

Certified Food Protection Manager Study Guide and Workbook



®

It is Mandatory to read and complete this Study Guide and Workbook

Read and complete the “multiple choice” and “true or false” exercises on your own time, before coming to class. You must bring your **completed** study guide and an instructor will verify completion prior to the start of class.

****If your study guide is not completed and presented to the instructor prior to class, you may be asked to reschedule; a \$45 fee per participant**

Disclaimer: All information presented in this course, both written and verbal is provided for informational purposes only and is not intended to provide legal advice or establish standards of reasonable behaviors. Operators who develop food-safety related policies and procedures are urged to obtain advice and guidance of legal counsel. Although Restaurant Management Group -RMG- endeavors to include accurate and current information compiled from sources believed to be reliable, Restaurant Management Group -RMG-, its agents and instructors make no representations or warranties as to the accuracy, currency, or completeness of the information. No responsibility is assumed or implied by Restaurant Management Group -RMG- for any loss or damage resulting from inaccuracies or omissions or any actions taken or not taken based on the content of this course both written and oral. Written course material is only to be used by those whose names are known and documented with Restaurant Management Group -RMG- and any electronic transfers, copying, scanning, mechanical, or otherwise is strictly prohibited. Requests to use or reproduce written material should be directed to Restaurant Management Group -RMG-



ServSafe®, NRFSP® and Prometric® logos are registered trademarks and are used by permission only by Restaurant Management Group -RMG-

Chapter 1- Food Safety Protection

Foodborne illness is a major concern to the restaurant and foodservice industry. A **foodborne illness** is a disease carried or transmitted to people by food. A foodborne illness OUTBREAK is when two or more people experience the same illness after eating the same food, an investigation is conducted by state and local regulatory authorities, and the outbreak is confirmed by laboratory analysis. A foodborne illness outbreak can be costly to an establishment. Costs can include lawsuits, higher insurance premiums, loss of sales, loss of reputation, staff missing work and staff retraining. **HIGH RISK PEOPLE** are more likely to get a foodborne illness and include ① infants and preschool age children, ② the elderly, and ③ people who are seriously ill. This is especially true when they consume potentially hazardous TCS-food that is raw, undercooked, or contaminated.

Food can become unsafe when it gets contaminated from a variety of points like farms, soil, sewage water, plants, animals and humans. However, in the retail food establishment, food is most likely contaminated by people working with food.

FOOD Contaminants are divided into three categories: **Biological, Chemical or Physical.**

1. **BIOLOGICAL** contaminants include bacteria, viruses, parasites, fungi and biological toxins.
2. **CHEMICAL** contaminants include cleaners, pesticides, and cooking in toxic metals like copper.
3. **PHYSICAL** contaminants include foreign objects like bandages, hair and broken glass.

Center for Disease Control determined 5 Key practices for ensuring food safety:

- ① Personal Hygiene: Practicing strict habits for hand washing, hair and clean clothing
- ② Holding Foods: Hold Cold TCS food at 41°F or less and Hot TCS foods at 135°F or higher
- ③ Cook foods: Cook foods thoroughly, to required internal temperatures
- ④ Clean and Sanitize Equipment: Prevent the transfer of bacteria to equipment like utensils and cutting boards by washing, rinsing and sanitizing the right way.
- ⑤ Purchasing: Only use approved, reputable suppliers to obtain food products.

Another word for illness causing microorganisms is a **Pathogen**. Pathogens include Bacteria, Viruses and Parasites. These pathogens can be transferred by **Poor Personal Hygiene**, when people don't wash their hands before handling food. **Cross-Contamination** happens when pathogens from raw animal foods are transferred to cooked or ready-to-eat food **by hands, equipment** like cutting boards and utensils or **improper storage** of raw foods in the refrigerator. **Time and Temperature** abuse happens when pathogenic bacteria grow on TCS foods that are left out at unsafe temperatures for more than 4 hours. This temperature range is called the Temperature Danger Zone and measures between 41°F - 135°F. Time and Temperature abuse happens when we fail to hold, cook, cool or reheat foods to the right temperatures. **Poor cleaning and sanitizing** happens when we fail to clean and sanitize equipment the right way. It occurs when cutting boards and utensils are not washed, rinsed, and sanitized between uses; when food contact surfaces are wiped clean instead of being washed, rinsed and sanitized; when wiping cloths are not stored in a sanitizer solution between uses; or when sanitizer solution was not prepared correctly.

TCS Food: Although any type of food can become contaminated, some are better able to support the rapid growth of bacteria than others. These foods are called TCS foods (*Time-Temperature Control for Safety.) They specifically are high in protein, have a low to neutral acid or pH of 4.6-7.5, and typically have high moisture content. TCS food requires time and temperature control to prevent the growth of bacteria and the production of toxins.

TCS FOODS include: ① Poultry (chicken, turkey, duck), ② Meats (Beef, Pork, Lamb), ③ Seafood (Fish, Crustacean, Mollusk), ④ Milk and Dairy, ⑤ Eggs, ⑥ Soy foods like Tofu, ⑦ Untreated Garlic and Oil mixtures, ⑧ Cooked Plants like, Cooked Rice, Cooked Beans and Cooked Potatoes, and these uncooked plants, ⑨ Raw Bean Sprouts, ⑩ Cut Melons, ⑪ Cut Tomatoes and ⑫ Cut Leafy Greens like lettuce, spinach and cabbage.

Ready-To-Eat food is food that can be eaten without further preparation, washing or cooking. Like TCS food, ready-to-eat food also needs careful handling to prevent contamination. Ready-to-eat (RTE) food includes: cooked food, washed fruit and vegetables, deli meat, bakery items, sugar, spices, and seasonings.

Person-In-Charge: A Food Protection Manager is the “**Person-In-Charge**” of food safety in the retail operation. Your role as a food safety manager is to have preventative measures in place to keep food safe and to keep food from being contaminated. You must supervise employees responsible for storage, preparation, display, and service of food in your establishment. The Person-In-Charge must conduct self-inspections, pass a certification exam, be able to describe foods identified as major food allergens, and describe the relationship between the prevention of foodborne disease and the personal hygiene of a food employee.

Staff Training: As a manager, it is your responsibility to ensure that employees have the knowledge and skills needed to keep food safe and protected from contamination. Your first task is to make sure your staff knows how to handle food safely and can follow food safety procedures. You must provide training when they are first hired and on an ongoing basis. In general, all staff should receive basic food safety and personal hygiene training while it is also important to understand the need for job specific training. You should retrain your staff regularly, especially when there are updates or changes in your operation. Monitor your staff to make sure they are following the food safety procedures taught the right way. And finally, it is very important to document the training session with each employee.

Government’s Role: A big part of your job as a food safety manager is keeping food safe and understanding all the rules and regulations that apply. What level of government makes what rules and who enforces them?

- **FDA: Food and Drug Administration** inspects all food except meat, poultry, and eggs. The agency also regulates food transported across state lines. In addition, this federal agency publishes the FDA Model Food Code, which is a recommendation, or guideline for food safety. It is not a law.
- **USDA: United States Department of Agriculture** regulates and inspects meat, poultry, and eggs. It also regulates food that crosses state boundaries or involves more than one state.
- **CDC: Centers for Disease Control and Prevention** and the **PHS: Public Health Service** are federal agencies that conduct research into the causes of foodborne illness outbreaks.
- **EPA: Environmental Protection Agency** created for the purpose of protecting human health and the environment by writing and enforcing regulations related to air, land and water.
- **OSHA: Occupational Safety and Health Administration** enforces health standards and regulations on employee work-safety, noise, chemicals and other work-place hazards
- **State Health Departments:** In the United States, Food regulations are written by State governments where each state decides whether or not to adopt or modify the FDA Model Food Code.
- **Local Regulatory Agency:** Inspections and enforcement of foodservice state regulations is usually carried out at the local, city, county level regulatory agency or Health Department. Accompany the inspector during the inspection, take good notes, and correct violations where possible. Health inspectors can inspect your facility anytime during your normal operating hours. This agency also investigates complaints, issues licenses and permits, approves construction and reviews and approves HACCP plans.

Chapter 1-Multiple Choice

1. Which is **TRUE** regarding food safety training?
 - a. The ideal length for a training session is one to two hours
 - b. Training records should be used to document training
 - c. Employees only require food safety knowledge that is specific to their tasks.
 - d. Further training is unnecessary if employees received training upon being hired.

2. What are the three categories of contamination to food safety?
 - a. Biological, Chemical, Environmental
 - b. Biological, Chemical, Physical
 - c. Biological, Practical, Poisons
 - d. Infectious, Chemical, Hazardous
3. Which food would most likely cause a foodborne illness?
 - a. Grape juice
 - b. Diced tomatoes
 - c. Whole wheat flour
 - d. Powdered milk
4. Cross-contamination would likely occur if...
 - a. Carrots are undercooked
 - b. Meat is left out at room temperature
 - c. Employees fail to wash their hands returning from the restroom
 - d. Cutting boards are not washed, rinsed and sanitized between use
5. A foodhandler scratches a cut and continues to prepare a sandwich. This is an example of
 - a. Time-Temperature Abuse
 - b. Poor Personal Hygiene
 - c. Cross Contamination
 - d. Acceptable Safe Food Practices.
6. Left over chili is left sitting out to cool on the counter, this is an example of?
 - a. Time-Temperature Abuse
 - b. Cross Contamination
 - c. Poor Personal Hygiene
 - d. Poor Cleaning and Sanitizing
7. A foodhandler sprays cleaner on a prep table next to ready-to-eat tuna salad; this is an example of
 - a. Time-Temperature Abuse
 - b. Poor Personal Hygiene
 - c. Cross Contamination
 - d. Chemical Contamination

True or False

- ☐ T ☐ F 1. Cross-contamination can be prevented if utensils are washed after each use
- ☐ T ☐ F 2. Time-temperature abuse is when food stays too long at temperatures between 41°F-135°F
- ☐ T ☐ F 3. Adults are more likely than pre-school age children to get sick from contaminated food
- ☐ T ☐ F 4. An example of preventing cross contamination is when you prepare raw meats separately from ready-to-eat foods
- ☐ T ☐ F 5. The FDA Food Code Model is an actual law that food establishments must follow
- ☐ T ☐ F 6. Purchasing fresh fish from a recreational fisherman could pose a threat to food safety
- ☐ T ☐ F 7. A foodborne-illness outbreak is two or more people sick from eating at the same place
- ☐ T ☐ F 8. USDA is a federal agency responsible for inspection of meats, poultry and shell eggs

CHAPTER 2- Contamination to Food

Biological contaminants include ① **Bacteria**, ② **Viruses**, ③ **Parasites** and ④ **Fungi**. These are called pathogens and may be transferred to food by people, raw food, food contact surfaces, or by pests. . The majority of foodborne illness is caused by **pathogenic microorganisms** like bacteria and viruses; however some microorganisms can spoil food. These are known as fungi, like mold and yeast.

Bacteria are microscopic living organisms and are found everywhere, including food, soil, animals, pests and in people. How do we control bacteria? The acronym **FATTOM** can help you remember the **6 conditions** Bacteria need in order to survive and grow. ① **Food**- high protein-carbohydrate TCS foods, ② **Acidity**- a slight to neutral acidic Ph of 7.5-4.6, ③ **Temperature**- Bacteria grow well in temperatures between 41°F to 135°F, ④ **Time**- Bacteria need 4 hours between 41°F to 135°F, to multiply and grow enough to cause illness, ⑤ **Oxygen**- Most bacteria require oxygen to grow, but a few can grow without it and ⑥ **Moisture** -Bacteria grow well in food with high levels of **water activity (aw)**. **aw** scale ranges from 0.0 to 1.0. The two conditions in the acronym FATTOM that a retail food manager should control to prevent the growth of bacteria are Temperature and Time. Although bacteria may be resistant to low or even freezing temperatures, most bacteria can be killed by high temperatures reached during cooking.

Spores however, are certain bacteria that produce a protective coating, which protects them from high heat and sanitizing. Since spores are commonly found in foods from the soil, (potatoes, carrots) it is important to hold, cook and reheat these foods properly. This will prevent spores that might be present from reverting back to a form capable of growing and causing illness. **Clostridium perfringens**, **Clostridium botulinum** and **Bacillus cereus** are foodborne illnesses caused by spore forming bacteria.

General symptoms of a foodborne illness include: Diarrhea, Vomiting, Fever, Nausea, Abdominal cramps, Jaundice (yellowing of skin and eyes), Fatigue. The type of pathogen, how much contamination is in the food, and the general health of the affected person determine the severity of the symptoms. The onset times can range from 30 minutes to 6 weeks.

Major Bacteria That Cause Foodborne Illness

Nontyphoidal Salmonella- Found mostly in raw and undercooked poultry, eggs and unpasteurized dairy products. Cook raw poultry to 165°F and prevent cross-contamination between raw poultry and ready-to-eat food. ② Exclude infected employee from work and report it to the health department.

