



EXHIBIT 9B-  
FOOD SAFETY  
MANAGER TRAINING  
MANUAL

U.S. General Services Administration  
Property Management Division



# FOH

## FOOD SAFETY MANAGER TRAINING

Presented by:  
U.S. General Services Administration  
Property Management Division, and  
U.S. Department of Health and Human Services,  
Federal Occupational Health



**FQH**



# Food Safety Manager Training

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## Food Safety Manager Training

### Forward

Once again, the General Services Administration (GSA), along with the U.S. Public Health Service (USPHS), Federal Occupational Health (FOH) has produced a food service training program. The first training, produced in 2005, focused on the food service employee. The training highlighted important food safety techniques as indicated by the most frequently cited violations from the FOH inspector's reports.

The training presented here is designed to provide GSA food service managers with the knowledge and ability to effectively communicate food safety issues to their employees.

It is designed to review fundamental food safety procedures as well as provide managers with an understanding of how to effectively communicate the information to their employees. The objectives of both trainings are similar in that they are both aimed at reducing the number of deficiencies that may be found during a food inspection and ultimately at reducing the likelihood of any



foodborne illness occurring in GSA food facilities.

More than 200 known diseases are transmitted through food. The causes of foodborne illness include viruses, bacteria, parasites, toxins, and metals. The symptoms of foodborne illness range from mild gastroenteritis (inflammation of the gastrointestinal tract) to life-threatening neurologic, hepatic (liver-related), and renal (kidney-related) syndromes. In the United States, the annual occurrence of foodborne diseases has been estimated at 76 million cases, up to 325,000 hospitalizations, and up to 5,000 deaths. However, because milder cases may go unreported, the incidence may be significantly higher. In addition, some proportion of foodborne illness is caused by pathogens or agents that have not yet been identified and thus cannot be diagnosed. For example, just 20 years ago, many of the pathogens that cause the most concern, including *Escherichia coli* (*E-coli*), had not been identified as causes of foodborne illness.



As a manager, you have an obligation to provide the safest food possible to the individuals that you serve. You have a responsibility to inform staff on all aspects of food safety. However, obstacles may exist that could potentially impede on an employee's willingness or ability to follow procedures. The manager must be aware of these obstacles and seek out ways to overcome them. This training focuses on providing techniques and tools that the manager can utilize to better understand their employees and to ultimately improve their employees' food service skills. The training is broken down into the following 7 sections:

1. Adult Learning Principles,
2. Understanding Food Safety,
3. Personal Hygiene,
4. Food Handling,
5. Cleaning/Sanitizing,
6. Facility Maintenance and
7. Effectively Transferring Learning and Skills to Employees.

This training is designed to supplement the food service training that managers require. Supervisors should also participate in existing training as indicated by state and federal requirements. This comprehensive training consists of viewing the enclosed DVD, reading this manual and completing the post-test at the end of this book. All managers and supervisors who operate food service facilities on GSA property (excluding facilities with vending machines only) are expected to participate.

Participants must achieve a score of 80% or greater in order to receive a *Manager Certificate of Completion*, which should be displayed prominently at your facility. The FOH Food Inspectors will be looking for the *Manager Certificate of Completion* displayed at every qualifying facility during the current inspection year. After viewing the DVD and reading this manual, please refer to page 82, for instructions on submitting the post-test to FOH for grading.



## Section 1

### DEFINITIONS

#### Accredited Program –

- (a) “Accredited Program” – means a protection manager certification program that has been evaluated and listed by an accrediting agency as conforming to national standards for organizations that certify individuals.
- (b) “Accredited Program” – refers to the certification process and is a designation based on an independent evaluation of factors such as the sponsor’s mission; organizational structure; staff resources; revenue sources; policies; public information regarding program scope, eligibility requirements, re-certification, discipline and grievance procedures; and test development and administration.
- (c) “Accredited Program” – does *not* refer to training functions or educational programs.

**Approved** – means acceptable to the regulatory authority based on a determination of conformity and principles; practices; and generally recognized standards that protect public health.

**Bacteria** – a germ with only one cell. There are many kinds and they can cause illness when they are allowed to grow and multiply.

**Contaminated Food** – food containing agents, including chemicals, which are capable of causing illness when consumed.

**Cross Contamination** - occurs when bacteria is spread between food, surfaces, or equipment. Cross contamination is most likely to happen when:

- Raw food touches or drips into other foods
- Raw food touches or drips onto equipment or surfaces
- People touch raw food with their hands and fail to wash their hands before touching other foods.

**Dial Stem Thermometer** – measures the temperature of food. It has a round top with a long pointed sensor made of stainless steel to insert into food. This is the recommended thermometer to be used to check the temperature of food.

**Food** – means a raw, cooked, or processed substance, ice, beverage or ingredient used or intended for use or for sale in whole or in part for human consumption, or chewing gum.

**Food Contact Surfaces** – consist of the surfaces of equipment or utensils with which food normally comes into contact. It also includes the surface of a utensil from which food may drain, drip, or splash onto or into a food, or onto a surface normally in contact with food. These surfaces are normally thought of as pans, spoons, countertops, and cutting boards, but may also include refrigerator shelving, steamers, or cooking appliances.



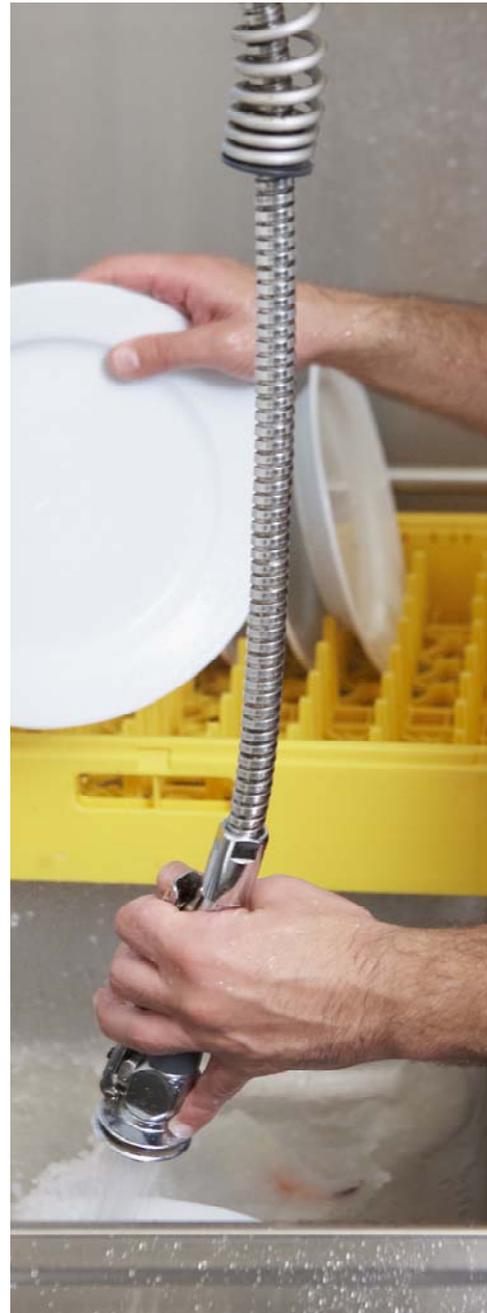
**Foodborne Disease** – is caused by consuming contaminated foods or beverages. Many different disease-causing bacteria or pathogens can contaminate foods, so there are many different foodborne diseases. In addition, poisonous chemicals, or other harmful substances can cause foodborne diseases if they come in contact with or are otherwise present in food.

**Food Employee** – means individual working with unpackaged food, food equipment or utensils, or food-contact surfaces.

**Formal Setting** – training environment that fosters learning and where real-life scenarios can be discussed.

**Garbage** – refuse that is wet or contains food matter.

**Germ** – refer to bacteria.



**HACCP** - Hazard Analysis Critical Control Points plan is a written document that explains the formal procedures for following the HACCP principles developed by the National Advisory Committee on Microbiological Criteria for Foods.

**Hazard** – is a biological, chemical, or physical property that may cause an unacceptable consumer health risk.

**Microorganism** – refer to bacteria.

**Person-in-charge** – means the individual present at the food establishment who is responsible for its operation at the time of inspection.

**Poisonous or Toxic Materials** – means substances that are not intended for ingestion and are included in the following four (4) categories:

1. Cleaners and sanitizers, including cleaning and sanitizing agents such as caustics, acids, drying agents, polishes, and other chemicals.
2. Pesticides, except sanitizers, which includes insecticides and rodenticides.
3. Substances necessary for the operation and maintenance of the establishment such as nonfood grade lubricant and personal care items that may be harmful to health.
4. Substances that are not necessary for the operation and maintenance of the establishment and are on the premises for retail sale, such as petroleum products and paints.

## Potentially Hazardous Food –

- a) Food that is natural or synthetic and requires temperature control because it is in a form capable of supporting the rapid and progressive growth of infectious or toxigenic microorganisms.
- b) Includes an animal food that is raw or heat-treated; a food of plant origin that is heat-treated or consists of raw sprouts; cut melons; and garlic-in-oil mixtures that are not modified in a way that results in mixtures that do not support growth.

## Ready-to-eat-foods – includes the following:

- Raw animal food that is cooked or frozen.
- Raw fruits and vegetables that are washed.
- Fruits and vegetables that are cooked for hot holding.
- All potentially hazardous food that is cooked to the temperature and time for the specific food and cooled.
- Plant food for which further washing, cooking, or other processing is not required for food safety and from which rinds, peels, husks, or shells – if naturally present – are removed.
- Substances derived from plants such as spices, seasonings and sugar.
- Bakery item such as bread, cakes, pies, fillings, or icing for which further cooking is not required.
- Dry salami or pepperoni; salt cured meat and poultry product, such as prosciutto ham; and country cured ham and Parma ham.
- Dried meat and poultry such as jerky or beef sticks.

**Refuse** – means waste materials that are clean and dry such as cardboard or glass recyclables.

**Regulatory Authority** – means the local, state, or federal enforcement body or authorized representative having jurisdiction over the food establishment.

**Risk** – means the likelihood that an adverse health effect will occur within a population as a result of a hazard in a food.

**Sanitization** – means the application of cumulative heat or chemicals on cleaned food contact surfaces that when evaluated reduces the presence of microorganisms that are capable of producing illness.

**Service animal** – means an animal such as a guide dog, or other animal trained to provide assistance to an individual with a disability.

**Sewage** – means liquid waste containing animal or vegetable matter in suspension or solution and may include liquids containing chemicals in solution.

**Warewashing** – means the cleaning and sanitizing of utensils and food contact surfaces of equipment.

## Section 2

### ADULT LEARNING PRINCIPLES<sup>1</sup>

Part of being an effective teacher involves understanding how adults learn and understanding what may prevent adults from learning. Teaching adults is simply communicating ideas and information. An effective teacher knows what will work with a particular audience. Here are some ideas to consider as you prepare to teach your employees about the principles of food safety.

