serving**

When serving food, be keenly aware of all food temperatures. Food should not be allowed to remain between 41 degrees Fahrenheit and 135 degrees Fahrenheit for more than 4 hours; food left out for more than 4 hours must be discarded. Serving already-served food is not permitted unless food is sealed and untouched. Finally, self-service stations should only be used with fresh plates. Patrons should not be permitted to reuse dirty plates or utensils because this can contaminate dishes placed out for service.

1. **Time and Temperature**

Controlling the time and temperature of food is the most important way to keep food safe. The “time” aspect of food safety involves such factors as food expiration dates, how long it has been out of a temperature-controlled environment, and cooking time. Because pathogens can flourish in certain conditions, controlling food storage and cooking temperature are equally important. Bacterial growth is most pronounced between 41 degrees Fahrenheit and 135 degrees Fahrenheit, so hot food should be kept well above this range and cold food should be kept in an environment below it. To ensure the food you are handling and serving is the right temperature, it should be checked with a thermometer every 4 hours. To properly check the temperature of food, be familiar with the thermometers used at your facility. Many require calibration, and all need to be cleaned and sterilized before each use. Food temperature should be double-checked for accuracy and should always be taken in the thickest part of the food.

1. **High-risk Foods**

All food can become contaminated in the right circumstances, but certain food categories are especially sensitive. These include, but are not limited to, the following categories:

1. Meats, including chicken, beef, pork, and lamb
2. Shellfish
3. Eggs
4. Milk and cheese
5. Baked potatoes
6. Cooked plant-based foods such as rice and beans
7. Sliced melons
8. Sliced tomatoes
9. Sprouts
10. **Managerial Practices**
11. **Cleaning and Sanitation**

Cleaning and sanitizing are different actions but generally go hand in hand.

1. Cleaning is the process of removing food or other items from a surface.
2. Sanitizing is the act of removing organisms from a surface to improve safety and reduce the risk of exposure to harmful bacteria or fungi.

Cleaning and sanitation of the food preparation area are critical in keeping food safe for consumption. While the equipment and products used to sanitize dishes and food surfaces may vary by facility, the general principles of sanitation are always the same. Any surface that touches food must be cleaned after each use, after 4 hours of use, before a different type of food is used, or any time it becomes dirty or soiled. These surfaces include utensils, dishes, cutting boards, and pans. Surrounding surfaces such as countertops, walls, storage shelves, and kitchen floors should also be cleaned frequently to help prevent bacterial growth.

Just because something looks clean doesn’t mean it is. To properly sanitize, you must:

1. Clean the surface.
2. Rinse the surface.
3. Sanitize the surface.
4. Allow the surface to air-dry.

If using heat for sanitizing, water used to sanitize an item should be at least 171 degrees Fahrenheit, and should remain in contact for 30 seconds. The chemicals used should include a heavy-duty cleaning agent such as Chlorine, Ammonia, or Iodine. No matter which type of chemical your facility uses, make sure they are accurately labeled and stored in an area well away from food and food handling. If the facility you work for has a dishwashing machine, make sure you follow manufacturer’s recommended guidelines and never overload the machine.

Cleaning and sanitation are extremely important in maintaining a well-rounded, safe eating environment. Proper cleaning will help eradicate pests such as mice and cockroaches, while sanitation will assist in warding off foodborne illness and cross-contamination between food items. Following the procedures for cleaning and sanitizing will ensure both workers and customers enjoy a hassle-free, safe dining experience.

1. **Food Safety and Contamination**

Many food safety and contamination concerns are matters of common sense: food should be both heated and cooled to certain temperatures, should not be left out for extended periods of time, should be covered and stored properly, should be stored separately from chemicals and cleaners, etc. Following these guidelines will not only ensure that food is kept safe from foodborne illnesses and contaminants, but that it is imbued with the highest quality and care possible.