Salmonella Typhi – Only lives in humans. People carry it in their bloodstream and intestinal tract. You can get typhoid fever if you eat RTE food or drink beverages that have been handled by a person who is infected with Salmonella Typhi. Wash hands and cook foods thoroughly. ② Exclude infected employee from work and report it to the health department.

Shigella spp. – Human intestinal bacteria transferred by foodhandlers' feces contaminated hands to ready-to-eat foods and salads containing TCS food ingredients; potato, shrimp, chicken salad. Flies can also carry it after landing on feces and then food. ② Exclude infected employee from work and report it to the health department.

Shiga toxin-producing E. Coli- Bacteria found in the intestines of cattle and mammals. Commonly linked to undercooked or raw ground beef. Cooking ground meat to 155°F will destroy the bacteria. Prevent cross-contamination between raw ground meat and ready-to-eat food. ② Exclude infected employee from work and report it to the health department.

Viruses are smaller than bacteria and are thought to be the No. 1 cause of foodborne illness in the United States. Although viruses do not grow in food, once contaminated food is eaten, the virus grows inside a person's intestines. A virus can survive cooler and freezer temperatures, and are not destroyed by normal cooking temperatures. People carry viruses in their feces and transfer them to their hands after using the restroom. Ready-to-eat foods are most likely to get contaminated. The key to controlling the spread of foodborne viruses is good personal hygiene. The viruses of primary importance to food establishments are **Hepatitis A** and **Norovirus**.

Major Viruses That Cause Foodborne Illness

Hepatitis A – It is initially found in molluscan shellfish (primarily oysters) contaminated by raw sewage. It is then found in the feces of the infected person who purchased and consumed shellfish from unapproved suppliers. Foodhandlers' feces contaminated hands spread the virus to ready-to-eat foods, salads, and produce due to poor personal hygiene. Hepatitis A attacks the intestines and liver. Symptoms initially are slight nausea and fatigue, and 2-6 weeks later, **persons develop jaundice**. Ⓢ Exclude infected employee, symptoms of jaundice and report it to the health department.

Norovirus – is also found in molluscan shellfish (primarily oysters) and water contaminated by raw sewage. It is spread to ready-to-eat foods by foodhandler's hands contaminated with feces due to poor personal hygiene. Symptoms are diarrhea and vomiting and usually appear within 24 hours. Norovirus is thought to be the No. ① cause of foodborne illness in the United States. Ⓢ Exclude infected employee from work and report it to the health department.

Parasites are organisms that live on or in another animal or host to survive. This includes animals such as seafood and wild game but can also be found in contaminated water. Parasites range in size from microscopic and up to worms visible to the naked eye. Proper cooking and freezing can destroy parasites. Fish and seafood served raw or undercooked must be frozen correctly by the manufacturer to destroy parasites. This is called **Sushi Grade** seafood.

- **Anisakia** - a small wormlike parasite found in Pacific raw fish, including Alaskan Salmon
- **Giardia** - a parasite found in improperly treated water and produce washed with contaminated water
- **Trichinella** - An intestinal roundworm parasite found in wild game and pigs

Biological Toxins can be a natural part of a plant, animal, fish or a result of their diet.

Seafood Toxins, like Scombroid Toxin result from the toxin **histamine** being produced when Tuna, Mackerel, Bonito and Mahi Mahi are time and temperature abused. **Ciguatoxin** is found in predatory tropical reef fish that have eaten smaller fish, which have consumed this toxin from marine algae. Some predatory reef fish associated with this toxin are Barracuda, Grouper, Jacks and Snapper. It is critical to purchase fish from approved suppliers since these toxins cannot be destroyed by cooking or freezing.

Mushroom Toxins: Foodborne illnesses associated with **mushrooms toxins** are almost always caused by eating toxic, wild mushrooms collected by amateur mushroom hunters. Mushrooms toxins are not destroyed by cooking or freezing. For this reason, do not use mushrooms picked in the wild unless they have been purchased from an approved supplier.

Spoilage Microorganisms

FUNGI, such as **molds** and **yeast** are generally responsible for spoiling food. **MOLD** may produce toxins but rarely cause illness. Freezing doesn't kill mold but may slow its growth. They can grow in almost any condition but grow well in acidic foods and dry foods. Foods containing mold should be thrown out, unless it's a natural part of the food, like blue cheese. The FDA allows cutting away moldy areas on hard cheese at least one inch around them. **YEAST** can spoil food and may bubble, turn pink and slimy with an alcohol-like odor. Foods spoiled by yeast, like jams and jellies, fruit and fruit juice should also be discarded.

Type	Biological Foodborne Illness	Associated Food	Prevention
*Bacteria	Salmonella Nontyphoidal (NTS) Begins in the intestinal tract of poultry and other farm animals. Found in raw poultry, eggs and unpasteurized dairy. <i>Diarrhea, Cramps, Vomiting, Fever</i>	Raw Poultry and unpasteurized eggs	Cook Poultry to 165°F and Minimize Cross-Contamination *Infected Employee Excluded from Establishment
* Bacteria	Salmonella Typhi is only found in humans, and is spread by people that carry it in their bloodstream and intestinal tract. <i>Diarrhea, Cramps, Vomiting, Fever</i>	RTE Foods, Liquids, beverages contaminated by human feces on unwashed hands	Practice Good Personal Hygiene and Hand washing, No Bare Hand Contact with RTE Foods *Infected Employee Excluded from Establishment
*Bacteria	Shigella spp. Lives in the intestinal tract and feces of humans. Flies also carry it from feces to food. <i>Bloody Diarrhea, Cramps, Fever</i>	Raw Vegetables and Ready-To-Eat Salads (tuna, chicken, potato) contaminated by human feces on unwashed hands	Practice Good Personal Hygiene and Hand washing, No Bare Hand Contact with RTE Foods. *Infected Employee Excluded from Establishment
*Bacteria	E. coli- shiga toxin Lives in cattle intestines and other farm animals <i>Diarrhea, Cramps</i>	Raw, undercooked ground beef and produce irrigated by water contaminated with cattle feces	Cooking, Minimize Cross-Contamination. *Infected Employee Excluded from Establishment
Spore Bacteria	Clostridium perfringens Spore-forming bacteria originating in soil <i>Diarrhea, Severe Cramps</i>	Cooked root vegetables, meat and poultry products including casseroles meat stews, gravies	Control Time and Temperature during cooling holding and reheating
Spore Bacteria	Clostridium botulinum Caused by toxin-producing spore-forming bacteria found in soil and root vegetables <i>Nausea, Vomiting, Deadly</i>	Improperly Canned foods, Reduced Oxygen Packaged Foods, Time/Temperature Abused Baked Potatoes	Control Time and Temperature, Avoid Swollen and Dented Cans.
Spore Bacteria	Bacillus cereus Caused by spore-forming bacteria in grains <i>Diarrhea or Vomiting</i>	Time and temperature abused Cooked Rice ,Cereal Grains and Corn	Control Time and Temperature
Other Bacteria	Listeria monocytogenes Bacteria originates in soil and grows well in refrigerator on deli meats <i>Causes Abortion in women; Meningitis in newborns</i>	Expired Deli meats, Hot dogs, and Unpasteurized Soft Cheese	Throw out Expired Products, Cooking and Prevention of Cross-Contamination
Other Bacteria	Vibrio spp. bacteria originates in waters where oysters are harvested <i>Diarrhea, Cramps, Vomiting, Fever</i>	Time and Temperature abused Oysters and seafood	Cooking, Time and Temperature Abuse, Purchase Oysters from Approved Source
Other Bacteria	Staphylococcus aureus Lives in human nose hairs, throat and scalp, infected cuts and open sores <i>Nausea, Vomiting, Cramps</i>	Ready-To-Eat foods touched by Contaminated Bare Hands with infected open sores.	Practice Good Personal Hygiene and Hand washing, No Bare Hand Contact with RTE Foods, Employee With Infected Cuts on Hands Restricted from food preparation
*Virus	Norovirus is initially found in oysters contaminated by sewage. Spread through vomit and diarrhea of infected person. <i>Vomiting, Diarrhea, Cramps</i>	Infected Foodhandler spreads the virus to Ready-To-Eat foods through vomit and feces contaminated hands	Practice Good Personal Hygiene and Hand washing, No Bare Hand Contact with RTE Foods, purchase shellfish from approved source. *Infected Employee Excluded from Establishment
*Virus	Hepatitis A is commonly found in oysters contaminated by sewage. Spread by people that carry it in their bloodstream and Liver <i>Mild Fever, Weakness, Jaundice</i>	Infected Foodhandler spreads the virus to Ready-To-Eat foods with feces contaminated hands	Practice Good Personal Hygiene and Hand washing, No Bare Hand Contact with RTE Foods, purchase shellfish from approved source. * Infected Employee Excluded from Establishment
Parasite	Anisakia Simplex Wormlike parasite in found in raw Salmon and Fish <i>Tingling in Throat, Coughing up Worms</i>	Various Raw Fish, especially Pacific Alaskan Salmon	Cooking and Proper Freezing destroys it. Purchase Sushi Grade Seafood if serving raw fish
Parasite	Giardia Microscopic parasite found in water <i>Cramps, Diarrhea, Vomiting, Fever</i>	Improperly Treated Water	Cooking and Proper Freezing destroys it. Use only clean potable water and ice for drinking.
Parasite	Trichinella Intestinal wormlike parasite in wild game <i>Diarrhea, Cramps , Swelling & Joint pain</i>	Undercooked wild game	Cooking destroys this parasite
Fish Toxin	Scombroid Toxin A histamine toxin-producing bacteria in fish <i>Reddening face, neck, tingling mouth</i>	Tuna, Mackerel, Mahi Mahi, Bonito	Prevent Time and Temperature abuse, Purchase seafood from Approved Suppliers
Fish Toxin	Ciguatoxin found in marine algae and tropical Reef-fish that have consumed smaller fish <i>Hot/Cold Flashes, Nausea, Tingling, Joint Pain</i>	Tropical Reef Fish, Barracuda, Grouper, Snapper, Jack	Purchase Tropical Reef Fish From Approved Sources

*The FDA has identified these six as Major Foodborne Illnesses that cause severe sickness and are highly contagious

CHEMICAL CONTAMINATION can come from a many things in your establishment including toxic metals, pesticides, hair spray, cleaning chemicals, sanitizers, and machine lubricants. To prevent toxic-metal poisoning, don't use lead, pewter, aluminum or copper to prepare or store acidic foods. Use only food grade cookware and utensils in your establishment. Carbonated beverage dispensers should be equipped with backflow prevention devices to reduce the risk of toxic metal poisoning in copper water lines. When using chemicals during operating hours, food should be stored, covered or protected. Never spray cleaning chemicals, pesticides or insecticides when working with or around food or near customers eating food. Store chemicals in their original containers or in a clean bottle with a label, and away from the food preparation area. Chemicals must **never** be stored above food or food-contact surfaces.

PHYSICAL CONTAMINATION occurs when any foreign object becomes mixed with food and presents a hazard to those consuming it. Physical contamination can range from a piece of hair to naturally occurring objects, such as bones in fish. Physical contaminants can include metal shavings from cans, staples, glass from broken light bulbs, fingernails, hair, band-aids, dirt. Closely inspect the food you receive and take steps to ensure food will not become physically contaminated during delivery, storage, or where it is most vulnerable, during preparation. Good maintenance of equipment can also minimize the risk of any loose screws or waste materials that might pose a threat. Customers can also pose a physical risk, so always provide a good barrier between food displays and the guest.

DELIBERATE CONTAMINATION of food is when people actually try to tamper with or contaminate food with intent, usually focused on a particular business or individual. You also must take steps to stop people who are actually trying to contaminate it. These people may try to tamper with your food using biological, chemical, or physical contaminants. They may even use radioactive materials. Attacks might occur anywhere in the food supply chain. But they are usually focused on a specific food item, process, or business. The best way to protect food is to make it as difficult as possible for someone to tamper with it. For this reason, a food defense program should deal with the points in your operation where food is at risk. The FDA has created a tool that can be used to develop a food defense program. It is based on the acronym A.L.E.R.T. It can be used to help you identify the points in your operation where food is at risk.

Assure: Make sure products received are from safe sources

Look: Monitor the security of products in the facility

Employees: Know who is in your facility

Reports: Keep information related to food defense accessible

Threat: Develop a plan for responding to suspicious activity or a threat to the operation

Crisis Management Despite your best efforts, a foodborne-illness outbreak or other crisis like power outage, water interruption or sewage backup may occur in your operation. Here are some things to consider as part of your response to a food borne illness outbreak: ① **Gather Information** about the food that was eaten and symptoms of the person who became sick. ② **Notify Local Authorities** that you suspect an outbreak. ③ **Remove Product** and set the suspect food item aside to ensure no further contamination. ④ **Document** the incident including the product name, lot number and date marks. ⑤ **Identify staff** who were scheduled or working at the time of the suspected contamination. ⑥ **Cooperate** with authorities by providing all requested documentation. ⑦ **Review** your food handling procedures to look for areas of weakness or where improvement is needed.