- When preparing your training, remember to keep the information simple and practical. By focusing on the elements that are most relevant to employees at your location you can individualize the message. By communicating information in a clear and concise manner you increase the likelihood that employees will retain and implement what has been presented to them.
- Adults are self-directed; they need to feel free to govern themselves. Whenever possible you should involve your employees in the learning process. One way to achieve this is to ask your employees if they have any confusion regarding a specific task or duty that is expected of them. The employees need to recognize you as the facilitator and the source of information. Your job is to guide employees and, whenever possible, assist them in determining the answer to problems or situations on their own. It should be made clear to employees that by participating in training that they will not only keep themselves safe on the job, they will also protect the customer from a potential foodborne illness.

- Adults have accumulated a foundation of life experiences and knowledge that may include work-related activities and previous education. Encourage employees to relate experiences to the class. This can prove to be a valuable instructional tool. Real life scenarios with resolutions may assist the employee in remembering what is expected of them on the job.
- Adults learn best in a comfortable, non-threatening environment. As do all learners, adults need to be shown respect. Remember that all members of your staff are valuable resources. The best learning environment is that in which participants feel that their ideas and contributions are valued.
- Employees must recognize the need for the information. Consider what might be the motivation for the employee to listen to what is presented? As a presenter you will need to find the ways to communicate information that your employee will want to listen to, learn and implement.
- Reinforcement is a very necessary part of the teaching/learning process. Keep in mind that there are two types of reinforcement, positive and negative. Positive reinforcement is normally used by instructors who are teaching participants new skills. As the name implies, positive reinforcement is “good” and reinforces good behavior. Negative reinforcement is useful in trying to change modes of behavior. The instructor uses negative reinforcement until the “bad” behavior disappears, or becomes extinct. When trying to change behavior you should consider applying both positive and negative reinforcement

- After training, employees must retain and apply information in order to benefit from the learning. As an instructor you need to use the information presented in training as part of how you communicate with your employees on a daily basis. Be aware of teachable moments which are opportunities for you to demonstrate desired practices and behaviors. Make note of the training posters that FOH will provide to you. Make sure to hang these posters in a conspicuous location so that they may serve as a continual reminder to employees on how to properly wash their hands and properly execute manual warewashing in a three compartment sink. These posters are designed to solidify information that should have already been communicated to your employees. Employees should also be reminded to pay attention to existing posters that serve as reminders for desired procedures and practices.
- Become aware of barriers that may prevent your employees from benefitting fully or participating in your training. Even if the employee is present at your training is there anything that is happening with him or her that may be interfering with their ability to focus and retain what is being taught? Some barriers that may exist include lack of interest, ability, language differences, and lack of confidence regarding the information being presented. You as instructor must keep in mind that people learn at different speeds and that it is natural for participants to feel anxious or nervous when faced with a learning situation. You must be sensitive to these barriers and individualize the message so that your employees will be more inclined to pay attention and

implement desired practices. Positive reinforcement by you can enhance the learning experience.

- Learning is enhanced from sensory stimulation. Some people favor one sense over others to learn or recall information. You should present information that stimulates as many senses as possible in order to increase the chance of learning success. For example, auditory learners are comfortable in a lecture modality, but physical learners learn by doing; encourage participation and include tactile and hands-on activities for them. Visual learners prefer media and demonstrations; be engaging and provide visual aids to help maintain interest.

Stephen Lieb, Principles of Adult Learning, Adults as Learners



## Section 3

### UNDERSTANDING FOOD SAFETY

#### Human Impact

As previously discussed, foodborne illness is a serious public health concern and the cost to American society is high. With 76 million cases of foodborne illness occurring each year, virtually all Americans will experience some form of foodborne illness over the course of their lifetime. For most individuals the impact may not even be noticeable, resulting in only mild, temporary discomfort. For others, especially pre-school age children, pregnant women, older adults, and those with impaired immune systems, foodborne illness may have serious or long-term consequences, and for some, may be life threatening.

The risk of foodborne illness is of increasing concern due to changes in our global market, the aging of our population, increasing numbers of immunocompromised and immunosuppressed individuals, changes in consumer eating habits, and changes in food production practices. According to one U.S. Department of Agriculture (USDA) Economic Research Service (ERS) report, just five foodborne illnesses: *Campylobacter*, *Salmonella*, *E. coli* O157:H7, *Listeria monocytogenes*, and *Toxoplasma gondii* - cause \$6.9 billion in medical costs, lost productivity, and premature deaths. For some, the acute stage of foodborne disease may be only the start of the problem. The Food and Drug Administration (FDA) estimates that two to three percent of foodborne illness victims develop secondary long-term medical

complications resulting in over 1.5 million lingering health problems per year.

The above figures are estimates that relate to the overall economy, but the costs to individual business can be even more overwhelming. If a food service establishment is investigated and/or implicated in a foodborne outbreak, its reputation, employee morale, revenue, and customer base can be grossly damaged beyond recovery. If the same facility is conclusively shown to have caused a foodborne outbreak, the financial, insurance and legal costs will be even higher.

## Areas of Responsibility

Food safety is a responsibility that involves everyone in the food supply chain. As a manager of a food service facility located within a GSA building you have a unique set of responsibilities to the employees you hire and to the public to which you serve your food. Your first responsibility is to ensure that the food you provide is safe. Your company, management team, and the individuals that work for you are all legally responsible for providing a safe food product. If a person becomes sick as a result of an error that was made in your establishment, you could be held liable.

According to the U.S. Food and Drug Administration's (FDA) Food Code, you also have a responsibility to participate in a certified food protection manager training course in which you have shown proficiency of required information by passing an exam as part of an *accredited program*.

As a manager you must ensure that the foods that enter your facility are from an *approved source*. An approved source is defined as one that has been found acceptable by the regulating authority based on recognized standards that protect the health of the public.

As a manager you must teach safe food handling practices of potentially hazardous food to your employees. The information provided to your employees must be aimed at inhibiting, restricting, and otherwise minimizing the growth of pathogenic organisms. Training can occur on a daily basis in the form of on-site reminders to individual employees, or it can be formal training that involves all employees. Formal training must be documented and should occur on a regular basis throughout the year.



It is your responsibility, as the manager of a food service facility, to ensure that a *person-in-charge* is present at your facility during all hours of operation. According to the FDA Food Code, the permit holder shall be the person-in-charge or shall designate a person-in-charge. The person-in-charge must comply with all critical Food Code items

As a manager, you should work with the regulating authority that has jurisdiction during a sanitation inspection. This includes your local county or state inspector as well as the FOH inspector. During your inspection you may be asked questions by the inspector and your full cooperation is expected.

If a certified manager is not available during an inspection, or anytime the certified manager is not present at the facility, then the person-in-charge at the time must either have no violations of the Food Code or be able to demonstrate subject area knowledge and answer all of the following questions correctly:

- Describe the relationship between a food employee's personal hygiene and the prevention of foodborne illness.
- Explain the responsibilities of the person-in-charge if a food employee has a disease or medical condition that may cause a foodborne illness.
- Describe specific foodborne illnesses and their symptoms.
- Describe the relationship between the holding time and temperature of potentially hazardous foods and the prevention of foodborne illness.

- Explain the hazards when raw or undercooked eggs, poultry, fish, or meat are consumed.
- State the required food temperatures and cooking times associated with the safe cooking of potentially hazardous foods.
- Understand the required minimum and maximum temperatures and times associated with safe refrigerated storage, hot food holding, cooling, and reheating of potentially hazardous foods.
- Describe the relationship between prevention of foodborne illness and each of the following:
  - Controlling cross contamination.
  - Minimizing the handling of ready-to-eat foods.
  - Frequent handwashing.
  - Maintaining the cleanliness and good repair of the establishment.
- Describe the relationship between food safety and each of the following:
  - The provision of food equipment sufficient in number and capacity for the food operation.
  - The provision of food equipment that is designed, constructed, located, installed, operated, maintained, and cleaned in a sanitary manner.
- Explain procedures for cleaning and sanitizing food contact surfaces of food equipment and utensils.
- Understand the source of potable water used in the food establishment and how it is to be protected from contamination.
- Identify all poisonous or toxic materials used in the food establishment and describe the correct procedures for storage, dispensing, use, and disposal as required by law.

- Identify critical control points in the flow of food through the food establishment and describe the preventative measures taken at each critical control point to ensure that hazards are minimized.
- Describe in detail how the person-in-charge and employees comply with a Hazard Analysis and Critical Control Point (HACCP) plan (if required by law), the FDA Food Code, or any other applicable local food sanitation regulations.

Inspectors have the unique opportunity to see many different food establishments within the same community. Being open to the ideas the inspector presents and implementing these suggestions will bring about desired outcomes and positive change to your facility. Keep in mind that the FOH inspector is conducting the inspection not only to identify potential hazards in your facility, but also to assist you in understanding the ways in which these hazards can be eliminated or reduced.



## Foodborne Illness

A foodborne illness is any infection or illness that is transferred to humans by the food they consume. There are five risks factors for foodborne illness, they are as follows:

1. Improper food temperatures. Potentially hazardous foods must be maintained at or below 41° Fahrenheit (F) if cold, and above 135° F if hot, in order to prevent the significant growth of pathogenic bacteria. That is not to say that all growth stops. Bacteria will continue to grow through cell mitosis (reproduction through cell division/splitting) even at these temperatures, but they grow much more slowly and take many more hours to become a problem.
2. Undercooked or uncooked foods. Many foods already contain pathogenic bacteria. These include meats, poultry, and fish that if not cooked thoroughly and to specified time and temperatures, may provide pathogenic bacteria the opportunity to grow.



3. Contaminated food equipment. Food that is prepared with equipment that has not been cleaned and sanitized has the potential to become contaminated with pathogenic bacteria. If this equipment is used without being properly cleaned and sanitized the risk of *cross contamination* greatly increases.
- **Food-to-food cross contamination** occurs when a raw food – such as meat – which contains harmful bacteria, comes into contact with ready-to-eat-foods. For example, if juices from raw contaminated chicken come into contact with salad ingredients that are not washed, cross contamination occurs. This can be avoided by using separate refrigerator space to store ready-to-eat-foods away from raw meat.
  - **Equipment-to-food cross contamination** occurs when raw foods – such as meat – that contains harmful bacteria, is cut by a knife and then the same knife is used to cut raw salad ingredients without having being cleaned and sanitized. This type of cross contamination can be prevented by washing equipment after each food operation, i.e. cutting vegetables then cutting raw meats.