1. **Foodborne Illnesses**

Foodborne illnesses are illnesses bred from bacterial food contamination. These include illnesses such as E. coli and Listeriosis (infection from Listeria exposure). Ensuring foods remain free from foodborne illnesses can be achieved in two ways: through proper storage and proper cooking. Proper storage requires that food handlers store all food in temperatures below 41 degrees Fahrenheit (for refrigeration), and exceeding 135 degrees Fahrenheit (storing hot and cooking). Foods held between these temperatures should only be given a 4-hour window before they are either placed back into storage or thrown away. Foods being cooked should first be cooked to 135 degrees Fahrenheit and higher to kill any remaining germs.

While the majority of foodborne illnesses result from bacterial contamination, some illnesses have been caused by viruses and diseases from food service workers. For this reason, it is vitally important to wear protective gear when handling food (keeping hair away from food and avoiding skin-to-food contact), and to practice proper hygiene, through washing your hands for a minimum of 30 seconds with hot water and soap.

While foodborne illnesses pose a risk to everyone, certain populations are more at risk than others. They are:

1. Young children
2. The elderly
3. People who are immuno-compromised
4. **Types of Contamination**

Food contamination takes on many different forms, including biological, physical, and chemical forces, as well as potential allergens. Contamination can occur due to improper food storage (storing food next to chemicals), to improper growing conditions, to exposure to parasites, and to the incorrect use of preparation materials. Below, each of these will be tackled and identified.

There are three types of food contamination: biological, physical, and chemical.

**Biological contamination** occurs when bacteria, viruses, fungi, or parasites are present.

**Physical contamination** occurs when a foreign object is found in the food, such as a hair.

**Chemical contamination** occurs when cleaning agents, sanitizes, or pesticides enter the food.

1. **Biological Contaminants**

Biological contaminates are contaminants found in nature. These include bacteria, parasites, fungi, and environmental toxins. The best way to prevent contamination from biological agents is to adhere to food storage and preparation guidelines, keeping foods at the proper temperatures during storage and cooking.

1. **Bacteria**―Bacteria thrive in moist environments between 41 degrees Fahrenheit and 135 degrees Fahrenheit. The FDA considers three types of bacteria as most dangerous because they are very contagious and cause severe illness: Salmonella Typhi, Shigella, and Escherichia Coli, more commonly referred to as E.coli.
2. **Salmonella:** Salmonella comes from people and is often found in beverages or ready-to-eat foods such as fruits and vegetables. The best way to prevent salmonella is to wash your hands and ensure all food is cooked to the proper temperature.
3. **Shigella:** Shigella originates from human feces. It is spread from flies and improper hand-washing. The best way to prevent Shigella is to observe good hygiene practices and eliminate insects around food.
4. **E. coli:** E. coli originates from cattle intestines and is found in ground beef or fresh produce that may be contaminated from farm-run off, such as lettuce or strawberries. The best way to avoid E. coli is to avoid cross-contamination between ground beef and other foods and to always wash produce before ingestion.
5. **Viruses**―Viruses do not grow in food but can be transferred to food through the fecal-oral route. Sneezing, coughing, and improper hand-washing practices are some of the most common routes of transmission. Hepatitis A and the Norovirus are the most common viruses found in food. They are typically linked with ready-to-eat foods and shellfish.
6. **Parasites**―Parasites are most often found in seafood, wild game meats, and foods that have been washed with contaminated water. To eliminate parasites, always cook foods to the recommended temperature. If the seafood or meat is supposed to be served undercooked or raw (such as in sushi or sashimi), ensure it is stored at the proper temperature and served to the guest immediately.
7. **Fungi**―Fungi includes yeasts, molds, and mushrooms. Fungi pose a problem when they produce toxins that can make the consumer sick. Always be sure the mushrooms you are serving are safe to eat, and throw out any food that has developed mold. In addition to the typical vomiting/diarrhea that many foodborne illnesses cause, ingesting toxic fungi can also cause neurological symptoms, such as a reverse hot/cold sensation or tingling in the extremities.
8. **Physical Contaminants**

Physical contaminants refer to contaminants of an actual foreign physical object. These can include insects or other foreign pests in food or may refer to shards of broken metal or other small, potentially hazardous objects that may be found in food. This also includes human items such as fingernails, hair, and skin. The best means of avoiding this particular contaminant is through a thorough inspection of food items and observation of safe food preparation and hygiene guidelines.