FOOD ALLERGY is the body's immune system responding to a food or protein mistakenly believes is harmful. Symptoms of food allergies could include itching, tightening of the throat, wheezing, hives, swelling, diarrhea, vomiting, cramps, and loss of consciousness or even death. Food allergies cannot be cured, so it is important to understand how to prevent an allergic reaction and the food that triggers it. **The 8 most common food allergies** include ①milk, ②eggs, ③shellfish, ④fish, ⑤wheat, ⑥soy, ⑦peanuts and ⑧tree nuts. Label menu items and packaged foods with any potential food allergens. Your service staff should be able to tell customers about menu items that contain potential allergens and suggest other menu items that are free of food allergens. At minimum, have one manager available per shift to answer customers' questions about menu items. When customers say they have a food allergy, your staff should take it seriously.

The kitchen staff must prevent cross-contact of allergens to food served to allergic customers. Wash rinse and sanitize equipment before prepping food for customers with allergies.

- Kitchen Staff must make sure that allergens are not transferred from food containing an allergen to the food served to the customer. This is called cross-contact.
- Cooking different types of food in the same fryer oil can cause cross-contact, for example; shrimp allergens could be transferred to chicken when being fried in the same oil.
- Putting food on surfaces that have touched allergens can cause cross-contact. For example, putting chocolate chip cookies on the same parchment paper that was used for peanut butter cookies can transfer some of the peanut allergen.

Food Allergens
Milk
Eggs
Fish
Shellfish
Wheat
Soy/Tofu
Tree nuts
Peanuts

Chapter 2-Study Questions

1. Which condition does **NOT** typically support the growth of bacteria?
 - a. Moisture
 - b. Protein
 - c. Time
 - d. High acidity
2. What is the best way to prevent a foodborne illness from viruses?
 - a. Control time and temperature
 - b. Cook fish to proper temperatures
 - c. Discard expired products
 - d. Practice good personal hygiene

3. Which statement is **NOT** true about E-coli?
 - a. I am found in the intestines of cattle
 - b. Cooking ground beef correctly can destroy me
 - c. Excluding employees with diarrhea can stop me
 - d. Flies can spread me
4. Which statement is **NOT** true about Salmonella Typhi?
 - a. I am commonly spread to ready-to-eat foods like beverages and liquids
 - b. Cooking food correctly can prevent me
 - c. I am carried in the bloodstream and intestines of humans
 - d. I am found in raw oysters contaminated with raw sewage
5. Which food is most likely to be contaminated with the virus that causes Hepatitis A?
 - a. Wild mushrooms
 - b. Raw oysters
 - c. Tuna
 - d. Poultry
6. Symptoms of food allergies could include;
 - a. Swelling, itching, hives, tightening of the throat, wheezing
 - b. Dizzy spells, blurry vision and headaches
 - c. Fever and bloody diarrhea
 - d. Vomiting and later jaundice
7. What is the most important way to prevent a foodborne illness from bacteria?
 - a. Prevent cross-contamination
 - b. Practice good cleaning and sanitizing
 - c. Practice good personal hygiene
 - d. Control time and temperature
8. Which statement is most true?
 - a. Physical contamination is when people handle food improperly with their hands
 - b. Chemical contamination likely happens when storing flour in aluminum containers
 - c. Physical contamination includes objects in food like hair, bandages, fingernails, dirt and bones
 - d. Biological contamination includes bacteria, viruses, parasites, fungi and chemical toxins
9. The FDA has created a tool to be used in a food defense program. It is based on the acronym
 - a. MSDS (Material Safety Data Sheet)
 - b. OSHA (Occupational Safety Health Administration)
 - c. FAT-TOM (Food Acidity Temperature Time Oxygen Moisture)
 - d. ALERT (Assure Look Employees Reports Threats)
10. What type of container should **NOT** be used to cook acidic foods?
 - a. Wood
 - b. Plastic
 - c. Copper
 - d. Glass

11. Which is **NOT** a common food allergen?
 - a. Peanuts
 - b. Milk
 - c. Shellfish
 - d. Tomatoes
12. In what way can a foodhandler chemically contaminate food?
 - a. Not washing floors properly
 - b. Not washing walls properly
 - c. Not washing food preparation equipment properly
 - d. Not washing the utility sink correctly
13. Prevent food allergies by doing all of the following **EXCEPT**:
 - a. Prepare food separate with washed, rinsed and sanitized equipment
 - b. Label menu items with any potential food allergens
 - c. Train your staff to be able to describe menu items to customers
 - d. Take the temperature of food every 4 hours
14. A customer orders a Caesar salad without cheese. What should the kitchen staff do?
 - a. Wipe out the bowl with a clean cloth and prepare the salad
 - b. Use the same bowl, but ensure there are no cheese particles inside.
 - c. Wash, rinse and sanitize the mixing bowl and tongs and proceed to prepare the salad
 - d. Wipe the tongs with a sanitized cloth and prepare the salad
15. Parasites are link to what type of food?
 - a. Reduced Oxygen Packed (ROP) Food
 - b. Prepared Salads
 - c. Seafood
 - d. Poultry

Chapter 2 True or False

- ___T___F 1. Most foodborne illness is caused by biological contamination
- ___T___F 2. Tofu and Soy are TCS foods and major food allergens
- ___T___F 3. A wild toxic mushroom is an example of a chemical contamination
- ___T___F 4. Cooking both fish and oysters in the same fryer oil can cause cross-contact of allergens
- ___T___F 5. FAT TOM is an abbreviation for the six conditions bacteria need to grow
- ___T___F 6. A bone found in a fillet of fish is a physical hazard
- ___T___F 7. Salmonella Typhi is most common in undercooked poultry
- ___T___F 8. The best way to prevent the spread of viruses is through proper handwashing
- ___T___F 9. "Sushi Grade" means raw seafood has been treated for viruses
- ___T___F 10. Most disease-causing bacteria can grow within a temperature range of 41°F-135°F
- ___T___F 11. The L in the acronym A.L.E.R.T stands for look

Chapter 3-Employee Foodhandling

Good personal hygiene is extremely important against contamination and foodborne illness because people carry disease. A successful personal hygiene program should cover overall cleanliness, bathing, proper handwashing, glove usage, work attire and employee illnesses that must be reported to the manager. Food handlers have the potential to contaminate food when they have been diagnosed with a foodborne illness, show symptoms of diarrhea, vomiting, have infected lesions, or touch anything that could contaminate their hands.

Proper hand washing is the most critical aspect of personal hygiene. Simple acts like nose picking, or touching one's hair can contaminate food with Staphylococcus. Hand washing is especially important before starting work, after using the restroom, after coughing, smoking, eating, drinking, handling raw food, and handling dirty dishes and garbage. The **5 steps to proper hand washing** should include: ① Turn on hot water at least 100° F and wet your hands, ② Apply soap, ③ Scrub hands and arms for 10 to 15 seconds, ④ Rinse and, ⑤ Dry with a single-use towel or air hand dryer. The whole hand washing process should take 20 seconds from start to finish. After drying hands, turn off the faucet using a single-use paper towel, if available. When in a restroom, use a paper towel to open the door. If an establishment uses a hand antiseptic, it must be FDA approved. Do not wash hands in a food prep sink, warewashing sink or utility sink. Do not dry hands on your apron or dish towel.

Hand maintenance should include short and clean nails, cuts and wounds covered with clean bandages and also covered with gloves or a finger cot. Long, false, and acrylic nails should not be worn because they may be difficult to keep clean. Long or false nails should not be worn during food preparation because of the physical contamination as well as biological because they harbor harmful bacteria. Some jurisdictions allow false nails if single-use gloves are worn.

Gloves can create a barrier between hands and food; however they should never be used in place of hand washing. Select the correct size and wash hands before putting on disposable gloves and when changing to a new pair. Gloves used to handle food are for single-use. Do not blow into, wash or re-use gloves. They must be changed at least every **four hours**, when they become soiled or torn, after handling raw meats or when beginning a new task. Do not handle ready-to-eat foods with bare-hands unless your local regulations allow it, and foodhandlers have properly washed their hands prior to handling food.

Personal Hygiene

All employees must bath or shower before work and keep their hair clean. Prior to handling food, employees must put on clean clothing, appropriate shoes and a clean hair restraint or hat. They must also remove jewelry from hands and arms. Only a plain wedding band should be allowed. Change aprons between raw and ready-to-eat foods and remove aprons when leaving the kitchen area. Establishments should implement strict policies regarding eating, drinking, smoking, and gum chewing because these behaviors spread bacteria from human saliva. These should not be allowed when preparing, serving or working in food-prep areas. Employees should eat and smoke in designated break areas. Drinks in the food preparation area must have a lid and a straw to prevent contamination.

Employee Illness must be reported to management before working with food and managers must exclude sick employees from work until cleared by a medical doctor if diagnosed with any of the 6 major food borne illnesses, ① **Salmonella Typhi**, ② **Nontyphoidal Salmonella (NTS)**, ③ **Shigella spp.**, ④ **Shiga toxin-producing E. coli- (STEC)**, ⑤ **Hepatitis A**, or ⑥ **Norovirus**. Foodworkers with Jaundice for less than 7 days should also be excluded and must be reported to the local health department and a written medical release received before allowing them to work. Foodworkers with vomiting or diarrhea are excluded from the operation until they are symptom free for 24 hours or have a medical release from a doctor. Managers must **restrict** staff from working with food if they have a sore throat with a fever, unless employees work in a high risk establishment, then they must be excluded. Employees who return to foodhandling after having a sore throat with fever should have a written release from a doctor. Management plays a critical role in the effectiveness of a personal hygiene program. By establishing a good personal hygiene policies, by training and enforcing those policies, and by role modeling behaviors, establishments can minimize the risk of a foodborne illness.

Chapter 3-Multiple Choice

1. What statement is true?
 - a. When hand washing, you must vigorously scrub your hands for 20 seconds
 - b. It is acceptable to work at a hospital with a sore throat and fever
 - c. A food worker vomiting this morning should be excluded from the restaurant
 - d. It is acceptable to use a hand sanitizer before hand washing
2. Which action would **MOST** likely cause a foodborne illness?
 - a. Not washing hands before taking out the trash
 - b. Removing all jewelry except a plain wedding band when working
 - c. Not washing hands after using the toilet
 - d. Smoking outside in a designated area
3. A deli worker stops making sandwiches to use the restroom. She should first
 - a. Apply hand sanitizer
 - b. Take off her hat
 - c. Take off her apron and store it in the kitchen area
 - d. Proceed to the bathroom and hook her apron on the back of the door
4. Which item is acceptable for employees working around food?
 - a. Small diamond ring
 - b. Necklace, if tucked under the apron
 - c. Clear nail polish
 - d. Plain wedding band
5. A food handler who is showing symptoms of jaundice should be
 - a. Told not to come to work until released by a doctor
 - b. Told to wear gloves
 - c. Told to wash his or her hands every 15 minutes
 - d. Assigned to a nonfood handling position until he or she is feeling better
6. The entire handwashing process, from start to finish, should take?
 - a. 10 seconds
 - b. 20 seconds
 - c. 30 seconds
 - d. 1 minute
7. Foodhandlers should be **restricted** from working around food if they are experiencing which symptoms?
 - a. Headache with soreness
 - b. Sore throat with fever
 - c. Thirst with itching
 - d. Soreness with fatigue
8. John, a chef has been diagnosed with Hepatitis A. What should the manager do?
 - a. Restrict him from working around food
 - b. Exclude him from the establishment until he is symptom free for 24 hours
 - c. Have him stay at work, wash his hands regularly and wear disposable gloves
 - d. Exclude him from the establishment and report it to the regulatory agency

Chapter 4-The Flow of Food

The Flow of Food is the path that food takes through your establishment and starts from

① **Purchasing**, ② **Receiving** and then products are moved into ③ **Storage** where they will remain until ④ **Preparation** and ⑤ **Cooking**. Food may also require ⑥ **Cooling**, ⑦ **Reheating** and ⑧ **Holding** before the final food item is ⑨ **Served**. Many things can happen to food as it flows through the establishment, but the hazards that the manager should focus on are time-temperature abuse, cross-contamination and personal hygiene.

Cross-Contamination is the transfer of microorganisms from one food or surface to another. It can happen by direct contact, dripping through improper storage, or indirectly through contaminated utensils and equipment. Prevention methods include assigning specific equipment to each type of food product, or preparing raw meat, fish and poultry and ready-to-eat food at different times. Clean and sanitize all work surfaces, equipment and utensils after each task. It may be helpful to purchase color-coded cutting boards and utensils. Keep raw poultry, meats and seafood separate from ready-to-eat foods during storage. Purchasing ingredients that require minimal preparation, like pre-cooked chicken, can also minimize your risk of cross-contamination.