- **People-to-food cross contamination** occurs when people directly contaminate food by not washing their hands after using the bathroom or sneezing into their hands, then resume food preparation or cooking. Good personal hygiene is the best method of prevention to avoid this type of cross contamination. The recommended handwashing technique should be taught and enforced for all food service employees. Sneeze guards and other mechanical devices used in the customer area also prevent contamination possibilities.
4. Food from an unsafe source. There have been foodborne illnesses linked to the receipt of food from an unapproved source such as a non-approved supplier. If food procured in this manner is used at the facility, the manager assumes the risk that the food may not have been handled according to standard practices that an approved supplier must follow.
  5. Poor hygienic practices. Employees that handle or prepare food are given the public's trust that they will practice sound personal hygiene procedures. This trust includes the assumption that they will wear clean clothes, use hair restraints, wash their hands when needed, and not work when they are sick.

The causes of foodborne illnesses are classified into three categories; foodborne intoxication, foodborne infection, and toxin-mediated foodborne infection. Descriptions of each, as

well as examples of the associated illnesses, are provided below.

**Foodborne intoxication** - is caused by eating food that contains either a chemical hazard or a toxin. Biological toxins are present when microorganisms produce waste. Unlike the living organism, these wastes may or may not be destroyed or chemically altered by heating the food. Foodborne intoxications occur even if the food is thoroughly cooked. Paying attention to compromised foods is essential to preventing intoxications. Some of the pathogenic bacteria associated with foodborne intoxication are:

- Botulism - is a rare but serious illness caused by a nerve toxin that is produced by the bacterium *Clostridium botulinum*. Foodborne botulism is caused by eating foods that contain the botulism toxin. Botulism is considered a medical emergency and foodborne botulism is especially dangerous because many people can be poisoned simultaneously by eating contaminated food. Symptoms of Botulism include double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, dry mouth, and muscle weakness.

**Foodborne infection** - is an illness that is caused by eating foods that contain live pathogenic microorganisms that reproduce in the gut. The organisms continue to reproduce and may cause the infected person to become ill. Some of the major bacteria associated with foodborne infections include the following:

- **Salmonellosis** - is an infection with bacteria called *Salmonella*. Most persons infected with *Salmonella* develop diarrhea, fever, and abdominal cramps 12 to 72 hours after infection. The illness usually lasts 4 to 7 days, and most people recover without treatment. However, in some cases, the diarrhea may be so severe that the patient requires hospitalization. In these patients, the *Salmonella* infection may spread from the intestines to the blood stream, and then to other body sites and can cause death unless the person is treated promptly with antibiotics. The elderly, infants, and those with impaired immune systems are more likely to suffer the most severe illness.
- **Campylobacteriosis** - is an infectious disease caused by the *Campylobacter* bacteria. Most people who become ill with campylobacteriosis get diarrhea, cramping, abdominal pain, and fever within two to five days after exposure to the organism. The diarrhea may be bloody and can be accompanied by nausea and vomiting. The illness typically lasts one week. Some infected persons do not have any symptoms. In persons with compromised immune systems, *Campylobacter* occasionally spreads to the bloodstream and causes a serious life-threatening infection.
- **Listeriosis** - a serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes*. Listeriosis has recently been recognized as an important public health problem in the United States. The disease primarily affects the elderly,

pregnant women, newborns, and adults with weakened immune systems. However, persons without these risk factors can sometimes be affected.

- **Vibrio parahaemolyticus** - is a bacterium in the same family as those that cause cholera. It lives in brackish saltwater and causes gastrointestinal illness in humans. *V. parahaemolyticus* naturally inhabits coastal waters in the United States and Canada and is present in higher concentrations during summer; it is a salt-requiring organism.

**Toxin-mediated foodborne infection** – is an infection that is very severe because it is a combination of pathogens and toxins. The person ingests the pathogens and then the infection produces toxins that begin to affect and/or damage organs in the body. Major bacteria associated with toxin-mediated foodborne outbreaks include:

- **Shigellosis** - is an infectious disease caused by a group of bacteria called *Shigella*. Most individuals who are infected with *Shigella* develop diarrhea, fever, and stomach cramps that begin a day or two after they are exposed to the bacteria. The diarrhea is often bloody. Shigellosis usually resolves in 5 to 7 days. Persons with shigellosis in the United States rarely require hospitalization. A severe infection with high fever may be associated with seizures in children less than two years old. Some people who are infected may have no symptoms at all, but may still pass the *Shigella* bacteria to others.

- *Escherichia coli* (*E. coli*) - are a large and diverse group of bacteria. Although most strains of *E. coli* are harmless, others can make you sick. Some kinds of *E. coli* can cause diarrhea; while others cause urinary tract infections, respiratory illness and pneumonia, and other illnesses. Still other kinds of *E. coli* are used as markers for water contamination. You might hear about *E. coli* being found in drinking water, which are not themselves harmful, but indicate the water is contaminated. Some kinds of *E. coli* cause disease by making a toxin called Shiga toxin. The bacteria that make these toxins are called “Shiga toxin-producing” *E. coli*, or STEC for short. The most commonly identified STEC in North America is *E. coli* O157:H7 (often shortened to *E. coli* O157 or even just “O157”). When you hear news reports about outbreaks of “*E. coli*” infections, they are usually talking about *E. coli* O157.

A properly functioning immune system can fight a small number of bacteria and prevent them from reproducing or producing harmful levels of toxins. However, bacteria can reproduce rapidly and in larger numbers, bacteria can cause illness. It is understandable why a person with a compromised immune system is particularly at risk.

To effectively reduce the occurrence of foodborne illness, managers must focus their attention on achieving active managerial control. The term “active managerial control” describes the industry’s responsibility for developing and implementing a food safety management system designed to prevent, eliminate, or reduce the occurrence of foodborne

illness risk factors. This approach stresses food safety prevention as opposed to reaction by implementing a continuous system of monitoring and verification. Elements of an effective food safety management system may include the following:

- Implementation of recipe cards that contain specific steps for preparing a food item and food safety critical limits, such as final cooking temperatures, that require monitoring and verification.
- Standard operating procedures (SOPs) for performing critical procedures, such as cooling techniques.
- Equipment and facility design and maintenance.
- Employee health policy for restricting or excluding ill employees.
- On-going quality control and assurance.

The principles listed above are included in a Hazard Analysis and Critical Control Point (HACCP) system. HACCP system is comprised of seven principles that are meant to be applied to a written food safety program. Managers that participate in a HACCP program greatly increase the likelihood a operating a safe food service facility.

## Potentially Hazardous Foods

Just as there are segments of our population that are considered high risk for developing a foodborne illness, there are also certain foods that are in the high risk category for causing a foodborne outbreak. These foods are called Potentially Hazardous Foods (PHFs). These foods have one or more of the following characteristics:

- High protein. Pathogenic bacteria depend on proteins, which are the building blocks of life.

- Moisture. All pathogenic bacteria require water to survive and to thrive. This is called the Active Water ( $a_w$ ) of a food.
- Chemically neutral or slightly acidic. On the pH scale, low numbers are said to be acid and high numbers are said to be base (or alkaline). The pH scale ranges from 0 to 14 with 7 being neutral (water is slightly acidic because of the polar nature of the material).
- Food processing procedures (e.g., slicing melons). When a food is sliced, or opened, more surface area is exposed to potential contamination.
- Examples of Potentially Hazardous Foods include the following:
  - Milk and milk products
  - Meats:
    - Poultry
    - Beef
    - Pork
    - Fish
  - Cooked carbohydrates (rice and spaghetti)
  - Eggs
  - Garlic and oil mixtures
  - Sliced melons
  - Shellfish
  - Ready-to-eat foods

Potentially hazardous food requires strict time and temperature controls to stay safe. Efforts should be taken so that PHF do not enter into the Temperature Danger Zone (TDZ), 41°F (cold foods) to 135°F (hot foods). PHF must be checked often to make sure that they stay safe using a properly calibrated, cleaned and sanitized thermometer.

## Food Safety Hazards

There are three major hazards that may be introduced into the food supply any time during harvesting, processing, transporting, preparing, storing, and serving food. These hazards may be chemical, biological, or physical.

**Chemical Hazards** - Chemicals are used throughout food establishments. These chemicals include pesticides, personal care items, cleaning products, food additives, and toxic metals. These chemicals can leach into food from canning or cooking utensils. All chemicals used in the food establishment must be labeled and stored in a separate location from food preparation areas. This separate space must not be stored above food, equipment, utensils, linens, and single-service or single-use articles. The only exception to this rule is for sanitizers that may be stored above warewashing equipment. Chemicals that are transferred from their original containers must be placed in containers that are not also used for food storage. All spray bottles, buckets and working containers must be clearly labeled with the common name of the chemical.

Only chemicals used for facility operation or maintenance are permitted at food service facilities. Chemicals used must comply with recommended handling procedures as outlined on the manufacturer's label. As required by law, Material Safety Data Sheets (MSDS) must be maintained for all chemicals used onsite. MSDS must be accessible to all employees of the facility. Pesticides must be specifically labeled as being allowed in a food establishment.

A restricted use pesticide shall only be applied by a certified applicator.

Chemical hazards can also occur from chemical reactions between food and food equipment containing metals such as copper, lead, zinc, brass, and cadmium. Acidic foods can leach these metals from the equipment and contaminate food. Backflow prevention devices are required on carbonated beverage dispensers specifically for this reason. Carbonated water is acidic, and if it backflows into a copper water line, the copper or lead from the solder can be leached into the water and dispensed to the next serving causing copper or lead poisoning. Acidic foods, such as canned tomato or pineapple juice, left in the can for storage can leach tin into the food. Acidic foods can also leach metals from pewter pitchers, copper pots, and galvanized utensils. There have also been foodborne illnesses associated with cadmium leaching from food being cooked on refrigerator shelving racks. It is important to only use “approved” food grade equipment in the food service establishment and to use the equipment as intended to prevent chemical hazards.

**Biological Hazards** –occur when food becomes contaminated by microorganisms found in the air, food, water, soil, animals, and the human body. Microorganisms are, by far, the most common type of food contamination and pose the greatest risk for humans. Because of this, microorganisms are considered the single greatest threat to food safety. Microorganisms commonly associated with foodborne illnesses include bacteria, viruses, and parasites.

**Bacteria** – the majority of biological hazards are bacteria that can be controlled through time, temperature, acidity, and water activity. Some bacteria form spores that are highly resistant and may not be destroyed by cooking and drying.

**Viruses** – can exist in food without growing, but they can rapidly reproduce once they are on or in a living host – typically a human being. Viruses can be controlled by practicing good personal hygiene, because that limits the possible transmission of viruses from one source to another via human contact. Hepatitis A, norovirus, and rotavirus are directly related to contact with contaminated human feces. The spread of viruses can be prevented by forbidding bare-hand contact with food, practicing proper hand washing, and not allowing ill employees to work at your facility.