1. **Chemical Contaminants**

Chemical contaminates are contaminants from cleaning supplies, improper surface materials, improper metals, and pesticides. While some pesticide exposure cannot be avoided in conventional foods, thorough cleaning of pesticide-exposed food greatly lessens the chemical contaminant. To avoid chemical contamination in other mediums, store and use cleaning materials a great distance from all food items, and wait the recommended time before using a surface cleaned with chemical agents. Adhere to the rules of food preparation and avoid using soft or unsafe metals and plastics in cooking.

1. **Allergens**
2. **Common Food Allergies**

Food allergies affect over 15 million Americans and cause hundreds of thousands of hospitalizations every year. It’s important that everyone working in the food service industry be familiar with food allergies and the special accommodations that should be made for guests with food allergies.

While allergens are not unsafe for everyone, even the slightest amount of exposure to a food allergy can prove toxic. For this reason, you must acquaint yourself with the equipment you use, the manufacturing facilities your food employs, and the ingredients found in your food items. To avoid allergen exposure during food preparation, be sure to clean and sanitize surfaces and utensils before and after each use. Acquaint yourself with common food allergies, and be aware of the presence of these allergens in your food.

The “big eight” in food allergies are eight foods that cause 90% of all allergic reactions. They are:

1. Peanuts
2. Milk/Dairy
3. Wheat/Gluten
4. Shellfish
5. Eggs
6. Fish
7. Soy
8. Tree nuts

But up to 170 additional foods can elicit an allergic response in people.

1. **Symptoms of Food Allergies**

Reactions to food allergies range from mild to severe, but all should be taken seriously. Common reactions include:

1. Itching or tingling
2. Shortness of breath/wheezing
3. Hives or rash
4. Swelling of the hands or face
5. Abdominal pain or cramps
6. Vomiting and diarrhea
7. Loss of consciousness

Reactions typically occur several minutes to several hours after ingesting the offending food.

1. **Cross-contamination**

Cross-contamination occurs when an allergen comes into contact with another type of food. An example would be using a pan to cook shrimp and then using the same oil to cook chicken. There are many ways to prevent cross-contamination from occurring, but here is a short list:

1. Ensure food is always properly labeled so you know what it is in it.
2. Always clean cookware, servingware, cutting boards, and utensils after each use.
3. Wash hands before and after the handling of different types of foods.
4. Store meats in well-sealed container and on a low-level to prevent the juice from contaminating other types of food underneath.
5. **Related Foods**

Certain allergy-producing foods may be referred to by different names depending on their state. For example, **whey** is the liquid that remains after milk has been curdled or strained and is a common ingredient in many products. **Lecithin** is a highly processed food related to soy.

Being familiar with foods that contain common allergens is also important. For example, chocolate and butter contain milk, so they may pose a problem for those with a milk allergy.

1. **Staff Response to an Allergic Emergency**

If a customer is displaying symptoms of an allergic reaction, you must take action. A staff member should stay with the customer while another staff member dials 911. As symptoms can progress quickly, it is imperative that medical intervention is sought as early as possible. If the customer is having trouble breathing, you may be asked by the EMT if the guest has an epi pen. If you are a manager, you should follow up with the customer a few days after the incident and also explore with your staff the system failures that allowed the customer to be served contaminated food.

1. **Pest Management**

Pest management involves three steps:

1. Denying pets access to the establishment.
2. Deny pests food, shelter, and water.
3. Work with a licensed pest control operator to remove any pests that have made a home for themselves.

While prevention is best, be on the lookout for signs of any existing pest issues. These include roach droppings and egg casings (pepperlike spots and cases that look like thick grains of dark rice), and rodent droppings and actions (including gnawing, nesting, and leaving tracks). Just as cleaning agents should be stored away from food, on-site pest removal agents must be stored away from food. Professional pest removal should be completed after business hours and after employees have gone home, and all surfaces should be cleaned and sanitized thoroughly before use.