Time-Temperature abused food is when it has been allowed to remain at temperatures between 41°F and 135°F for too long. This is known as the **temperature danger zone** and it's where bacteria like to grow. They can grow even faster in the range of 70°F and 125°F. To keep foods safe, you must have time and temperature controls as a part of your daily operating procedures by making thermometers available to your employees, and regularly recording temperatures and times. This should be placed on charts or logs at least every four hours, but every two hours if leaving room for corrective action.

Thermometers are the most important tools managers have to prevent time-temperature abuse.

Employees should always start with a clean, sanitize and **calibrated** thermometer. Either using the boiling-point method or the ice-point method to calibrate thermometers. The boiling-point method requires the thermometer to be adjusted to 212°F after the probe is placed in boiling water. The ice-point method is when the thermometer is submerged in ice water, and adjusted to 32°F.

Always wait for the thermometer reading to steady for 15 seconds before recording the temperature of the food. Glass thermometers can only be used when enclosed in shatterproof casing. When measuring the internal temperatures of food, the thermometer stem or probe should be inserted into the thickest part of the product. A **bimetallic stemmed** thermometer has a range of 0°F-220°F, an adjustable calibration nut, easy-to-read numbered markings, and **accuracy within 2 degrees**. A digital stemmed displays the temperature numerically and has a wider range than the dial-faced bimetallic.

Thermocouple and Thermistor digital thermometers have different types of detachable stems or probes which are: **Penetration Probes**, used to take the internal temperature of thick or very thin food;

Immersion Probes, used to measure liquids, like soups and sauces; **Air Probes** measure temperature inside refrigerators; **Surface Probes**, used to measure temperatures of equipment like griddles. **Infrared thermometers** are lasers, good for taking the surface temperatures of food and should not be used to take the internal temperatures of food. A **Time-Temperature-Indicator (TTI)** is a device designed to measure food delivered by your suppliers, like your frozen or refrigerated delivery items. A color change appears in the window if the product has been time-temperature abused and this color change is not reversible. A **maximum registering device** indicates the highest final rinse temperature of dishwashing machines. A **T-Stick** is a single-use device to measure sanitizer in automatic machines.

Personal Hygiene

At every step in the flow of food from receiving through service, foodhandlers can contaminate food.

Good personal hygiene is a critical protective measure against foodborne illness.

You can minimize the risk of foodborne illness by establishing a personal hygiene program that spells out specific hygiene policies. You must also train your employees on these policies and enforce them.

Chapter 4-Multiple Choice

1. An employee has just trimmed raw chicken on a cutting board and must now use that board to prepare vegetables. What should the employee do with the board before preparing the vegetables?
 - a. Wash, rinse and sanitize the cutting board
 - b. Dry it with a paper towel
 - c. Rinse it under very hot water
 - d. Turn it over and use the reverse side
2. Which practice will **NOT** prevent cross-contamination?
 - a. Preparing raw meat separately from ready-to-eat food
 - b. Assigning specific equipment for preparing specific food
 - c. Rinse cutting boards between preparing raw food and ready-to-eat food
 - d. Using specific storage containers for specific food
3. Which is the best thermometer to measure the internal temperature of foods?
 - a. TTI (time temperature indicator)
 - b. Infrared thermometer
 - c. The temperature gage on the outside of the refrigerator
 - d. A digital thermocouple
4. Which practice will **NOT** prevent time-temperature abuse?
 - a. Holding the ingredients for tuna salad at 39°F
 - b. Storing shelled eggs at 45°F
 - c. Placing raw ground beef in the cooler before going on break
 - d. Holding vegetable soup on a warming unit at 125°F
5. Which practice could help prevent cross contamination?
 - a. Calibrating a thermometer before using it
 - b. Purchasing pre-cooked chicken breasts
 - c. Preparing small batches of food at one time
 - d. Taking temperatures every 4 hours
6. You must purchase a new thermometer for your restaurant. Which type would **NOT** be a proper choice?
 - a. Bimetallic stemmed thermometer
 - b. Thermistor
 - c. Thermocouple
 - d. Glass thermometer

True or False

- ☐ T ☐ F 1. Washing and rinsing a cutting board will prevent cross-contamination
- ☐ T ☐ F 2. A thermometer calibrated by the ice-point method should be set to 41°F
- ☐ T ☐ F 3. Infrared Thermometers are best for measuring the internal temperature of food
- ☐ T ☐ F 4. A maximum registering device indicates final rinse temperatures of dishwashing machines
- ☐ T ☐ F 5. A thermistor or thermocouple is best for taking internal temperatures of food
- ☐ T ☐ F 6. Foodborne pathogens grow more quickly in temperatures above 70°F and up-to 125°F

Chapter 5-Flow of Food: Purchasing, Receiving and Storage

Purchasing should always be done from approved, reputable suppliers. Make sure suppliers have been inspected, licensed and are in compliance with federal, state, and local laws. Plan your delivery schedules so products can be inspected and put away immediately. Employees should be trained on how to take temperatures of food properly as well as to visibly inspect products that are acceptable and those that are not.

Key Drop Delivery is when a supplier is given after-hour access to the operation to make deliveries. Deliveries must meet the following criteria: Be inspected upon arrival at the operation; be from an approved source; have been placed in the correct storage location to maintain the required temperature; Have been protected from contamination in storage, is NOT contaminated and is honestly presented.

Receiving and Storage of products at safe temperatures is critical. TCS cold food must be received and stored at 41°F, unless otherwise specified. All meat, poultry and shell eggs should have a USDA inspection stamp. Reject meat, poultry or fish if it is slimy, sticky, dry or unpleasant odor. Flesh should be firm, and springs back when touched. Fish that will be served raw, like sushi-grade, must be frozen to kill parasites. Live Molluskan shellfish must be received with an air temperature of 45°F - 50°F but should be stored at 41°F or lower in the original container or crate. Keep shell-stock ID tags attached until all shellfish are served, then file for 90 days. Shellstock ID tags have the harvester's ID, harvest date, location and shellfish type and quantity. Fish received and labeled as "farm raised" or "sushi grade" must have required documents filed for 90 days. Live Crustacean (lobster, crabs) must be alive on arrival. Shell Eggs can be received and stored at an air temperature of 45°F or lower. Milk can be received at a temperature of 45°F but should be stored at 41°F or lower. Sliced Melons, Sliced Tomatoes, Cut Leafy Greens, and Raw Seeded Sprouts should be received and stored at 41°F or lower. **Other produce** items have no specific temperature however, inspect for insects, mold or damage. **Frozen food** should be received frozen solid and rejected for signs of thawing and refreezing, like ice crystals or water stains in the bottom of the case. **ROP** (reduced oxygen packaged) food should not bubble, appear slimy or have excessive liquid. **Canned food** must be carefully examined, no dented or swollen cans. **Dry food** should be inspected for pest infestation and moisture and once opened stored for 12 calendar months. **UHT (Ultra High-Heat Temperature)** items like mayonnaise and salad dressings that are aseptically sealed, can be received and stored in dry storage temperatures, however once opened they should be stored in the refrigerator at **41°F** or below. **Bakery goods** should not appear moldy or show signs of pest damage, and should not have passed the expiration date. **TCS hot** food must be received and stored at **135°F** or higher.

Recalls on food happen when food is mislabeled without food allergens or when contamination is suspected or confirmed by the FDA or the USDA. You should follow these guidelines when there is a recall; Identify the recalled item by matching any identification numbers, remove it from inventory and label it in a way that it ensures the item will not get used, then refer to the recall notice for information on what to do with the item.

FIFO: First in First Out Food should be stored in a designated place and ensure proper rotation is followed. If it is removed from its original packaging, wrap it in clean moisture-proof material, or place it in a clean sanitized container with a lid. Never reuse empty chemical containers; use only containers intended for food that are durable, leak proof and have a tight fitting lid.

Labeling All opened food containers should be labeled with at least the common name of the food.

Date marking TCS foods prepared in-house if not used within 24 hours, should be labeled with the name of the food and the expiration date and can be held for a maximum of 7 days at 41°F or lower. The count begins on the day the food was cooked, prepared or a commercial container was opened. TCS foods

prepared in house that will be sold to customers to use in home, should be labeled with the name of the food, ingredients in descending order, any food allergens, quantity, and name and address of manufacturer. Bulk food in self-service areas must be labeled. A label is not needed for bulk unpackaged food, such as bakery products, if: The product makes no claim regarding health or nutrient content, no laws requiring labeling exist, the food is manufactured or prepared on the premises, the food is manufactured or prepared at another regulated food operation or processing plant owned by the same person.

Refrigerator Storage Refrigerators must be set to keep the internal temperature of the food at 41°F or lower to slow the growth of bacteria. Never place hot food in refrigerators, which could raise the temperature inside. If possible, store raw meat, poultry, and fish below cooked or ready-to-eat food to prevent cross-contamination. Use wire rack shelves and space food products to allow the cold air to circulate. Equipment thermometers should be placed in the warmest part of the unit and be accurate within **3°F**.

Raw animal foods are stored in the refrigerator based on internal cooking temperatures. This helps food stay protected from cross-contamination. See chart below:

READY-to-EAT Foods
Whole SEAFOOD
Whole MEATS (beef/pork/lamb)
Ground or Minced MEAT and SEAFOOD
Whole and Ground POULTRY

Freezer Storage The FDA food code recommends freezers be kept at a temperature that will keep product frozen at **0°F to -10°F (-18°C to -23°C)** and be equipped with a thermometer inside the unit. Units should be cleaned often. Individually packaged raw meat, poultry or seafood can be stored with or above ready-to-eat foods when in a freezer. Although bacteria are generally not destroyed by freezing, parasites can be killed if foods are frozen at the right temperature for the proper time.

Dry Storage areas should be kept at the appropriate temperature, between **50°F and 70°F** with a relative **humidity of 50-60%**. Dry storage should be clean, dry and well ventilated and all food stored at least **6 inches off the floor**. Do not store food products below chemicals or cleaning supplies since food can easily become contaminated. Opened dry food items should be labeled and stored in a sealed container for a maximum of 12 months.

Chapter 5-True or False

- ☐ T ☐ F 1. Storing a 25lb bag of dry rice at 65°F is acceptable
- ☐ T ☐ F 2. Water on the floor in the dry storage area is acceptable, only if you are very busy
- ☐ T ☐ F 3. Ice crystals on frozen food are acceptable as long as the product is frozen upon receiving
- ☐ T ☐ F 4. Food can be stored next to sanitizer, as long as the sanitizer bottles are closed and labeled
- ☐ T ☐ F 5. UHT aseptically sealed products can be stored in dry storage until opened
- ☐ T ☐ F 6. Thermometers should be placed in the coldest part of a refrigerator
- ☐ T ☐ F 7. Ready-to-eat foods prepared onsite can be stored for a maximum of 7 days
- ☐ T ☐ F 8. Raw carrots should be stored below raw fish in a cooler
- ☐ T ☐ F 9. Receiving food at the correct temperature and condition is the first step in food safety

Chapter 5-Multiple Choice

1. What is the most important factor in choosing a food supplier?
 - a. It's prices are the lowest
 - b. It's warehouse is close to your establishment
 - c. It has a HACCP program
 - d. It has been inspected and is compliant with local, state and federal laws
2. Which shipment should be rejected?
 - a. Beef that is bright, cherry red color
 - b. Poultry with flesh that is firm and springs back when touched
 - c. Fish that arrives with sunken cloudy eyes
 - d. Grade A Milk received at 45°F
3. What does **NOT** have to be received at 41°F or below?
 - a. Beef and poultry
 - b. Live shellfish and shell eggs
 - c. Pork and raw sprouts
 - d. Sliced tomatoes and sliced melons
4. What is the best method for taking the temperature of a chicken breast?
 - a. Insert the thermometer into the thinnest part
 - b. Insert the thermometer into the thickest part
 - c. Take the surface temperature only
 - d. Take the temperature of the cooler
5. A shipment of eggs should be rejected for all of these reasons **EXCEPT**
 - a. The shells are cracked
 - b. They have a sulfur smell
 - c. They lack an inspection stamp
 - d. The air temperature of the delivery truck was 45°F
6. At what temperature can dry storage rooms be kept?
 - a. 40°F to 60°F
 - b. 41°F to 135°F
 - c. 50°F to 70°F
 - d. 35°F to 70°F
7. Which storage practice is correct?
 - a. Storing fresh lamb chops below ground beef
 - b. Storing raw carrots below raw red snapper fillets
 - c. Storing raw clams in their shipping crate at an air temperature of 55°F
 - d. Storing ground pork above ground turkey

Chapter 6-Preparation, Cooking, Cooling, Reheating

Preparation To protect food during preparation, you must handle it safely. The keys are time-temperature abuse, the prevention of cross-contamination and ensure good personal hygiene.