**Parasites** – are organisms that require a host. Parasites may be transmitted from animals to humans, from humans to humans, or from humans to animals. Several parasites have emerged as significant causes of foodborne and waterborne disease. These organisms live and reproduce within the tissues and organs of infected human and animal hosts, and are often excreted in feces. Special attention should be given when preparing foods such as fish and pork since they are known to carry parasites.

**Physical Hazard** – is any physical material or foreign object not normally found in a food that can cause illness or injury. These physical hazards may be the result of contamination, carelessness, mishandling or poor practices at any point in the food chain from harvest to consumer, including within the

food facility. These hazards are the easiest to identify because the consumer usually finds the foreign object and reports the incident.

## Recognizing and responding to a foodborne outbreak.

A foodborne outbreak is an incident in which two or more individuals experience a similar illness after the ingestion of a common food. Epidemiological evidence implicates the food as the source of the illness. The only exceptions are a single case of botulism or a single illness caused by the ingestion of a chemical. In these examples one case constitutes an outbreak. Knowing that you have the ultimate responsibility to prevent such outbreaks means that you also need to know how to detect and react to an outbreak if one should occur.

Consider the following scenario. A regular customer comes into your facility for lunch. The customer decides to have the lunch special. About 10 minutes later two other customers come in and order the same item. All three customers take their lunches back to their office. One hour later the first customer returns back to your facility and tells you that her stomach is upset and she feel nauseous. She has returned to get something to drink. At the same time another one of the three original customers who ate the special returns and he too complains to you that his stomach is upset and he in fact just got sick in the men's room. He informs you of this because he believes it is your special that made him sick.

At this point, as the manager, you must assume the complaints from the customers are related and are true. You should immediately remove the suspect item from your food service line. It is recommended that you do not destroy this item because testing of the item may be required. Next, you should begin gathering information from the affected customers. You should collect the following information.

1. Name, address and telephone number(s).
2. Who else may have become ill in the office?
3. Has the person sought medical attention for the illness (if so, who was the doctor)?
4. What foods or drinks were consumed?
5. What time was the food consumed?
6. Who was the server, if any?
7. Other information that may seem important at the time.

Let the customer know that the complaint is being taken seriously and that it will be investigated immediately. Give the customer a timeframe to indicate when they can expect a follow-up phone call with the results.

The following people should be contacted immediately:

1. The food establishment's owner.
2. The GSA Building Manager.
3. The local health department (as a courtesy only).
4. Your company's attorney.
5. Your company's insurance agent.

## The Investigation



The GSA Building Manager has the ultimate responsibility in assuring that all operations that occur in his/her building are done safely. With this authority the GSA Building Manager may decide to call FOH or the local health department to conduct an emergency inspection of the facility. The inspector will help to identify the problem and will outline the specific steps required to rectify the situation. This will be achieved by implementing several activities. The first will be to conduct a series of interviews with the involved parties including the affected customers, employees who served the food, food service management, and medical staff who cared for the affected customers. The objective of the interviews is to determine (a) what foods were involved in the outbreak/illness, and (b) what went wrong to cause the outbreak/illness.

When an outbreak occurs, the primary concern is preventing further cases. Some control measures that may need to be implemented immediately are:

1. Pinpointing employees that are ill, or who may have caused the outbreak to be excluded from the food establishment (only if they are ill).
2. Recommending alternative food processes or preparation methods.
3. As a last resort, closing the establishment.

Food samples may be collected at this point in the investigation. The investigator will collect samples for laboratory analysis to include microbial matching from the foods and customers. This involves asking the customers and/or employees for stool, vomit and/or blood samples. This is a key to the overall success or failure of the investigation. The laboratory will confirm or deny the connection between the suspect food and the customer's illness.

Once a food or food stock is suspected, the inspector may tag it for holding until the results of the investigation are finalized. Only the inspector can release the hold of the foods.

There are certain investigations and reporting requirements of foodborne outbreaks according to the FDA food code. The possible outcomes of an investigation may be as follows:

1. The outbreak was associated with the food from the establishment or a supplier.
2. The outbreak was not associated with the food from an establishment, or a supplier, and no cause was found.
3. The outbreak was not associated with the food from the establishment or a supplier and another cause was found. Sometimes the cause can be a common outside influence such as a pool or water supply that is completely out of the manager's control.

## What happens next?

The follow-up phase of the outbreak is dependent upon what the inspectors have found. The inspector attempts to find the food that caused the outbreak, why it caused the outbreak, the severity or number of individuals involved in the outbreak, and other applicable factors. All of this information helps to better understand how to prevent it from ever happening again. Reports may also be sent to the state health department or a federal authority such as the Centers for Disease Control and Prevention (CDC) for tracking purposes.

In the end, all of the information collected helps to prevent future outbreaks by pointing out the details of how the event unfolded. The cause of the outbreak can be a simple or a very complex chain of events that can be used to teach other managers and employees how to prevent an outbreak in the future.



## Section 4 PERSONAL HYGIENE

The habits and hygienic practices of the food service employee have the most direct impact on food quality and



safety of the food they prepare and handle. Poor personal hygiene is one of the most common ways to contaminate food and increase the risk of a foodborne outbreak. In this section you will learn what constitutes good personal hygiene and how to teach this information to your staff. The consequences of not teaching and enforcing these basic practices are too great to ignore.

Hands touch every part of the body and every part of the food being prepared. Good handwashing technique is a requirement to prevent the contamination and spread of disease. If an employee who handles ready-to-eat food has a gastrointestinal illness and neglects to wash their hands after using the bathroom, the employee can easily spread the disease onto surfaces that he/she touches, including plates and silverware. Infected lesions on the hands or forearms can contaminate foods by introducing pathogenic bacteria onto foods and utensils. Sometimes a seemingly healthy employee is actually a carrier of a disease such as

Hepatitis A. These are all examples of why proper handwashing is so important in the food service industry.

In addition to making others ill, a food service employee with poor personal hygiene may be a risk to themselves as well. If employees do not wash their hands before eating they may be exposed to pathogenic bacteria if they were handling raw meats or other potentially hazardous foods prior to eating. Employees who wipe their hands on their aprons may be allowing a huge amount of bacteria to grow on their soiled apron. Bacteria can be spread from surface to surface and food to food throughout the kitchen. Sometimes people will spread bacteria without realizing it by touching a pimple that has pus oozing from it, scratching their scalp, sneezing, rubbing their nose or coughing into their hands. Smoking, drinking, and eating also are hand-to-mouth activities that should only be conducted in designated areas and never in food storage or preparation areas. There is only one exception to drinking in food preparation areas and that is if the drink container has a tightly fitting lid and a straw that will not allow the contents to spill.

### Handwashing:

Even though handwashing seems like a routine task, the FDA Food Code actually specifies how you should wash your hands if you are working in a food service establishment. According to the Food Code, it should take at least 20 seconds to execute the following:

1. Wet the hands with warm running water;
2. Apply soap;
3. Rub the hands together for at least 20 seconds, (about the time it takes to sing “Happy Birthday” to yourself twice), making sure to get soap to all exposed surfaces including in between fingers and forearms;
4. Clean under fingernails;
5. Rinse all soap;
6. Dry hands using single-use paper towels or a warm-air hand dryer.

Here is a partial list that outlines when an employee is required to wash their hands:

1. After using the restroom.
2. After touching their face.
3. After touching their clothes.
4. After eating, smoking, and drinking.
5. After taking out the garbage.
6. After using cleaning compounds or any type of chemical.
7. After clearing tables or handling dirty utensils.
8. After coughing, sneezing, or using a handkerchief.
9. Before handling clean utensils.
10. Before and after handling raw foods.
11. Before handling ready-to-eat foods.
12. After touching anything that could contaminate their hands.

The Food Code also stipulates the proper use of handwashing sinks. Handwashing sinks must only be used for handwashing and may not be used for any other activity

such as washing utensils, fruits and vegetables, or other equipment. The path to the sink must be kept clear and free of obstacles to promote handwashing. There must also be hot and cold running water available at the sink with hot water reaching at least 110°F within 15 seconds.

While chemical hand sanitizers may reduce the number of living microorganisms on a person's hands, it does not actually remove any soil from the hands and is therefore not considered an adequate substitute for actual handwashing with running water and soap.

## Gloves

Disposable gloves are not required in food service establishments, but if gloves are used there are some guidelines that must be followed.

1. You must wash your hands after taking off used gloves and before donning a clean pair.
2. Gloves are not to be used if they are damaged or are contaminated. They must be changed at least every four hours.
3. Just like hands without gloves, the wearer of gloves must be conscientious of the gloves becoming contaminated at all times. If this occurs, gloves must be changed immediately.

The purpose of glove use is to protect the food from the individual not the individual from the food. Gloves are not a substitute for proper handling of ready-to-eat foods or a reason not to wash hands. Handwashing must never be overlooked.

Note: Personal jewelry can be both a physical and biological hazard in a food facility. Jewels and other items can become dislodged and fall into food during preparation or possibly get caught in food equipment. A plain gold wedding band is the only jewelry allowed in a food service operation.

If an employee has a lesion containing pus, such as a boil or infected wound, he is required to keep the lesion covered with a clean bandage and a waterproof covering, such as a single use glove. If the lesion cannot be covered, he is to notify the person in charge for further instruction or exclusion. Employees are also required to let the person-in-charge know if they are currently experiencing diarrhea, fever, vomiting, jaundice, or a sore throat with fever. The person-in-charge must then restrict the employee's activities to work that does not involve direct food contact, cleaning plates or utensils, cleaning linen, or working with unwrapped single-use items. The person-in-charge can also exclude the employee completely from the establishment if there is a high risk population being served.

If an employee is ill due to norovirus, Salmonella Typhi, Shigella spp., shiga toxin-producing Esherichia Coli, or Hepatitis A, he may not work in a food establishment until cleared by a doctor. In addition, the manager is required to notify the regulating authority (health inspector). The person-in-charge must maintain confidentiality of the employee's personal health situation.

## Section 5

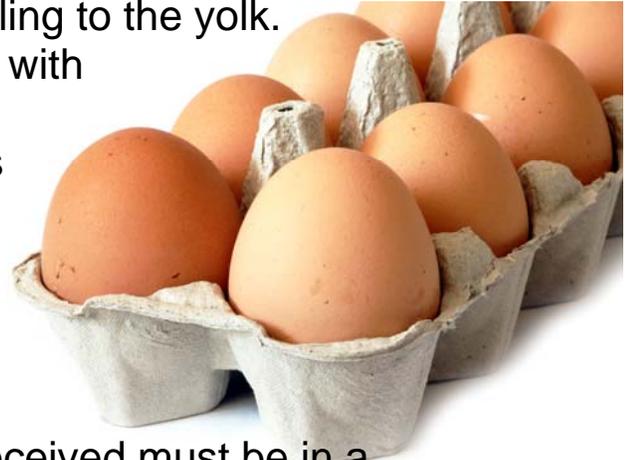
### FOOD HANDLING

Food safety begins when food is ordered and received at the facility loading dock. It is the manager's responsibility to ensure the food is ordered, shipped, and received from an approved source and is in wholesome condition. Some of the products received may have already been inspected by a regulatory agency such as the USDA but will need to be re-inspected by you or your employees before being accepted.

There are several criteria that must be met before food may be deemed to be wholesome. The following guidelines are provided to help identify when to keep or reject a shipment:

- Beef - when fresh, beef should be light red with firm and elastic flesh that will spring back into shape when pressed. The odor should be light and fresh. It must be marked with a USDA inspection and received at a temperature at or below 41° F.
- Pork - when fresh, pork should be pink and firm with an elastic feel. The odor should be light and fresh. Pork must be marked with a USDA inspection stamp and be received at a temperature at or below 41° F.
- Poultry - when fresh, poultry should be almost white in color with no dark discoloration. Duck and goose may appear darker in color than chicken or turkey. The odor should be very light to almost unnoticeable. There should be no sticky flesh. It must be marked with a USDA inspection stamp and be received at a temperature at or below 41° F.

- Fish – frozen fish should only be accepted from a licensed and approved vendor and should only be accepted in a fully frozen state.
- Eggs - eggs should be clean and intact. Fresh eggs have firm yolks with whites that cling to the yolk. The packaging must be stamped with a USDA inspection stamp. If the eggs are brought in cartons or otherwise, they must have been labeled as being pasteurized. Eggs must be received at a temperature at or below 45° F.
- Frozen foods - all frozen foods received must be in a fully frozen state. It is imperative that the person assigned to receive the frozen food inspect the shipment for signs of temperature abuse. Water/ice crystals are a giveaway that the foods have been thawed and refrozen.
- Dairy products - all dairy products must be received at a temperature at or below 41° F. Liquid milk must reflect that it has been pasteurized on the labeling as well as display an expiration date.
- Canned foods - All cans received must be inspected either at the dock or when stocking the shelves. The cans should be in good condition and properly labeled. Dented cans should be rejected or sent back to the manufacturer for proper disposal. Swollen or bulging cans indicate that the can contains a high level of gas-producing organisms and may be under great pressure. **Do not open these cans.**



- Dry goods - all dry goods should be inspected for container integrity as well as indication of insect or vermin infestation. The containers and the product must be dry and dirt free both on the packaging and the material itself.

It is important to remember that the process of receiving food stock is the first line of defense in a food establishment. For the person who is responsible for receiving food stock it is essential that they understand that they have the right and obligation to inspect, (including taking temperatures) and reject adulterated or unwholesome food stock.

If a shipment is rejected, notify the food vendor immediately and receive credit from the vendor for the refused shipment. If the trend continues, find another vendor.

### Rotation of stock

Once the food is received it is time to store it until needed. Refrigerated and frozen foods should be stored as soon as possible to maintain a constant temperature at or below 41° F, except eggs which are allowed to be received and kept at 45° F. Dry, canned, and refrigerated items must be stored in a way that allows for stock rotation. A good rule of thumb is FIFO (First in First Out). This rule keeps the oldest stock for use first while storing the newer stock in reserve. Stock rotation is paramount to a safe food service operation.

To ensure good stock rotation, it is a good idea to label products with the received date, and try not to receive stock during busy times of the day. This will ensure there is enough time and help to properly label and stock the food stores.

## Minimum Cooking Temperatures

Another effective way to prevent a foodborne illness is to cook foods to the proper temperature for a specified time to kill or retard the growth of pathogenic bacteria, viruses, and parasites. It is also important to understand that cooking temperatures cannot destroy toxins or chemical hazards.

Different foods have different minimum internal cooking temperatures, based on the characteristic of the food (such as whether it has high or low fat content). The pathogens normally found on some foods (such as *Salmonella*, typically found on chicken) are killed only at a high temperature; while *Trichinella*, typically found in pork, is easily killed at a lower temperature. The recommended internal temperature and time that they must be maintained for foods commonly served are as follows:

1. Eggs must be cooked to 145° F for 15 seconds (cooked to order). When the eggs are used in a sauce that cannot be heated to 145° F – only use pasteurized egg products.
2. Poultry and stuffed meats must be cooked to 165° F for 15 seconds
3. Beef steak, veal, and lamb (whole muscle) must be cooked to 145° F for 15 seconds.

4. Ground meat products (beef and fish) must be cooked to 155° F for 15 seconds.
5. Leftovers that are reheated must reach 165° F for 15 seconds

Any of the above cooking times can be shortened if the temperature is increased.

Freezing can also be used to destroy certain microorganisms. Fish and shellfish that are frozen to a temperature of -4° F for seven days or -31° F for 15 hours will achieve the destruction of microorganisms just as effectively as cooking. It should be noted that even this extreme freezing does not destroy all bacteria.

## Thermometers and calibration

The manager and the employees have to be able to assess the receiving, cooking, and holding temperatures of food products. This is accomplished by using a thermometer. There are several types of thermometers available, but we will highlight the most common, the **dial stem thermometer**. The dial stem thermometer is one of the most underused tools but one of the most beneficial to the food service industry.

**Calibrating thermometers** – setting a thermometer so it can give you an accurate temperature reading. It is important that dial stem thermometers are calibrated often enough to be accurate to within +/- 2° degrees of 32° F. The procedure for calibration is as follows:

- Pack a large insulated Styrofoam cup full of ice cubes and add cold water but not enough to make the ice float.
- Place the thermometer in the water, making sure that the sensing dimple is immersed in the ice water.
- Allow two to three minutes to elapse before attempting to calibrate.
- Read the dial by looking at the indicator needle straight on.
- If the dial reads 30° – 34° F then the thermometer is already calibrated and is ready for use. If the dial does not read 30° - 34° F then it will need to be calibrated.
- Keep the thermometer stem fully submerged in the ice water while moving the thermometer needle.
- In order to move the needle, firmly hold the hex nut (to keep it from moving) with a wrench or other tool.
- Turn the silver ring on top of the thermometer to read 30° – 34° F.
- The thermometer is now calibrated and ready for use. To test the newly calibrated thermometer remove from the ice water and place the stem into a pot of boiling water to confirm that it reads between 210° - 214° F. If not, replace the thermometer. **Warning, be careful not to scald yourself.**

It is easy to determine when a dial stem thermometer becomes damaged. The procedure for establishing effectiveness is to place the thermometer stem into an ice bath and calibrate as detailed above then immediately place in a pot of boiling water to see if it reads 212°F +/- 2 °F or not. If it is worn out, it will not indicate the temperature at 212°F +/- 2 °F. Discard the thermometer and replace it with a properly calibrated thermometer.

Other signs of a damaged thermometer are:

1. Unable to calibrate to +/- 2 degrees of true.
2. Cannot change the face settings.
3. Face is cracked, broken, or otherwise obscured.
4. Metal is flaking from the stem.

A calibrated thermometer must be available at all times in the food preparation area as well as the warewashing area.

Thermometers should be protected when not in use and must be cleaned and sanitized before each use. If alcohol swabs are used to sanitize the probe, then the probe should be allowed to air dry before being inserted into food. If other chemical sanitizers are used, the probe should have an adequate amount of contact time with the sanitizer and must be rinsed before use.

**Cooling** – Improperly cooled food is one of the most common causes of foodborne illness. The Food Code recommends a two-step cooling process that must be followed when dealing with potentially hazardous foods, these are:

1. Potentially hazardous foods must be cooled from 135°F to 70°F within a two-hour window. If the food is not cooled to 70°F within two hours, it must be reheated to 165°F and the process must be started again.
2. If the potentially hazardous food has met the first criterion then the food must continue to cool from 70°F to 41°F within a four-hour window. If the food does not cool to 41° F within the four-hour limit, the food must be reheated to 165° F and the process

must be started again.

Rapid Cooling techniques – there are six techniques to cool hot foods quickly, they are:

1. Shallow pans – food that is placed in a shallow pan and then put into a walk-in cooler will be cooled more quickly than if in a deeper pan because shallow pan allows the heat in the food product to dissipate quickly. The product should be stirred periodically in order to promote even cooling.
2. Blast Chiller – this device chills foods quickly – to 41° F or cooler, by circulating super chilled air around the food.
3. Ice bath – ice baths can be used on liquids or semi-liquid foods such as broths, chili, or sauces. Place the food in a pan that will fit into an ice filled prep sink (a larger pan filled with ice and water may also be used). Stir the food while in the ice bath to facilitate rapid cooling. Monitor the temperature often to make sure that food is cooling properly.
4. Adding ice as an ingredient – by adding ice to soups (and other liquid foods), in their concentrated form, they become diluted and cooled at the same time.
5. Cooling wands – these are hollow plastic tubes that can be filled with water and then frozen. Hot food is stirred with the cooling wand causing the food to chill rapidly. This technique is especially effective when combined with the ice bath method.
6. Separating the food into thinner portions – the surface area of the food is increased resulting in rapid cooling.

## Thawing techniques -

The following four techniques are the most appropriate thawing techniques for potentially hazardous foods:

1. The refrigerator – Never thaw foods at room temperature. The outside of the food will warm faster than the center portion allowing the outer portion to grow bacteria. Thawing products in the refrigerator allows both the inside and outside temperature of the entire food to be kept at 41° F or less. This method does require many hours of time. Therefore, pre-planning is a must. When thawing products in a refrigerator, they should be placed on a pan to collect the drippings, and the pan placed on the bottom shelf, away from other foods to prevent the possibility of cross-contamination.
2. Microwave oven – using a microwave oven to thaw frozen foods will allow the frozen product to be thawed in minutes versus hours. The cooking process can be continued in the microwave or the product may be transferred into a conventional oven.
3. Cooking – frozen products can be taken directly from a frozen state to a continual cooking process as long as the food is cooked thoroughly. The internal temperature of the food must meet the minimum cooking temperature requirements.
4. Cold running water – frozen foods may be thawed using cold (70° F or less) running water. The



velocity of the running water must be strong enough to remove any loose food particles. The preparation sink used must be washed, rinsed, and sanitized before and after use.

## Section 6

### CLEANING VS. SANITIZING

Cleaning is the removal of all food debris, dirt, or other buildup from the surface of utensils. Various factors can affect how cleaning should be accomplished. These factors include:

- Types of foods being prepared.
- Type of equipment used.
- Makeup of the soil – The physical makeup of the soil being cleaned can affect the cleaning. The type of cleaner used will have to be matched to the soil. Another factor to consider is how much soil has accumulated and how much energy will be required to clean the surface or equipment.
- Water quality - water from the tap must be clean and free of chemical contamination. All food service establishments are required to have water delivered to the facility from an “approved source.”
- Water temperature – Hot water will be more effective to emulsify soil. The best water temperature for cleaning is between 130° - 160°F. Mop water should be changed often and reheated with new water as often as needed to be effective.
- Cleaning Agents – There are four types of cleaning agents that are used most often in food service establishments. They include:
  1. Abrasives – used to scour soil from surfaces using mechanical means.
  2. Acid – used to clean soil that other cleaners cannot remove, such as mineral deposits and rust stains.