Control time and temperature by having employees prepare food in small batches, used pre-chilled ingredients, utensils and bowls, and take only a small amount of food out of the refrigerator at one time.

Thaw frozen food in the refrigerator at 41°F or below, submerged under cool running water of 70°F or lower for no more than a total time of four hours, in a microwave oven if the food is used immediately, or as part of the cooking process, like a frozen pizza. Never thaw food at room temperature. ROP Frozen fish must be removed from the packaging before thawing in a refrigerator or; before or immediately after thawing under running water.

Minimize Cross-Contamination, Make sure equipment, cutting boards and workstations are cleaned and sanitized. Never prepare raw meats or poultry in the same workstation as fruit, vegetables or ready-to-eat foods. Never combine leftover TCS salads with fresh made batches. Pooled eggs are shell eggs that are cracked open and combined in a common container; these should be cooked promptly or stored at 41°F or below. Promptly clean and sanitize all equipment and utensils used to prepare eggs. High risk establishments and anyone serving raw or partially cooked eggs should serve only Grade A Shell Eggs or pasteurized liquid eggs.

Produce and fruit should be washed before preparation or cooking, but do not mix different items in the same batch of water. Pathogens from contaminated produce can contaminate the water. Pull leafy greens apart and use slightly warmer water to help reduce dirt and pesticides.

A Variance is a document that allows a requirement to be waived or changed and is typically issued by the local health department. A variance is required when smoking or curing food as a preservative, using food additives or preservatives, custom-processing animals, using reduced-oxygen packaging methods, sprouting seeds or bean sprouts, selling live molluscan shellfish from a display tank, and packaging fresh juice on-site for sale at a later time, unless the juice has a warning label.

Ice should be made from potable water, always use a clean, properly stored ice scoop, and never reuse ice for consumption after transferring it from a holding unit or after used on a buffet.

Cooking can ensure that bacteria are destroyed. The temperatures vary from product to product. **Fruit, vegetables, grains and ready-to-eat commercially processed foods** (hot dogs, deli meats) should be cooked to an internal temperature of **135°F for 15 seconds if being hot held for service**. **Whole Fish and Whole Meats (steaks or chops)** should be cooked to **145°F for 15 seconds**, as well as eggs served immediately; **Beef or Pork Roasts** cook to **145°F for 4 minutes**. Alternate temperatures for rare roasts: 130 for 112 minutes or 140 for 12 minutes. **Ground Meats and Ground or Minced Fish** should be cooked to an internal temperature of **155°F for 15 seconds**, as well as Injected or mechanically tenderized meats and eggs held for hot service. **Whole or Ground Poultry** cook to an internal temperature of **165°F for 15 seconds** as well as foods that are stuffed with TCS ingredients; TCS foods cooked in a microwave; and any TCS pre-cooked item to be used an ingredient in a recipe should all be **cooked to 165°F**.

Partially cooked foods that are finished just before service should not cook for longer than 60 minutes during initial cooking, then cooled and refrigerated at **41°F** or below if not being sold immediately, or if holding for service and must be heated to **its required internal temperature** before serving. Check with your local jurisdiction on written requirements on monitoring procedures, corrective action and labeling procedures to prevent cross contamination from other cooked RTE foods.

A **Consumer Advisory** is a disclaimer or warning and should be added to your menu **if serving raw or partially cooked** TCS foods. This disclaimer warns the customer about the increased risk of foodborne illness when consuming raw foods. You must place an asterisk next to the menu item and include a footnote to indicate the item is served raw or undercooked.

Children's Menu Raw or partially cooked foods, especially ground meats, should not be allowed on children's menus, or when serving a high-risk population such as a nursing home or day-care center

because of the increased risk of foodborne illness.

Internal Cooking Temperature Chart

FOOD ITEM	COOKING TEMPERATURE
Ready-to-Eat , Fruits and Veggies (hot held) <ul style="list-style-type: none">• Rice and Grains (hot held)• Commercially Processed RTE (Mozz Sticks, Hot Dogs)	135°F for 15 seconds
Whole Meats (Beef Steaks, Pork Chop, Roast) <ul style="list-style-type: none">• Whole Fish and Seafood (Fillets, whole shrimp)• Eggs (immediately served)	145°F for 15 seconds Roasts- 145°F for 4 minutes
Ground Meats (Beef, Pork, lamb) <ul style="list-style-type: none">• Ground or Minced Fish and Seafood• Eggs (hot held for service)	155°F for 15 seconds
Poultry (Whole or Ground Chicken, Turkey, Duck) <ul style="list-style-type: none">• Stuffed TCS Foods (Ravioli, stuffed meats)• Microwave TCS Foods• Pre-Cooked TCS Foods (added as an ingredient)	165°F for 15 seconds

Cooling Once food is cooked, it should be served as quickly as possible. If it is going to be stored and served later, it must be cooled rapidly. Potentially hazardous food must be **cooled from 135°F to 70°F within two hours and then from 70°F to 41°F within the next four hours**. Before large quantities of food are cooled, they should be reduced in size to allow them to cool faster. Larger items like Roasts should be cut in smaller pieces; large containers of liquids should be separated into smaller containers or 2" inch shallow pans. There are several methods for cooling food safely. They include using an **ice-water bath**, **stirring food with an ice-paddle**, **using a blast chiller**, or **using clean potable ice as an ingredient**. Once food is chilled to at least 70°F, it can be stored on the top shelf in the refrigerator.

Reheating previously cooked TCS food must be **reheated** to an internal temperature of **165°F** for 15 seconds within two hours before it can be served for hot-holding because of the risk of Clostridium Perfringens. Commercially processed ready-to-eat foods can be reheated to 135°F when being hot held for service.

Roasts can be reheated to alternative temperatures when initially cooked to an alternate temperature, depending of the type of roast and oven used. Check with your local health department for requirements. Examples of acceptable reheating and cooking temperatures for **Roasts**: 130°F for 112 minutes or 140°F if cooked for 12 minutes.

Chapter 6-Multiple Choice

1. Beef stew must be cooled from 135°F to 70°F within _____ hours and from 70°F to 41°F within the next _____ hours.
 - a. Four, two
 - b. Two, four
 - c. Three, two
 - d. Two, three
2. Which is **NOT** a safe method for thawing frozen food?
 - a. Thawing it by submerging it under running potable water at 70°F or lower
 - b. Thawing hamburger patties as part of the cooking process
 - c. Thawing it in a microwave and cooking it 3 hours later
 - d. Thawing it in the refrigerator overnight at 39°F
3. Ravioli stuffed with meat and cheese must be cooked to an internal temperature of
 - a. 135°F for 15 seconds
 - b. 145°F for 15 seconds
 - c. 155°F for 15 seconds
 - d. 165°F for 15 seconds
4. When reheating previously cooked Potentially Hazardous-TCS food for hot holding, reheat the food to
 - a. 135°F for 15 seconds within two hours
 - b. 145°F for 15 seconds within two hours
 - c. 155°F for 15 seconds within two hours
 - d. 165°F for 15 seconds within two hours
5. Eggs cooked and held on hot-holding equipment must be cooked to an internal temperature of
 - a. 140°F for 15 seconds
 - b. 145°F for 15 seconds
 - c. 155°F for 15 seconds
 - d. 165°F for 15 seconds
6. What is the correct method to help cool a pork roast faster?
 - a. Put the roast in the freezer for 30 minutes to cool it quickly, and then put it in the refrigerator
 - b. Put the roast in an ice water bath
 - c. Cut the roast into smaller pieces
 - d. Put the roast on a shallow pan on the counter

True or False

- ___T___F 1. Baked salmon and pork chops should be cooked to an internal temperature of 145°F
- ___T___F 2. Hamburgers and Tuna burgers should be cooked to a minimum of 155°F for 15 seconds
- ___T___F 3. In a microwave, steaks must be cooked to 145°F
- ___T___F 4. The final temperature of a cooked roast is 145°F for 15 seconds
- ___T___F 5. A hospital serving egg dishes should use pasteurized liquid eggs or Grade A shell eggs
- ___T___F 6. Glazed carrots cooked for hot-held service should be cooked to a minimum of 145°F
- ___T___F 7. A consumer advisory should be posted for a restaurant offering rare hamburgers

Chapter 7-Holding and Service

Holding You must continue to protect it from time-temperature abuse and contamination until it is served. When holding potentially hazardous-TCS food for service, keep hot food hot, at 135°F or higher and cold food cold, at 41°F or lower. Check the internal temperature of food being held at least every four hours and throw out food if not at the proper temperature. (Check and Monitor temperatures every 2 hours to have room for corrective action.) Protect foods from contaminants with covers and sneeze guards and establish policies to ensure that food being held for service will be discarded after a predetermined amount of time. Never use hot-holding equipment to reheat food. Train your kitchen staff to use clean and sanitized utensils with long handles to keep hands away from food. Ice-cream scoops can be stored under cool running water.

Time as a Health Control The Food Code allows you to use time as a health control with ready-to-eat food, held for service or displayed for a short period of time, such as at a catering event, or when no electricity is available. Your operation must follow certain guidelines to ensure food is safe.

Hot food held without temperature control can be held for 4 Hours. The food must have been held at 135°F prior to removing it; it must be labeled when it was removed from the hot holding equipment, and when it is to be discarded. All food not served or sold within the 4 hours must be discarded.

Cold food held without temperature control can be held for 6 Hours. The food must have been held at 41°F or below prior to being removed from refrigeration; it must never reach above 70°F once removed and it must be labeled with the time it was removed from refrigeration and the time it is to be thrown away. All food not served or sold within the 6 hours must be discarded.

Serving

Train your kitchen staff to use clean, sanitized utensils to serve food. Foodworkers should use tongs, deli wrap or single-use gloves when touching cooked and ready-to-eat food. Make sure all employees are healthy and trained in hand washing and good personal hygiene. Train them to avoid cross-contamination when handling service items and tableware. Glasses should be held at the base or stem, dishes or plates should be held by the bottom or the edge and never be stacked when serving; use a tray or a rack instead. Flatware and utensils should be held by the handle. Teach staff about the potential hazards posed by re-serving food such as plate garnish, bread or rolls. Un-opened individually packaged items, like condiments or wrapped crackers are acceptable to re-serve. Some jurisdictions allow refills on Take-home meal containers if they meet these conditions: ① They were designed to be reused; ② They were provided by the operation, and ③ They are cleaned and sanitized. Take-Home Beverage containers can be refilled if: ① Container is cleaned and sanitized at home or in the operation, ② It will be rinsed with hot water under pressure before refilling, and ③ It will be refilled using a process that will prevent contamination. If you **preset tableware** you must prevent it from being contaminated, wrap or cover the items. Preset tableware does not need to be wrapped or covered only if extra settings are removed before guests are seated and settings are cleaned and sanitized after guests have left.

Self Service

Customers can contaminate food unknowingly in Self-Service areas. Post signs to communicate self-service rules and station employees in these areas to ensure compliance. Never allow customers to re-use dirty plates or utensils, although they are allowed to re-use glassware. Protect food on display in food bars and buffets with sneeze guards 14" high and 7" wide, and make sure equipment can hold food at the proper temperature. Label all containers and especially salad dressing ladle handles. Keep raw foods away from ready-to-eat or cooked foods, like Sushi buffets, and Korean or Mongolian style BBQ self-service areas. Never reuse ice that was previously used to hold cold food in a buffet.

Offsite Service

Food must always be prepared in a licensed food service operation. When delivering food, the equipment must be an insulated container to keep food at 135°F if hot food, or 41°F if for cold food. Transport raw food in separate containers from ready-to-eat. Vehicles and delivery equipment must be cleaned regularly; food must be labeled with expiration dates and service instructions for employees at off -site locations. Make sure there is safe water or you must use single-use items or disposable tableware. Always provide safe foodhandling instructions when giving leftovers to your catering customers.

Vending Machines Food prepared for vending machines must be handled with the same care as any other food served to a customer. If refrigerated, TCS food must be dispensed in its original container and sold or consumed within 7 days. Fruit with edible peels must be washed and wrapped.

Mobile Units, trucks and trailers used to cater events must follow all food safety principles as full service facilities. **Temporary Units** may operate for no more than 14 consecutive days with limited facilities, like a state or county fair or festival. **Home Meal Replacement** and meal solutions are products that are “ready-to-cook”. They are products designed to save time and effort for families too tired to cook. Products need to be labeled with sell-by date and have information on the safe handling of the food.