3. Degreasers – are strong alkaline cleaning agents. Degreasers are most effective at breaking up grease deposits and oily soils when used with soft water.
4. Mild detergents are slightly alkaline and are used for all-around cleaning in general areas of the kitchen.
  - Contact time with the soil will affect the cleaning agent's effectiveness by allowing it to surround, re-hydrate, and lift the soil from the surface. Generally, the longer the contact time the more efficient and effective the results.

Sanitizing is the reduction of the actual number of microorganisms from surfaces. The sanitizing of any surface first involves the cleaning of all surface debris; otherwise the sanitizing agent will not be effective. Sanitizing destroys microorganisms on clean surfaces. Food service establishments typically use either high temperature or chemicals to sanitize surfaces. High temperature methods are used for mechanical warewashing. Chemical sanitizers are used for both warewashing and sanitizing surfaces on equipment and food contact surfaces.

## **Types of Sanitizers**

The most common types of sanitizers include:

- Chlorine
- Quaternary ammonium compounds
- Iodine

- Chlorine - such as unscented, household bleach, is the most commonly used sanitizer. It is inexpensive, effective on most microorganisms and works in almost any type of water. The down side is that it becomes inactive quickly when in water above 115°F, or water with a pH below 6.0 and above 7.5. Chlorine is also corrosive to some metals if used in the wrong concentrations. The concentration of chlorine should be between 50 to 100 parts per million (ppm) depending on water temperature. This can be achieved by using one capful of household bleach in 5 gallons of water. Optimal cleaning can be achieved by maintaining 7 to 10 seconds of contact time (bleach solution on equipment/surfaces). Remember to use a chlorine test kit to determine the actual concentration. Also keep in mind that scented bleach is not permitted.
- Quaternary Ammonium Compounds (Quat) - are effective at a wider temperature and Ph range than other sanitizers. The disadvantages of using Quat compounds are that they are not effective on as many germs as chlorine and iodine. They also leave a residue on surfaces, and are not effective in hard water. The normal concentration of Quat is above 200 ppm at a temperature above 75°F. Optimal cleaning can be achieved by maintaining 30 seconds of contact time.
- Iodine sanitizers are not inactivated quickly by soil. They can be used in low concentrations, 12.5 to 25 ppm, and their presence or absence can be detected by sight (brown in color). The disadvantages of using iodine sanitizers are that they are not as effective as chlorine, they are less effective in water with a pH above 5.0, they are corrosive to metals at high

temperatures, and they may stain porous surfaces such as plastics. Optimal cleaning can be achieved by maintaining 30 seconds of contact time.

## Manual and machine warewashing

Bacteria are everywhere and can grow very quickly under the right conditions. Therefore, dishes, utensils and equipment must be both cleaned and sanitized to ensure that they are safe for use by your customers. Remember that cleaning and sanitizing are two separate tasks and both must be done. The methods available for cleaning and sanitizing dishes, utensils, and equipment can be performed either manually or using a machine.

- Manual warewashing – using a 3-compartment sink, the following nine steps are required to properly clean and sanitize dishes, utensils, and equipment.
  1. Clean and sanitize the sinks and work surfaces before each use.
  2. Sink # 1 should be filled with soap or detergent and water at a temperature of 110° – 120°F.
  3. Sink #2 should be filled with clean, hot water at a temperature of 120°F.
  4. Sink #3 should be filled with a chemical sanitizing solution with water at a temperature range of 75° - 120°F.
  5. Scrape and pre-soak all utensils.
  6. Wash utensils in sink #1.
  7. Rinse utensils in sink #2. All food particles and soap film must be removed from utensils surfaces or the sanitizer in sink #3 will be ineffective.

8. Sanitize utensils in sink #3 by immersing them in the chemical sanitizing solution for a minimum of 7-30 seconds – depending on the sanitizer used – or in a hot water bath of at least 171°F for a minimum of 30 seconds.
  9. Rack utensils and let air dry as part of the sanitizing process. Do not use a towel to speed up this process.
- Mechanical or machine warewashing – the following 3 steps outline the procedures for washing utensils using mechanical means.
    1. Be sure the proper cleaning agent is connected to the machine (do the same for the sanitizing solution if the machine is equipped).
    2. Scrape utensils and pre-soak before loading into the rack for cleaning.
      - Place utensils into racks, trays, baskets, or onto conveyors in a position that exposes all surfaces to the spray from all cycles.
      - Place in a manner that allows the item to drain fully. If utensils are racked, place them so that the food contact surface is up and the handle is down to allow water to drain away from the action end of the utensil.



3. Start the mechanical washer and note the temperature in each cleaning chamber. Follow the manufacturer's recommended temperature for each chamber or cycle.
  - If hot water is used as a sanitizing agent, the temperature must reach between 180° and 195°F in order to allow the surface of the utensil to reach 160°F or higher.
  - If a chemical sanitizer is used, the water should be between 55° – 100°F, depending on the chemical used and its concentration.
  - If one person is responsible for loading and unloading the mechanical warewashing machine, they must wash their hands before handling clean utensils.
  - If the machine does not meet the specified temperature in either the wash or sanitizing cycle, then the person-in-charge should be notified immediately so that the machine may be serviced. While the machine is not in operation, all utensils must be immersed in a sanitizing solution for at least 7 – 30 seconds and allowed to air dry.

**Chemical Test Kits** – When sanitizing with chemicals, you must use a chemical test kit. Chemical test kits are designed to make sure that the water and chemical mix of the machine is correct. There are three primary sanitizing solutions used in the food industry; each one requiring a different chemical test kit. The solutions, test kit, and procedures for use are as follows:

(a) Chlorine – usually white individual strips that turn either several shades of gray or black when exposed to chlorine.

1. When removing a strip from the chlorine test kit your hands and fingers must be dry.
2. Immerse in the sanitizing solution for less than one second.
3. Remove immediately.
4. Compare color to the color chart provided with the test kit.
5. The concentration should be between 50-100 ppm, depending on water temperature.

(b) Quaternary ammonia – usually orange individual strips that turn several shades of deeper green as the concentration increases.

1. When removing a strip from the quaternary ammonia test kit, your hands and fingers must be dry.
2. Immerse in the sanitizing solution for at least 10 seconds undisturbed.
3. Remove from solution.
4. Compare color to the color chart provided with the test kit.
5. Follow the manufacturer's concentration recommendation.

(c) Iodine – usually white individual strips that turn shades of black depending on the concentration.

1. When removing a strip from the iodine test kit, your hands and fingers must be dry.
2. Immerse in the sanitizing solution for less than one second.
3. Remove immediately.

4. Compare color to the color chart provided with the test kit.
5. The concentration should be between 12.5 -25 ppm, depending on water temperature.

## Wiping cloths

Wiping cloths are used to wipe up foods and shall not to be used for any other purpose other than their intended use.

### Dry wiping clothes

- Shall be used for wiping spills from tableware and carryout containers.
- Shall be free from food debris and visible soil.

### Wet wiping cloths

- Shall be laundered daily.
- Shall be stored in a sanitizing solution.
- Are used only for wiping spills from food contact and non-food contact surfaces.



## Garbage and Refuse Disposal

Frequent removal of garbage helps prevent rodent or other vermin infestation in food service establishments. The Food Code outlines specific requirements for garbage containers located both in and outside of the facility.

Indoor garbage containers must be:

- Durable
- Cleaned easily
- Non-absorbent
- Waterproof
- Leak-proof
- Rodent and insect resistant
- Kept covered when not in continuous use
- Emptied when full
- Cleaned after emptying

Outside garbage containers or dumpsters are required to:

- Have drain holes with drain plugs in place during usage.
- Have the area around them be free from debris.
- Be located on a hard surface that can be sprayed clean.
- Have lids or sliding doors that can be kept closed when not in use.



## Section 7

### FACILITY MAINTENANCE

#### **Floors, Walls, and Ceilings**

Floors and walls of a food service establishment must be easily cleanable and able to stand up to being wet most of the time. These surfaces may be covered with ceramic tile, quarry tile, asphalt tile, or terrazzo. Concrete floors can be approved if they are sealed with a durable material such as epoxy.

Carpeting, wood, and vinyl should not be used in warewashing or food preparation areas. Carpeting is never permitted in walk-in refrigerators, restrooms, handwashing stations, garbage storage, and any other location where floor may be subject to moisture. Floors that are subject to wet cleaning methods must be equipped with floor drains and baseboard covering.

Ceilings in all food preparation and warewashing areas must be non-porous and easily cleanable. All light fixtures and ventilation covers attached to the ceiling must be able to be cleaned easily. In old buildings, exposed overhead pipes that carry waste, must be shielded to prevent leaks from contaminating food. In newer buildings, exposed overhead pipes, rafters, and joists are not allowed in any food or warewashing areas.

## Lighting

The amount of light needed in an area depends on the type of work done in that area. The following intensity levels are recommended by the Model Food Code:

- Minimum of 10-foot candles (110 LUX):
  - In walk-in refrigerators and freezers.\*
  - In dry storage areas.\*
  - In any other area when cleaning is taking place.\*
- Minimum of 20-foot candles (220 LUX)
  - Customer self-service areas where food is being offered (e.g., buffet and salad bars).
  - Surfaces where produce or packaged foods are being sold or displayed.
  - Inside equipment (reach-in refrigerators and undercounter refrigerators, etc).
  - At handwashing stations.\*
  - In warewashing areas.\*
  - Storage rooms with utensils and equipment.\*
  - Restrooms.\*



- At least 50-foot candles (550 LUX):
  - Any surface where a food-service employee is using dangerous implements such as knives, slicers, and saws.
  - Wherever safety is a factor for employees.

## Pest Control

Rats, mice, cockroaches, and flies are of most concern to a food-service manager. These pests and vermin can carry pathogenic bacteria and can contaminate food with soil and excrement. While not all pests can be eliminated, they can be prevented or controlled in the food service establishment.

## Flies

Flies carry pathogenic bacteria such as *E. coli*, *Samonella*, and *Shigella*. Flies pick up bacteria as they land and feed on garbage, feces, and other food sources. Hairs on the fly's body pick-up bacteria from contaminated surfaces and the flies transport the bacteria to foods humans may consume.

There are three types of flies that are of most concern and each represent different hazards when present.

- **House flies** – house flies are common in all areas of the United States and thrive when food sources are present. These flies cannot eat solid foods and must regurgitate stomach juices onto the surface of the solid food to liquefy the foods. The housefly then uses its proboscis (mouth parts) to slurp up the food; leaving some behind when they fly away.