Chapter 7-Multiple Choice

1. Which is an **UNSAFE** serving practice?
 - a. Carrying multiple plates of food on a tray
 - b. Holding flatware by the handles when setting a table
 - c. Serving soup with a long-handled ladle
 - d. Holding glassware by the rims
2. Which statement about serving utensils is **NOT** true?
 - a. They should be cleaned and sanitized at least once every four hours during continuous use
 - b. They can be used to handle more than one food item at a time
 - c. They can be stored in the food with the handle extended above the rim of the container
 - d. They must be cleaned and sanitized after each task
3. To keep food safe during delivery, you must
 - a. Reheat it upon arriving to customer’s house
 - b. Instruct the customer to reheat before consuming
 - c. Transport and deliver cold food at 41°F or lower and hot food at 135°F or above
 - d. Ensure that cold, TCS food is kept at 70°F or lower
4. To hold cold food safely, you must
 - a. Store it directly on ice
 - b. Store it at 41°F or lower
 - c. Stir it regularly
 - d. Leave it uncovered
5. Which is an acceptable serving practice at a self-service bar?
 - a. Holding hot, potentially hazardous-TCS food at 120°F
 - b. Storing raw meat next to ready-to-eat food
 - c. Allowing customers to use the same plate for a return trip to the service bar
 - d. Allowing customers to reuse glassware for beverage refills
6. Hot TCS food should be held at an internal temperature of
 - a. 135°F or higher
 - b. 130°F or higher
 - c. 120°F or higher
 - d. 110°F or higher
7. Which statement is **NOT** true about TCS cold food holding using only “Time as a Health Control?”
 - a. The temperature of the product must not exceed 50°F
 - b. The food must be sold, served or discarded within six hours
 - c. The food must contain a label specifying the time it was removed from refrigeration
 - d. The food must contain a label specifying the time it must be thrown out

Chapter 8-Food Safety Management and HACCP

Food safety management system is a group of programs, procedures intended to limit the risks that cause foodborne illness throughout the flow of food. In order for the food safety system to be effective, you must include personal hygiene, facility design and equipment maintenance, obtain food from approved suppliers, sanitation and pest control, and food safety training in cross-contamination and time-temperature control. The two management systems are: **Hazards Analysis Critical Control Point (HACCP)** and **Active Managerial Control**.

Active Managerial Control is an approach that focuses on controlling the five most common risk factors responsible for foodborne illness identified by the **Center for Disease Control and Prevention (CDC)**. These include ① **poor personal hygiene**, ② **failing to cook food to correct temperatures**, ③ **holding food at improper temperatures**, ④ **cross-contamination by using contaminated equipment** and ⑤ **purchasing from unsafe sources**. These are specific steps that should be taken when using active managerial control to manage these risks. First you must consider the five risk factors as they apply throughout the flow of food and then identify any issues that could impact food safety. Next, you will need to develop policies and procedures that address the issues that were identified. These will require monitoring to determine if they are being followed and corrective action if needed. Finally, you must verify that the policies and procedures you have established are actually working by controlling the risk factors.

A HACCP System focuses on identifying specific critical control points where a food may have the risk of biological, chemical, or physical contamination and preventing or reducing that risk to a safe level. A HACCP system is a unique, specific written plan to work for each facility's menu, customers, equipment, processes, and operation. The HACCP plan is developed following seven principles-essential for building a food safety system.

Principle ①- Conduct a Hazard Analysis: First, the establishment must identify and assess potential hazards in the food they serve. Look at how menu items are processed from purchasing to serving. Where are the food safety hazards likely to occur for each one? **Principle ②-Determine Critical Control Points:** The establishment must then determine the critical control points, where the hazards can be prevented, eliminated or reduced to safe levels. For example, cooking is a critical control point used to reduce the biological hazard of Salmonella spp. in raw chicken. **Principle ③-Establish Critical Limits:** Next, the establishment must determine maximum and minimum limits that must be met for each Critical Control Point (CCP.) For example, the critical limit for cooking raw chicken is 165°F. **Principle ④-Monitoring Procedures:** The establishment must determine monitoring procedures and the best way to check them. Checking the internal temperature of the chicken with a thermometer during the cooking process is an example of monitoring. **Principle ⑤-Identify Corrective Action:** Identify what corrective actions will be taken when critical limits have not been met. **Principle ⑥-Verify System Works:** Then you must verify that it works. Determine if your plan adequately prevents, reduces, or eliminates the identified hazards. Evaluate and monitor your system and charts to check if the plan is working. **Principle ⑦-Record Keeping:** Remember to establish procedures to keep records like monitoring logs, invoices and any documentation to support and maintain your HACCP plan.

A HACCP plan is necessary for the following, but always check with your local regulatory agency or health department to see what is required. Smoking or curing food as a preservative, using food additives or preservatives, custom-processing animals, using reduced-oxygen packaging methods, sprouting raw seeds or bean sprouts, pasteurizing juice for sale, and selling live shellfish from a display tank.

Chapter 8-Multiple Choice

1. The temperature of a roast is checked to see if it has met its critical control limit of 145°F. This is an example of
 - a. Verification
 - b. Monitoring
 - c. Record keeping
 - d. Hazard analysis
2. The temperature of a pot of beef stew is checked during holding. The stew has **NOT** met the critical limit of 135°F and is discarded according to house policy. Discarding the stew is an example of which HACCP principle?
 - a. Monitoring
 - b. Corrective action
 - c. Hazard analysis
 - d. Verification
3. Which is an example of verifying?
 - a. Analyzing menu items for potential hazards throughout the flow of food.
 - b. Throwing out soup that doesn't meet the proper reheating temperature
 - c. Monitoring critical control limits on charts and temperatures logs
 - d. Failing to hold food at the proper temperature
4. What is the first step in developing a HACCP plan?
 - a. Group your menu items according to common process to find the likely hazards
 - b. Establish Monitoring Procedures
 - c. Determine critical control points
 - d. Identify corrective action
5. Which program should be in place before you begin developing your food safety management system?
 - a. Personal hygiene program
 - b. Incentive program
 - c. Workplace accident prevention program
 - d. None of the above
6. What is **NOT** one the CDC's common risks for foodborne illness?
 - a. Inadequate holding temperatures
 - b. Inadequate cooking temperatures
 - c. Using contaminated equipment
 - d. Failing to have a pest control program

Chapter 8 True or False

- ☐ T ☐ F 1. Active managerial control focuses on the CDC's 5 most common foodborne-illness factors
- ☐ T ☐ F 2. A critical control point is a point where a hazard can be prevented, eliminated, or reduced
- ☐ T ☐ F 3. Purchasing fish directly from a fisherman would be a risk in active managerial control
- ☐ T ☐ F 4. An establishment sprouting raw bean sprouts must have a HACCP plan
- ☐ T ☐ F 5. The first step in developing a HACCP plan is to conduct an analysis of your menu items

Chapter 9- Facilities, Equipment and Pest Control

Many breakdowns in sanitation are caused by facilities and equipment that are simply too difficult to clean. When designing a facility, we should arrange it so contact with contaminated sources such as garbage or dirty tableware is unlikely to occur. A well-designed kitchen will have a **good workflow** that minimizes the time food spends in the danger zone. Locating storage areas near receiving areas and prep tables near refrigerators and freezers can minimize time-temperature abuse. And since hard to reach areas are less likely to be cleaned, equipment should be accessible for cleaning, easy to disassemble and reassemble. Even if local laws don't require it, layout and **design plans** should be reviewed by the local regulatory agency **before construction begins**. Permits are required before establishments can open for business. Food establishments' most important consideration when selecting construction materials should be how easy it will be to clean and maintain.

Flooring should be strong, durable and easy to clean. It should also be **non-absorbent**, resist wear and help **prevent slips** especially in walk-ins, food prep areas, dishwashing areas, restrooms and others areas subject to moisture or spray cleaning. Carpeting is not recommended in high-soil areas but is popular in dining rooms because it absorbs sounds. **Coving** is a curved, sealed edge placed between the floor and the wall and is used to eliminate sharp corners or cracks between the floor and the wall to get rid of hiding places for insects. Finishes for walls should be easy to clean, kept in good repair, free of cracks, holes or peeling paint.

Equipment purchased should have been designed with sanitation, ability to clean and durability in mind and certified for use in a restaurant such as **NSF International** (National Sanitation Foundation). **Food-contact surfaces** must be **non-corrosive, nonabsorbent, seamless, smooth, easy to take apart** and reassemble and they must resist pitting and scratching. Equipment should be installed so both the equipment and the surrounding area can be easily cleaned. Floor-mounted equipment must be on legs at **least six inches off the floor**, or it must be sealed to a masonry base. Stationary tabletop equipment should be mounted with a clearance of **four inches** between the tabletop and the equipment or it should be sealed to the countertop. Any gap between a piece of equipment and the floor, wall, or tabletop greater than **1/32 inch** should be filled with nontoxic sealant to prevent food buildup and pests.

Restrooms should have a fully equipped hand washing station with hot and cold water, soap, a means to dry hands, a waste container, and signage indicating employee's hand washing requirements before returning to work. Hand washing stations are required in **food-preparation areas, dishwashing areas, service areas and restrooms** and used for hand washing only. Food preparation areas should never be under sewerage water lines. **Potable water** (water safe to drink) is vital in an establishment. Sources include public water mains, bottled drinking water and private water sources such as wells that are tested at least once a year. In a water emergency, an establishment might be allowed to remain open if certain precautions are followed. These could include boiling water, purchasing water and ice and boiling water for hand washing and essential tasks.

Plumbing Only licensed plumbers should work on plumbing systems. The greatest water safety risk comes from **cross-connections**. These are physical links between safe water and dirty or contaminated water when back-siphonage occurs. **Vacuum breakers** can be used but **air gaps** are the most reliable way to prevent backflow. The distance of air must be at least 2 times the diameter of the supply pipe (2D). It is essential to prevent wastewater from contaminating food and food-contact surfaces. If sewage backs up, you must close the area right away and notify your local regulatory agency if necessary. If you can, fix the problem, thoroughly clean the area and then you may re-open. Never allow sewage lines to be installed above food preparation areas because it may drip into food.

Lighting Use shatter-resistant bulbs and protective shields over bulbs and heat-lamps to prevent broken glass from contaminating food or food-contact surfaces. The lighting intensity for **food-preparation areas** is **50 foot-candles**. **20 foot-candle** intensity should be used in **service and display areas** like hand washing, dishwashing, utensil storage, restrooms and wait stations. **10 foot-candles** are used in **storage areas** and **dining rooms**.

PROPER VENTILATION improves the indoor air quality by removing smoke, grease, steam and heat. If there is inadequate ventilation, there will be a buildup of grease and condensation on walls and ceilings. **Ventilation** must be designed so hoods, fans, guards, and ductwork **do not drip** onto food or equipment.

GARBAGE CONTAINERS must be leak proof, water proof, pest proof, easy to clean, and durable. Outdoor trash cans must have tight-fitting lids and should be kept covered at all times. Clean the inside and outside of the container regularly. Never clean garbage containers in a food preparation sink, handsink or warewashing sink. Garbage should be removed from food-preparation areas as soon as possible, and must not be carried across a food-preparation area.

Emergencies Affecting the Facility Certain crisis can affect the food and people you serve. Some include electrical, power outages, fire, flood and raw sewage back-ups. These are considered to be “Health Hazards” by the local health department, and require immediate correction or closure to prevent injury. During a crisis, you must first determine if there is a risk to safety or security of food. If there is a definite risk, then you must discontinue service and notify your local regulatory agency or health department.

Pests can carry and spread a variety of diseases. An integrated pest management (IPM) program uses a combination of sanitation, mechanical and chemical processes which are key to prevention and control. To be successful, the establishment must follow these rules: ①deny pests entry into the establishment, ②deny pests food, shelter and water. ③Finally, you must work with a licensed PCO (pest control operator) to eliminate pests that enter.

How do pests enter? Pests can be brought into the establishment with deliveries, or openings and cracks in the building itself. To prevent them from entering, check deliveries before they enter your facility and refuse any shipments showing signs of infestation. Screen all windows and vents, install self-closing doors and air curtains or fly fans, and keep exterior openings closed when not in use. Fill holes around pipes with a hard drying material or tight fitting metal closure and seal cracks in floors and walls.

Pests are usually attracted to damp, dark and dirty places. A clean establishment offers them little food and shelter. Stick to your master cleaning schedule and dispose of garbage quickly. Keep your outdoor garbage containers clean and tightly covered. Keep food and supplies away from walls and at least six inches off the floor. Rotate products so pests do not have time to settle in them and breed.

Understanding what pests like is key to controlling them.

Roaches like dark, warm moist places. Check for a strong oily smell, droppings look like grains of black pepper, and capsule egg cases.

Rodents like quiet corners and will chew up paper or cloth to build a nest. Look for droppings the size of rice pellets, signs of gnawing, tracks, and holes. **Flies** can carry *Shigella* spp. and typhoid fever. They are drawn to odors and prefer calm air. **Moths and beetles** feed on wheat, corn and flour. Inspect deliveries for signs of infestation. **Birds** can carry fungi, bacteria and mites. Other pests such as ants can also infest your building.

Although you can take many prevention measures yourself, a professional should carry out most control measures. A licensed PCO is the most effective pest extermination you can have. Store bought pesticides are not approved to use in restaurants or foodservice establishments and pests can develop immunity to them. Require a written service contract outlining the work to be performed as well as what controlling methods will be used and preferred service scheduling.

Controlling Methods There are several methods your PCO can use to control insects including repellents, sprays, chemical bait, and zappers. Rodents can be controlled by the use of traps set near runways, glue boards for mice, and chemical bait.

Pesticides are hazardous materials. Anytime they are used or stored on your premises, you should have a corresponding SDS-Safety Data Sheets. To minimize the hazard to people, have your PCO use pesticides when you are closed and your employees are not on site. If pesticides are stored on the premises, they should be kept in their original container and stored away from food-storage or food-preparation areas.

Chapter 9-Multiple Choice

1. Generally, establishments that use a private water source must have it tested at least
 - a. Once a year
 - b. Every two years
 - c. Every three years
 - d. Every five years
2. An establishment should respond to a backup of raw sewage by
 - a. Closing
 - b. Correcting the problem that caused the backup
 - c. Thoroughly cleaning affected areas of the restaurant
 - d. All of the above
3. Which will **NOT** prevent backflow?
 - a. An air gap between the sink drain pipe and the floor drain
 - b. The air space between the faucet and the flood rim of the sink
 - c. A vacuum breaker
 - d. A cross-connection
4. When mounting tabletop equipment on legs, the clearance between the base of the equipment and the tabletop must be at least
 - a. One inch
 - b. Two inches
 - c. Four inches
 - d. Three inches
5. Equipment food-contact surfaces should meet all of the following **EXCEPT**
 - a. They must be corrosion resistant
 - b. They must be absorbent
 - c. They must be smooth
 - d. They must resist pitting
6. Which practice will prevent overhead lights from contaminating food?
 - a. Use shatter resistant bulbs
 - b. Using fluorescent bulbs
 - c. Using extended life bulbs
 - d. Using glass over bulbs
7. Which is **NOT** true regarding garbage containers?
 - a. They must be leak proof
 - b. They must remain uncovered
 - c. They must be pest proof
 - d. They must be water proof

Chapter 9-True or False

- ☐ T ☐ F 1. There should be a minimum of 20ft candles of light in food prep areas
- ☐ T ☐ F 2. Grease on an establishments ceiling could be a sign of inadequate ventilation
- ☐ T ☐ F 3. Handwashing stations are required in restrooms and food prep areas
- ☐ T ☐ F 4. Resiliency means a material has the ability to react to shock without breaking
- ☐ T ☐ F 5. A cutting board made of pine is acceptable
- ☐ T ☐ F 6. Floors in food prep areas should be slip resistant and repel water and moisture
- ☐ T ☐ F 7. NSF is an example of a company that evaluates and test industry level equipment
- ☐ T ☐ F 8. Handwashing stations should have a minimum of 20ft candles of light
- ☐ T ☐ F 9. A physical link between safe water and contaminated water is a cross-connection
- ☐ T ☐ F 10. Pesticides introduced into food would be a physical contamination
- ☐ T ☐ F 11. Rodent's feces droppings look like black pepper
- ☐ T ☐ F 12. The best way to prevent backflow is with an air gap or a vacuum breaker
- ☐ T ☐ F 13. It is acceptable to apply pesticides during normal operating hours
- ☐ T ☐ F 14. Fill holes around pipes with insulation to keep out pests
- ☐ T ☐ F 15. OSHA requires pesticides have a corresponding SDS-Safety Data Sheets

Chapter 10-Cleaning and Sanitizing

Cleaning The purpose of CLEANING is to remove food residue, dirt and grease from surfaces. You can do this by scrubbing, thermal process or with the help of detergents. Cleaners are divided into four groups. ① Detergents are to remove new or fresh dirt and grease. ② Degreasers are solvents that dissolve grease when it has been burned or baked onto grills, ovens, and range hoods. ③ Delimers are acid cleaners used on steam tables and dishwashers to remove mineral deposits from water. ④ Abrasive cleaners have a scouring agent to scrub hard-to-remove dirt. They can scratch some surfaces.

Sanitizing reduces the number of harmful microorganisms from a clean surface to safe levels. Surfaces can be sanitized by soaking them in hot water or by using a chemical-sanitizing solution. Chemical sanitizers measure their strength in parts per million (ppm). Chemical sanitizers like Chlorine, Iodine or Quats (Quaternary Ammonium) must be EPA compliant and approved for safe use in a food establishment. Chemical sanitizers are influenced by **Concentration** of the sanitizer, **Temperature** of the solution, **Contact Time** and **Water Hardness**. Hard water makes a sanitizer less effective because of high mineral content. Chemical sanitizer immersion guidelines for water temperature range between **68°F to 120°F**. Always check the concentration regularly with a sanitizer test kit. The strength of the sanitizer weakens as pathogens are killed off and the solution is diluted with rinse water.

SANITIZING CHART

MANUAL WAREWASHING SANITIZING METHODS		Temperature	Contact Time
HOT-WATER IMMERSION		171°F	30 sec
CHEMICAL IMMERSION	Parts Per Million (ppm)	Temperature	Contact Time
Quaternary Ammonium (Quats)	200ppm	75°F	30 sec
Iodine	12.5 to 25ppm	68°F	30 sec
Chlorine	50 to 99ppm	75°F to 100°F	7 sec
AUTOMATIC WAREWASHING SANITIZING METHODS		TEMPERATURE	
Conveyor Machine, Hot Water Sanitizer		180°F	
Single-Rack, Single Temperature, Hot Water Sanitizer		165°F	
Warewashing Machine, Chemical Rinse		120°F or less	

Dishwashing Machines can be used to clean, rinse and sanitize most tableware and utensils. Operate your dishwasher according to manufacturer's guidelines and always keep the machine clean, scrape or pre-rinse items, don't overload racks, inspect the racks as they come out and air dry items. Check the temperature; for hot water sanitizing automatic machines, the final rinse should be **180°F**, but if the water is too hot it may vaporize. If using a single rack or stationary rack machine, the water should be set to **165°F**. Maximum registering devices are good for providing an irreversible record of the highest temperature of the final sanitizing rinse temperature. Information should be posted near the machine regarding correct settings for water temperature and pressure. Chemical sanitizing machines should have a water temperature no greater than **120°F**.

Warewashing Sinks can wash items that are too large for the dishwashing machine but can be cleaned and sanitized manually. This may be done in a three-compartment sink (ware-washing sink.) Tableware and utensils cleaned in the three compartment sink should be ① pre-soaked or scraped clean,

②washed in detergent with **110°F water**, ③rinsed in clean water, and ④sanitized in either hot water of at least **171°F**, or with a chemical-sanitizing solution. ⑤All items should be air-dried.

CIP: Clean-In-Place stationary equipment must ①first be unplugged, ②followed by disassembling parts that may be scraped, cleaned, rinsed and sanitized, ③Then scrape, wash, rinse and sanitize the unit, ④Allow all parts to air-dry ⑤then re-assemble and plug unit back in. CIP Equipment, such as soft-serve yogurt machines, that are designed to have sanitizing solutions pumped through them, should be wash, rinsed and sanitized daily.

Clean and Sanitized All surfaces should be cleaned on a regular basis. However, food-contact surfaces and equipment must be cleaned and sanitized. When? ①After each use; ②whenever you begin working with another food type; ③any time equipment gets contaminated; ④and every four-hours if in constant use.

Clean all nonfood-contact surfaces regularly. Areas such as public restrooms, floors, shelves, and floor drains should be cleaned daily-or more often if needed. Ceilings, walls, fixtures as well as exterior areas can be cleaned less frequently. NEVER dump mop water or other liquid waste into toilets or urinals.

Cleaning Tools and chemicals should be placed in a storage area away from food and food-preparation areas. Color-coding can help ensure that the right tools are used for the right tasks. Make sure chemicals are clearly labeled. Cleaning tools should only be cleaned in a utility sink, never in a hand sink, vegetable wash sink or dishwashing sink.

Chemicals

OSHA-Occupational Safety Health Administration requires that **SDS- Safety Data Sheets** are kept for each chemical in a location available to all employees on the job. These sheets have important information about safe use **and first aid treatment**. Dispose of chemicals according to the instructions on the label.

Master Cleaning Schedule is the best way to ensure that your establishment is being cleaned regularly. Identify what needs to be cleaned by walking through the operation and talking to employees. Create a list and specify what should be cleaned, assigned by who should clean it, or job title, when or which day of the week to be completed, and tools and time needed to complete. Explain to employees the important relationship between cleaning versus sanitizing. As a manager it is your responsibility to monitor daily to ensure the program is successful. Remember to adjust a cleaning program to include changes in equipment, or procedures.

Cleaning Diarrhea or Vomit

If a person gets sick in the operation, these substances must be cleaned up to prevent the spread of Norovirus, which is highly contagious. You must contain and remove the substance. You must clean, rinse, sanitize and disinfect all surfaces. You must also consider what type of equipment you will use to remove the substance, and if protective eye-wear, gloves and clothing is necessary. Additionally, you must have a plan to remove sick customers or employees from the establishment as quickly as possible. Correct procedures will keep food protected and also keep others from getting sick.

Chapter 10-True or False

- ☐T ☐F 1. Food contact equipment must be cleaned and sanitized after it is used
- ☐T ☐F 2. Hard water makes a sanitizer more effective because of high mineral content
- ☐T ☐F 3. Tableware and utensils must be stored a minimum of 4 inches off the floor
- ☐T ☐F 4. Concentration, Temperature and Contact Time influence a chemical sanitizer
- ☐T ☐F 5. You should rinse or scrape cookware before washing in a 3-compartment sink
- ☐T ☐F 6. Iodine sanitizer should have a minimum chemical strength of 12.5 ppm
- ☐T ☐F 7. Automatic dish machines using hot water should have a final rinse temperature of 180°F
- ☐T ☐F 8. Delimers remove white mineral scale deposits on steam tables
- ☐T ☐F 9. Chlorine sanitizer set at 50 ppm can have a water temperature of 171°F
- ☐T ☐F 10. Detergent wash water should have a minimum temperature of 110°F

Chapter 10-Multiple Choice

1. When disposing of chemicals, managers should
 - a. Throw them away with other garbage
 - b. Place them in a separate bag and then throw them away
 - c. Pay someone to remove them from the establishment
 - d. Follow the instructions on the label and any local regulations that may apply
2. Your dishwashing machine is not working and you must use the three-compartment sink. What should you do first?
 - a. Fill the tank with hot water and detergent
 - b. Clean and sanitize the sinks and the drain boards
 - c. Prepare the sanitizing solution in the third sink
 - d. Gather towels for drying items
3. Which step is **INCORRECT** for cleaning and sanitizing a standing mixer?
 - a. Clean the food and dirt from around the base of the mixer
 - b. Remove the detachable parts, and wash them in the dishwashing machine
 - c. Wash and rinse non-detachable food-contact surfaces. Wipe them with a sanitizer.
 - d. Dry the detachable parts with a clean cloth, and reassemble the machine
4. What is the best way to check the strength of a chemical sanitizer?
 - a. Check the color of the sanitizer
 - b. To be safe, change the sanitizer every hour
 - c. Always use cold water with chemical sanitizers
 - d. Check the concentration of the chemical with a test kit
5. If food-contact surfaces are in constant use, they must be cleaned and sanitized
 - a. Four-hour intervals
 - b. Five-hour intervals
 - c. Six-hour intervals
 - d. Eight-hour intervals
6. What resource would you check for hazards and first aid information about specific chemicals?
 - a. The manager's daily log book
 - b. The FDA food code recommendations
 - c. The SDS book
 - d. The HACCP program
7. The temperature of the detergent wash water in a three-compartment sink should be a minimum of:
 - a. 100°F
 - b. 110°F
 - c. 171°F
 - d. 120°F
8. When dealing with diarrhea or vomit in a food operation, you should
 - a. Contain and remove the substance immediately
 - b. You must clean, rinse, sanitize and disinfect all surfaces
 - c. Have a plan to remove the sick customer from the establishment
 - d. All of the above

GLOSSARY

aw (Water Activity) Generally speaking, it is the amount of water available in a food to allow bacteria to live and multiply

ACCEPTABLE LEVEL means the presence of a food safety hazard at levels low enough not to cause an illness or injury.

ACIDIC having a pH level less than 7.0 as do foods such as vinegar and tomatoes

ACTIVE MANAGERIAL CONTROL means the purposeful incorporation of specific actions or procedures by foodservice management into the operation of their business to attain control over determined CDC foodborne illness risk factors

ADDITIVES are preservatives, antioxidants, colorings, emulsifiers, stabilizers, artificial sweeteners and flavorings added to food to improve taste or shelf life.

AEROBE is organisms that require oxygen to live.

AFLATOXINS are toxins produced by mold

AIR GAP is the space between a water outlet and the highest level of water in a sink, drain or tub. It is the most reliable method of backflow prevention.