- **Blow flies** – blow flies are larger than the house flies and usually have a shiny blue-green colored abdomen. Blow flies are usually found in the presence of animal carcasses or when large amounts of fecal material are present. They are attracted to the smell of food and garbage.
- **Fruit flies** – fruit flies are smaller than houseflies and are usually yellow-brown in color. They are attracted to rotting or decayed fruits and vegetables. Fruit flies are very difficult to eradicate because it is difficult to pinpoint their breeding areas.

In general, if you eliminate the food supply for flies you can prevent a possible infestation. Another strategy is to install and maintain screens on all window and door openings. This, in conjunction with sealing all outside or outer wall penetrations, will dramatically reduce access to the facility by flies. Frequent and regular garbage pick-up is also essential to the elimination of the fly habitat.

## Cockroaches

Cockroaches are another type of pest that can carry bacteria and other pathogens from one area to another and are often found in food service establishments. Total elimination of these pests is next to impossible once they have been introduced, but their numbers can be controlled with good housekeeping and the proper use of insecticides.

Cockroaches avoid well lit areas and like to live in warm, tight, and moist areas such as under refrigerators, countertops, and garbage storage areas. The four most common types of cockroaches are the American, German, Oriental, and Brown Banded. The most common type found

in food service establishments in North America is the German cockroach which is readily identified by its two brown stripes on the back of its head.

Cockroaches are most active at night or in the dark. If you see a cockroach in the light or during the day you may have a severe infestation and action should be taken immediately.

If the food source for cockroaches is eliminated, they will not survive. This is the most effective way to prevent and control cockroach populations. Keep floors, walls, ceilings, and work surfaces clean and free of food debris. Use insect-proof containers to store food. Also ensure all doors, windows, and other access points to the facility are tight-fitting. This will eliminate or at least control unlimited access to your facility. Keep in mind that cockroaches have been known to hide in cardboard. Therefore, when boxes or other cardboard are brought into the facility they should be emptied and taken out of the food establishment as soon as possible.

Insecticides should only be applied by a trained pest control operator (PCO). Ask for the PCOs certification card before you allow insecticides to be applied in your establishment.

## **Rodents**

Rodents, such as the common house mouse, roof rat, and Norway rat are common and typically found near their food-source. They are destructive to food stores and can carry pathogenic organisms. They can gnaw through walls, floors, or containers to get to food.

The common house mouse usually lives within 30 feet of its food-source. They are small and found in walls, boxes, cabinets, equipment, and furniture. Mice like to feed on grains and cereals.

The roof rat is an excellent climber and is often found on the upper floors of a building, although they may be found in sewers as well. They like to stay within 150 feet of their nest and like to eat grains, cereals, fruits, and vegetables.

The Norway rat is larger than the roof rat and tends to burrow in the ground and sewers. Norway rats like to feed within 150 feet of their nest on grains, meats, spoiled foods, and garbage.

Rodents are nocturnal and like the cover of darkness. They are unlikely to be seen in the open and tend to follow the same path each time they travel and prefer staying close to walls or the sides of buildings. Common signs of a possible rodent infestation include runways, burrows, droppings, rub marks, and gnaw marks. As they travel, they leave urine and feces readily available for identification. Rodent urine fluoresces under black light.

If you suspect your facility has an infestation, notify the GSA Building Manager so that they can contact a licensed professional to handle the situation. Do not place poisons or other lethal measures in your establishment. This may inadvertently make the situation worse by causing a foodborne illness or even a possible death.

## **Integrated Pest Management**

The most effective way to control or eliminate pests and vermin from your establishment is by following good sanitation practices that minimize or eliminate food harborage areas and water sources. This is often referred to by pest control operators as an Integrated Pest Management (IPM) system.

An effective IPM will include frequent waste removal, maintenance for the facility and equipment, biological as well as mechanical control techniques, and pesticide application.

Three elements of a good IPM

- Maintain the facility to prevent pest and vermin access.
- Eliminate harborage by good housekeeping, food storage, and repairs as needed to the facility.
- Keeping a licensed professional available to exterminate any pests found at the establishment.

## **Plumbing**

### **Potable and non-potable water**

Water that is fit for human consumption is considered potable. It must be free from pathogens and chemical contamination that may cause illness. All water used in food preparation; warewashing; cleaning and sanitizing of equipment; and hand washing must be potable. Since “city-water” is checked regularly and must meet the above requirements, it is considered an approved source. Wells,

private water systems, and non-public distribution systems are required to be assessed and approved before use in a food-service establishment. Additional testing and close monitoring must also be employed on a regular basis.

Non-potable water is not normally approved nor allowed in food-service establishments except for air conditioning, fire suppression, and outdoor irrigations only.

### Cross-connections

When potable and non-potable water is plumbed or allowed in the same system and is allowed to mix, a cross-connection has occurred. One example of this is when a hose is connected to a sink faucet to fill a mop-bucket and is not removed after the operation is complete. If the sink water supply loses pressure or reverses the pressure causing suction, then a backflow situation has occurred and the water with chemicals will be sucked into the potable water supply. This situation can be caused by fire suppression systems being activated or sudden loss of pressure due to a main break.

### Backflow preventers

To prevent the above scenario, backflow preventers and air gap requirements have been required for some time now. Backflow preventers do exactly what the name implies. They mechanically close the pipe orifice if directional water flow and pressure is lost. All external water hose bibs, and mop sinks are prime examples of when a backflow preventer (double check-valve, reduced pressure backflow, and atmospheric vacuum breaker) is required. Remember that

atmospheric vacuum breakers must not be used upstream of the shut-off valve (i.e. hose nozzle).

## Air gap

An air gap is the physical distance created from the end of a water fixture to the rim, or highest point where water can collect directly below the fixture. This gap must be sufficient to prevent the possibility of water being sucked back into the fixture if a back-pressure situation occurs. Normal air gaps are at a ratio of 2 to 1. This means that the air gap distance must be twice as large as the diameter of the pipe or fixture feeding the water. For example, if the fixture is a 1 inch pipe then the air gap must be a minimum of 2 inches.

## Grease traps

If a grease trap is used or installed in your food service operation, it must be cleaned regularly because a blocked grease trap may cause wastewater to back up and overflow into the establishment. Keep in mind that the grease trap must be accessible.

## Immediate Health Hazards

An Immediate Health Hazard is a situation that poses an immediate and severe risk to proper sanitation and human health. If the following conditions occur, the manager is required to take action and close the facility or at least stop the serving of food until the situation is corrected:

- Sewage backup into the food establishment.
- Loss of electricity.
- Loss of hot water.
- Loss of potable water.
- Refrigeration failure (total failure of all refrigerated spaces).
- Severe insect infestation.
- Severe rodent infestation.
- Other problem that poses an immediate human health threat.

You should contact your GSA representative as soon as possible to explain the situation and to begin repairs or gather resources for reconciling the situation. Once the facility has been restored to its proper working order and a health authority (e.g., FOH inspector, local health department, or other entity) has deemed the facility ready, you may reopen.

## Workplace Safety

Food service facilities represent a unique working environment with a variety of potential hazards. An array of injuries can occur at food facilities including slips, trips, and falls from food or liquid spillage, cuts from a knife, or cuts from food preparation equipment. Managers and employees have a shared responsibility to do what they can to reduce the likelihood of an accident or injury occurring at the workplace.

For managers, the first step in reducing the potential for accidents and injuries is to identify the activities that put employees at risk. This is done using a *hazard assessment*, which starts by identifying tasks associated with different

duties. Once the tasks have been identified the next step is to look at ways to alter tasks that will help to reduce the risk of injury. If a task cannot be altered then provisions must be made that will help to protect the employee while doing that task. For example cutting meat with a meat cleaver is a necessary task in some facilities. To reduce the risk of injury you can require that employees wear a protective glove such as a mesh or Kevlar glove while using the meat cleaver.

In addition to management's responsibilities it is expected that employees would also be responsible for their safety by following the prescribed procedures outlined by management. This may include:

- Promptly cleaning up food spills and using cones to identify wet areas.
- Wear appropriate waterproof non-slip footwear.
- Practicing safe knife-handling.
- Using kitchen equipment only after being properly trained.

As a manager you are responsible for protecting the safety and health of your employees. By implementing safe work practices for your employees you can greatly reduce the likelihood of accidents and injuries from occurring at your facility. Some other safe work practices to be considered include the following:

- Identify and correct possible slip hazards.
- Use non-slip mats on slippery surfaces. Mats should clean easily.
- Provide adequate drainage for wet areas.
- Repair any uneven floor surfaces.
- Replace any drain covers that have come loose.

- Keep grates/drains free from debris and blockage.
- If necessary, follow OSHA Machine Guarding Standard, 1910.212, and properly guard kitchen equipment.
- Identify ergonomic stressors and the implement ways they can be decreased. For example, by providing stools or a foot rest bar at work stations workers can shift weight from their feet and still maintain reach and accessibility
- Redesign or reposition tasks to allow elbows to remain close to the body, (for example turn boxes over on their side to allow for easier access).
- Rotate workers through repetitive tasks.
- Use mechanical aids for chopping, dicing, or mixing foods (such as food processors and mixers) rather than hand chopping or mixing.
- Reduce the amount of chopping tasks by purchasing ready-made salads, pre-sliced onions and vegetables, and other pre-prepared foods. This may be limited by budgetary considerations.
- Restructure jobs to reduce repeated motions, forceful hand exertions, and prolonged bending.
- Select ergonomically designed tools. For example: Use ergonomically designed kitchen scoops and knives that allow the wrist to remain straight.



## Section 8

### IMPLEMENTING LEARNED SKILLS

Now that you have learned about effective communication and you have been reacquainted with the fundamentals of food safety, it is time to put these principles into practice.

Below are practical tips you can use to assist you in your training process. These tips are also provided to help you maintain the best food service facility possible.

1. Become familiar with what inspectors will be looking for during their inspections. FOH food service inspectors have been conducting inspections at your facility for several years. You should review the past inspection reports to determine if any violations have occurred more than once. You should also determine what you can do to rectify these violations. Please keep in mind that the inspector will be paying close attention to those areas that have been cited in the past.
2. Keep training records readily available. FOH's food inspectors will be verifying that training has occurred at your facility. The inspector will ask to see training records for all employees that have participated in the GSA Food Service training. The inspector will also ask to see your GSA Manager's Certificate, as evidence that you participated in this training. In addition, you are required to have a Manager's Certificate from one of the recognized food programs such as the National Environmental Health Association, NEHA, Food Safety Management Principles course, or the National

Restaurant Association ServeSafe Management Training. These certificates should be posted in a conspicuous area of the facility whenever possible.

3. Know how to access the information presented in the FDA Food Code. The FDA along with the Centers for Disease Control and Prevention (CDC) and the U.S. Department of Agriculture (USDA) update the Food Code every 4 years. It is highly recommended that you obtain the most recent hard copy of this document by downloading it from the FDA site at <http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/default.htm> This document will prove invaluable to the success of your facility.
4. Read this manual and become familiar with its contents and review the material in the video. The information in both this manual and the video are designed to serve as stand-alone resources. It is expected that you will fully participate by reading the entire manual and viewing the entire video. As part of this training you should also take the 20-question exam that is included at the end of this manual.
5. Utilize the training posters that have been provided to your facility. These posters should be hung in a conspicuous area and should serve as visual reminders on how to effectively execute desired tasks such as proper hand washing and effective use of the 3-compartment sink.

## Section 9

### SUMMARY AND REVIEW

The information presented in this training manual was designed to make you an effective communicator of food safety to your employees. By following the techniques and recommendations outlined in this manual you will hopefully enable your employees to work safely and effectively at your facility and thus reduce the likelihood of food code violations. As a manager you have an obligation to stay well informed of the hazards that impede success of your facility. Your employees look to you to provide the information that they need to be successful at work. Below is a list containing the six best practices that managers should adopt to maintain a successful and safe food service program:

- Get to know your employees and how they would best learn. This may require developing individualized training techniques. Be aware that a standardized training message may not be effective for all employees. You will need to determine the best way your employees learn.
- Understand that opportunities exist all the time that will allow you to reiterate desired work practices. Look for “teachable moments” throughout the day in which you can communicate proper food safety techniques. The posters provided to you by FOH can serve as useful reminders by depicting recommended procedures.

- Work closely with all regulating authorities, (e.g., food inspectors). Understand that the inspector is providing you with valuable information that, if ignored, could mean the termination of your business. Cooperate by being available to accompany the inspector during the inspection. Provide all requested documentation – including training records. Familiarize yourself with previous inspection reports; paying close attention to previous violations.
- Ensure that your facility maintains proper holding temperatures of potentially hazardous foods. Keep all potentially hazardous foods out of the temperature DANGER ZONE by keeping hot foods at 135°F or above and cold foods at 41°F or below.
- Only accept food from an approved source. Ensure that the food being delivered has been handled according to standardized practices.
- You and your employees should practice frequent handwashing. Keep lavatories, as well as handwashing sinks, well stocked with handwashing supplies.

Questions regarding this training should be directed to Jamie Bryant, FOH, at 214-767-3893 or emailed to [jamie.bryant@foh.hhs.gov](mailto:jamie.bryant@foh.hhs.gov)

## Section 10

### INSTRUCTIONS AND POST-TEST

1. All participating facility managers/supervisors are expected to complete the final exam. The final exam appears in the last section of this manual followed by three (3) copies of the answer sheet. The extra copies are for facilities with multiple managers/supervisors.
2. The selected answers on the answer sheet should be completely filled in to avoid confusion.
3. It is important that the following information is clearly printed on the answer sheet:
  - Manager/Supervisor name
  - Facility name
  - Facility mailing address (not physical address)
  - Manager/Supervisor phone number (in case information is not clear or missing).
4. The completed answer sheet may either be emailed to
  - Jamie Bryant
  - Federal Occupational Health at
  - [Jamie.Bryant@foh.hhs.gov](mailto:Jamie.Bryant@foh.hhs.gov)
5. Managers/Supervisors who receive a score of 80% or better on the final exam will receive a training certificate within two weeks of the date of submission.
6. If you have any questions, please call Jamie Bryant at 214-767-3893

Thank you

## Final Exam

The following questions are taken from the GSA/FOH Manager Food Safety Training. Please indicate the correct answer on the accompanying answer sheet by completely filling in the appropriate circle.

1. What is the Temperature Danger Zone?
  - a. 45°F to 140°F
  - b. 35°F to 140°F
  - c. 41°F to 135°F
  - d. 41°F to 165°F
  
2. What are the characteristics of potentially hazardous foods (PHFs)?
  - a. Dry, low acidity, vegetable based
  - b. Moist, neutral acidity, protein
  - c. Moist, sugary, low fat
  - d. Moist, vegetable based, high fat
  
3. The causes of foodborne illnesses include
  - a. Bacteria, parasites, solids, toxins and metals
  - b. Viruses, liquids, parasites, metals and toxins
  - c. Viruses, bacteria, parasites, gases, and toxins
  - d. Bacteria, parasites, viruses, toxins and metals
  
4. The following are all characteristics of adult learners except one of the following:
  - a. Adults need to recognize the need for the information
  - b. Adults learn best in a threatening environment, i.e. intimidation
  - c. Adults are self directed
  - d. Adults have accumulated a foundation of life experiences and knowledge

5. If a certified manager is not available during an inspection then the person-in-charge must either have no violations of the Food Code or be able to answer all of the following subjects/questions correctly except
  - a. Describe specific foodborne illnesses and their symptoms.
  - b. State the required food temperatures and cooking times associated with the safe cooking of potentially hazardous foods.
  - c. Describe the health risks associated with a high fat diet.
  - d. Explain procedures for cleaning and sanitizing food contact surfaces of food equipment and utensils.
  
6. Which is not a risk factor for a foodborne illness?
  - a. Undercooked or uncooked foods
  - b. Contaminated food equipment
  - c. Not wearing gloves while serving food
  - d. Maintaining proper food temps
  
7. When considering stock rotation, FIFO means
  - a. First In, First Out
  - b. First In, First Order
  - c. First Included, First Out
  - d. Fill In, Fill Out

8. What is the first action you should take as a manager following a suspected foodborne illness outbreak?
  - a. Call the local health department
  - b. Immediately remove the suspect item from the food service line, hold for possible testing
  - c. Notify your company's insurance agent
  - d. Find out if anyone else in the building has become sick as a result of eating at your establishment
  
9. Examples of how food safety information can be reinforced to your employees includes all but one of the following
  - a. Take advantage of "teachable moments" or opportunities to reiterate important information
  - b. Utilize positive and negative reinforcement techniques
  - c. Have a trained employee demonstrate the proper way to set up and use a 3-compartment-sink
  - d. Ask a new employee to describe the HACCP system
  
10. The first step in reducing accidents and injuries at your facility includes:
  - a. Identifying the activities that put employees at risk by conducting a job hazard assessment.
  - b. Conducting interviews of employees to determine how accidents/injuries occur at your facility
  - c. Reviewing training materials on accident prevention
  - d. Having a safety representative from a recognized safety organization provide an informational session to your employees

11. If hot water is used as a sanitizing agent the water must reach the following temperature range
  - a. between 160°F and 170°F
  - b. between 200°F and 215°F
  - c. between 180°F and 195°F
  - d. between 170°F and 179°F
  
12. According to the FDA Food Code, it should take how long to effectively wash your hands?
  - a. at least 5 seconds
  - b. at least 20 seconds
  - c. at least 35 seconds
  - d. at least 2 seconds
  
13. What must be done if potentially hazardous food is not cooled to 70°F in two hours?
  - a. It must be reheated to 165°F and the process started again
  - b. It must be reheated to 200°F and the process started again
  - c. It must be placed in the freezer to speed up the cooling process
  - d. It must be left at room temperature for at least one more hour

14. All of the following statements are true regarding “active managerial control” except
- It is used to describe the industry’s responsibility for developing and implementing a food safety management system
  - It is designed to prevent, eliminate or reduce the occurrence of foodborne illness risk factors
  - It involves non-specific action or procedures
  - Utilizes Standard Operating Procedures (SOPs) for performing critical procedures, such as cooling techniques
15. The variation allowed when calibrating a dial stem thermometer in an ice bath is \_\_\_\_\_ of 32°F.
- +/- 10°F
  - +/- 0°F
  - +/- 5°F
  - +/- 2°F
16. Illnesses in which employees may not work in a food service establishment, until cleared by a doctor, include all but one of the following
- Norovirus
  - Eczema
  - Salmonella typhi*
  - Hepatitis A
17. While demonstrating how to use a chemical test strip for chlorine, you inform your employees that the recommended concentration range of chlorine in water is:
- 110-125 ppm
  - 25-50 ppm
  - 50-100 ppm
  - 35-45 ppm

18. Which of the following people or organization should be contacted immediately following a suspected foodborne illness outbreak?
  - a. The GSA Building Manager
  - b. The local health department
  - c. The Centers for Disease Control and Prevention, CDC
  - d. U.S. Food and Drug Administration, FDA
  
19. Examples of safe work practices that you should implement at your facility include all but one of the following:
  - a. Keep grates/drains free from debris and blockage
  - b. Assign one individual to do repetitive tasks, such as slicing fruit
  - c. Require employees to wear appropriate waterproof non-slip footwear
  - d. Encourage safe knife handling, such as allowing a falling knife to drop to the floor
  
20. You observe an employee who is preparing sandwiches sneeze into his hand and then resume his work without washing his hands. This serious infraction is an example of what type of cross contamination:
  - a. Food to food cross contamination
  - b. Equipment to food cross contamination
  - c. People to people cross contamination
  - d. People to food cross contamination

Manager/Supervisor Name: \_\_\_\_\_  
 Facility: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 Phone number: \_\_\_\_\_

**GSA/FOH Manager Food Safety Training**

**Final Exam Answer Sheet**

Please select your answer by filling in the correct circle

1. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	2. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
3. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	4. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
5. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	6. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
7. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	8. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
9. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	10. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
11. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	12. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
13. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	14. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
15. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	16. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
17. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	18. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
19. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	20. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>

I acknowledge that I have completed the requirements of the  
GSA/FOH Manager Food Safety Training

\_\_\_\_\_  
Manager/Supervisor Signature

\_\_\_\_\_  
Date

Manager/Supervisor Name: \_\_\_\_\_

Facility: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Phone number: \_\_\_\_\_

## GSA/FOH Manager Food Safety Training

### Final Exam Answer Sheet

Please select your answer by filling in the correct circle

1. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	2. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
3. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	4. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
5. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	6. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
7. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	8. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
9. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	10. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
11. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	12. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
13. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	14. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
15. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	16. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
17. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	18. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
19. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	20. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>

I acknowledge that I have completed the requirements of the  
GSA/FOH Manager Food Safety Training

\_\_\_\_\_  
Manager/Supervisor Signature

\_\_\_\_\_  
Date

Manager/Supervisor Name: \_\_\_\_\_

Facility: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Phone number: \_\_\_\_\_

**GSA/FOH Manager Food Safety Training**

**Final Exam Answer Sheet**

Please select your answer by filling in the correct circle

1. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	2. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
3. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	4. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
5. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	6. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
7. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	8. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
9. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	10. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
11. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	12. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
13. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	14. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
15. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	16. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
17. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	18. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>
19. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>	20. A. <input type="radio"/> B. <input type="radio"/> C. <input type="radio"/> D. <input type="radio"/>

I acknowledge that I have completed the requirements of the  
GSA/FOH Manager Food Safety Training

\_\_\_\_\_  
Manager/Supervisor Signature

\_\_\_\_\_  
Date