ALKALINE means having the opposite of acidic. Alkaline products have a pH of 7.0 or higher.

ALLERGEN is any substance, such as food, pollen and microorganisms that cause allergic reactions in people.

ANAEROBE is organisms that can live with the absence of oxygen

ANAPHYLACTIC REACTION is a severe allergic reaction, often causing death

ANISAKIA is a wormlike parasite that lives only in a host but survives in raw or undercooked fish.

ANTISEPTIC is a substance that helps prevent the growth of bacteria and molds, specifically on or in the human body

APPROVED SOURCE means an acceptable supplier to the federal, state and local regulatory authority based on a determination of conformity with principles, practices, and generally recognized standards that protect public health.

BACILLUS CEREUS is an intoxication causing bacteria commonly found in starchy cereal crops, rice and grains and meat products.

BACKFLOW is the reverse flow of water which can occur when there is a drop in water pressure

BACTERIA are single-cell microorganisms that multiply by dividing into two. Some cause illness and food spoilage.

BIOLOGICAL CONTAMINATION is the contamination of food by microorganisms including bacteria, parasites, viruses and fungi. These microorganisms can be transferred to food by people, raw food, pest and refuse.

CAMPYLOBACTER JEJUNI is an infection causing bacteria found on raw poultry and in contaminated water.

CARRIER is a person who harbors and may transmit pathogenic organisms without showing signs of illness.

CCP means Critical Control Point and is a step in the HACCP process where control can be applied to reduce a food safety hazard

CDC stands for the Centers for Disease Control and Prevention. The CDC investigates foodborne illness outbreaks

CHEMICAL CONTAMINATION is the contamination of food by chemical substances such as pesticides and cleaning solutions.

CIGUATION is a toxin found in marine algae and tropical coral reef fish that have consumed smaller fish who eat the algae

CIP stands for clean-in-place and is the cleaning process of equipment that cannot be dismantled or moved

CLEANING is the process of removing soil, dirt, debris, and grease from a surface with scrubbing, chemicals or thermal heat.

CLEANING AGENTS are compounds such as soap or detergents to remove dirt, food or stains from a surface.

CLOSTRIDIUM BOTULINUM is an intoxication causing bacteria commonly found in soil and linked to roots vegetables that grow in the soil, especially baked potatoes. It grows without oxygen which is why it has been linked to swollen cans.

CLOSTRIDIUM PERFRINGENS is a bacteria that causes mild infection from toxin-producing spores. It is found in soil and linked to food including meat stews, gravies and casseroles.

COLITIS An inflammation of the large intestine or bowel

CORRECTIVE ACTION the action taken when a critical control limit is not met

CROSS-CONNECTION is the mixing of contaminated water and potable water in plumbing lines.

CROSS-CONTAMINATION means the transfer of harmful disease-causing microorganisms to food by hands, food-contact surfaces, sponges, cloth towels and utensils that touch raw food, are not cleaned, and then touch ready-to-eat foods. Cross-contamination can also occur when raw food touches or drips onto cooked or ready-to-eat foods.

DANGER ZONE means the temperature range between 41°F and 135°F that favors the growth of pathogenic microorganisms.

E. COLI is a bacteria found in the intestines of mammals, especially cattle. It can be found in raw ground meat and produce irrigated with contaminated water.

EPA The Environmental Protection Agency is responsible for regulations regarding air, water and land pollution.

EXCLUSION is restricting workers from entering a food establishment as a result of a specific illness.

FAT TOM an acronym for bacteria growth stands for Food, Acidity, Temperature, Time, Oxygen, and Moisture

FDA stands for Food and Drug Administration

FIFO is an acronym for food rotation based on the expiration date which means First-In; First-Out

FOOD ADDITIVES are colorings are flavorings added to food

FOOD ALLERGY is a response in the body to a certain type of food or food additive, usually affects the central nervous system, skin, and breathing.

FISH means fresh or saltwater finfish, crustaceans and other forms of aquatic life (including alligator, frog, aquatic turtle, jellyfish, sea cucumber, sea urchin and the roe of such animals) including fish that have been processed in any manner.

FOOD means raw, cooked, or processed edible substance, ice, beverage, chewing gum, or ingredient used or intended for use or for sale in whole or in part for human consumption.

FOOD ESTABLISHMENT means an operation at the retail or food service level, i.e., that serves or offers food directly to the consumer and that, in some cases, includes a production, storage, or distributing operation that supplies the direct-to-consumer operation

FOOD IRRADIATION is the process of exposing food to ionizing radiation (gamma rays, x-rays) to destroy microorganisms

FOOD SAFETY is the measurement and conditions necessary to control the hazards of food to ensure it's safe for human

consumption

FOODBORNE ILLNESS means sickness resulting from the consumption of foods or beverages contaminated with disease-causing microorganisms, chemicals, or other harmful substances.

FOODBORNE OUTBREAK means the occurrence of two or more cases of a similar illness resulting from the ingestion of a common food.

FUNGI are a biological contaminant that can be found naturally in air, soil, and plants. It can spoil food.

GASTROINTESTINAL relates to the stomach or intestines

GIARDIA is a parasite found in contaminated water, fruits and vegetables

HACCP means Hazard Analysis and Critical Control Point and is a prevention-based food safety system that identifies and monitors specific food safety hazards that can adversely affect the safety of food products.

HAZARD means a biological, physical, or chemical property that may cause a food to be unsafe for human consumption.

HEPATITIS A VIRUS has been found in shellfish contaminated by raw sewage and is primarily spread by the feces of humans infected with the virus because of improper handwashing

HIGH-RISK FOOD is potentially hazardous food requiring time temperature control for safety

HISTAMINE is a toxin found in certain scombroid fish, like Tuna and Mahi Mahi

HOT HOLDING minimum storage temperature for hot food is 135°F, awaiting service to customers

INFECTION a disease caused by pathogenic bacteria in the intestines of a person. It may take 2 days for symptoms to show.

INTOXICATION is when a bacteria release toxins into the food, or by chemical residue or food additives.

INTERNAL TEMPERATURE means the temperature of the internal portion of a food product.

JAUNDICE is a yellowish discoloration of the skin and eyes resulting from liver illness

LAG PHASE is a stage when bacteria are not multiplying at all

LISTERIA MONOCYTOGENES is bacteria naturally found in soil and has been linked to expired deli meats, hot dogs and unpasteurized milk. It grows well in cool temperatures

LOG PHASE is a stage when bacteria multiply rapidly

MEAT means the flesh of animals used as food including the dressed flesh of cattle, swine, sheep, or goats and other edible animals, except fish, poultry, and wild game animals.

MICROORGANISM means a form of life that can be seen only with a microscope; including bacteria, viruses, yeast, and single-celled animals.

MOLD is fungi that produces thread-like filament and can be black, or various colors

MOLLUSCAN SHELLFISH means any edible species of raw fresh or frozen oysters, clams, mussels, and scallops or edible portions thereof, except when the scallop consists only of the shucked adductor muscle.

MONITORING means the act of observing and making measurements to help determine if critical limits are being met and maintained.

PARASITE means an organism that lives on or in another, usually larger, host organism in a way that harms or is of no advantage to the host.

PASTEURIZATION is a low temperature heat treatment of food that destroys pathogens

PATHOGEN means a microorganism (bacteria, parasites, viruses, or fungi) that causes disease in humans.

PERSON-IN-CHARGE individual responsible for food safety in the food establishment, or a designated department or area of a food establishment

PERSONAL HYGIENE means individual cleanliness and habits including hair, nails, and clothing

PEST is an animal, bird or insect capable of indirectly or directly contaminating food

pH means the measure of the acidity of a product.

PHYSICAL CONTAMINATION occurs when a foreign object becomes mixed with food and presents a hazard

POULTRY are birds that are killed for their meat or eggs and generally include chicken, turkey, quails, ducks and geese.

POTABLE WATER is water that is approved and safe to drink

POTENTIALLY HAZARDOUS FOOD (PHF) is an obsolete term. See TCS (Time/temperature control for safety) FOOD.

QUATERNARY AMMONIUM COMPOUNDS a chemical disinfectant referred to as QUATS

READY-TO-EAT (RTE) FOOD means: foods that have been properly smoked, cured or cooked or raw fruits and vegetables that are washed where no further processing is required.

REHEATING is the process of re-cooking previously cooked and cooled food to a temperature of at least 165°F

REGULATORY AUTHORITY means a federal, state, local enforcement body or authorized representative having jurisdiction over the food establishment.

RESTRICT means to limit the activities of a food employee so that there is no risk of transmitting a disease that is transmissible through food and the food employee does not work with exposed food, clean equipment, utensils, linens, and unwrapped single-service or single-use articles.

RESILIENCY means a material has the ability to react to shock without breaking

RISK means an estimate of the likely occurrence of a hazard.

SALMONELLA spp. A bacteria most commonly found in raw poultry and their eggs, and unpasteurized dairy products

SALMONELLA TYPHI is a bacteria found in humans after consuming contaminated food or water

SANITIZE uses chemicals or heat to remove harmful bacteria, germs, and microorganisms

SCOMBROID FISH POISONING is when the toxin histamine rises in scombroid fish (tuna, mahi mahi, and mackerel) due to time and temperature abuse

SHIGELLA SPP. Bacteria found in the feces of humans; transmitted when food handlers improperly wash their hands after using the bathroom and also flies carry these bacteria

SHELLFISH means bivalve molluscan shellfish, like oysters and clams

SPORE means a very tough, dormant form of certain bacterial cells that is very resistant to heat

STAPHYLOCOCCUS AUREUS bacteria found on skin, hair, nose and throat of people. This bacteria produces toxins that multiply rapidly in room-temperature food that has been contaminated

STANDARD OPERATING PROCEDURE (SOP) means a written method of controlling a practice in accordance with predetermined specifications to obtain a desired outcome

TEMPERATURE MEASURING DEVICE means a thermometer, thermocouple, thermistor, or other device for measuring the temperature of food, air, or water

TCS FOOD (Time/Temperature Control for Safety Food) An animal food that is raw or heat-treated; a plant food that is heat-treated or consists of raw seed sprouts, cut melons, cut leafy greens, cut tomatoes or mixtures of cut tomatoes that are not modified in a way so that they are unable to support pathogenic microorganism growth or toxin formation, or garlic-in-oil mixtures that are not modified in a way so that they are unable to support pathogenic microorganism growth or toxin formation. TCS food was formerly known as “potentially hazardous food” (PHF).

TOXINS are poisons and can be produced by pathogens either in food or in the body

TRICHINELLA SPIRALIS-(TRICHINOSIS) a parasite intestinal roundworm found in wild game and pork

UHT ultra high-heat temperature treatment of preserving food to extend its shelf life

USDA stands for the United States Department of Agriculture

USE-BY-DATE date recommended for product use to ensure peak quality

VERIFICATION means, for the purpose of this document, ensuring that monitoring and other functions of a HACCP plan are being properly implemented

VIRUS microorganisms completely dependent on a living host cell to survive and multiply and therefore cannot multiply in or on food



Study Guide ANSWER KEY

- Chapter 1 1)B 2)B 3)B 4)D 5)B 6)A 7) D 1)F 2)T 3)F 4)T 5)F 6)T 7)F 8)T
- Chapter 2 1)D 2)D 3)D 4)D 5)B 6)A 7)D 8)C 9)D 10)C 11)D 12)C 13)D 14)C 15)C
- 1)T 2)T 3)F 4)T 5)T 6)T 7)F 8)T 9)F 10)T 11)T
- Chapter 3 1)C 2)C 3)C 4)D 5)A 6)B 7)B 8)D
- Chapter 4 1)A 2)C 3)D 4)D 5)B 6)D 1)F 2)F 3)F 4)T 5)T 6)T
- Chapter 5 1)T 2)F 3)F 4)F 5)T 6)F 7)T 8)F 1)D 2)C 3)B 4)B 5)D 6)C 7)D 8)F 9)F
- Chapter 6 1)B 2)C 3)D 4)D 5)C 6)C 1)T 2)T 3)F 4)F 5)T 6)F 7)T
- Chapter 7 1)D 2)B 3)C 4)B 5)D 6)A 7)A
- Chapter 8 1)B 2)B 3)C 4)A 5)A 6)D 1)T 2)T 3)T 4)T 5)T
- Chapter 9 1)A 2)D 3)D 4)C 5)B 6)A 7)B 1)F 2)T 3)T 4)T 5)F 6)T 7)T 8)T 9)T 10)F
- 11)F 12)T 13)F 14)F 15)T
- Chapter 10 1)T 2)F 3)F 4)T 5)T 6)T 7)T 8)T 9)F 10)T 1)D 2)B 3)D 4)D 5)A 6)C 7)B 8)D



Your **one source** for food safety training programs

**Please call on us for all of your food safety
certification programs.**

(678) 480-8064

**Check out our website for available class
schedules and exam options**

www.servsafe.today



Restaurant Management Group
-RMG-