



Food Safety Manager

Course Study and Reference Book

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Additional Study Resources

We recommend you visit our website for additional free study resources at

fidelitysafety.com/food-safety-resources/

Our Websites

Main	FidelitySafety.com
Food Safety for Schools	FoodSafetyForSchools.com
Food Handler Certification	MyFoodHandlerCard.com

Updated: December 8, 2023

Confirmation Letter

Certified Food Safety Manager



Dear Attendee:

I am pleased you will attend the Certified Food Safety Manager Review Course and Examination. I am sure the review course will provide you with a thorough knowledge of food safety principles you can apply to your job. The review course is designed to reinforce the material in the FDA Food Code and provide an opportunity to ask questions and relate food safety principles to your operation. However, attending the review course should not be considered a substitute for reading and studying before the course. Since 2000, California law has required each retail food facility to have at least one owner, manager, supervisor, or other person certified as a Food Safety Manager, also known as ServSafe® or Food Protection Manager.

Information about our training program and exam:

- Classes are in-person and instructor-led.
- The material covered will be reviewed and covered at a very rapid pace. Those who study before and participate in the course generally obtain a passing score on the certification exam.
- The exam and certificate are ANSI/ANAB Accredited and approved nationally.
- Certification is good for five (5) years.
- If you have a Food Manager Certificate, you do not need a Food Handler Card.
- Our food manager review classes are in-person, half-day programs taught in ENGLISH.
- The exam will be taken online using a tablet or laptop computer, available in English or Spanish.
- The 75-question, multiple-choice certification exam will take approximately 30–120 minutes, depending on the person.
- Exam results are immediate, and your certificate will be available for download the next day.
- Exam-only options are also available.

Other Important Information:

- ✓ To successfully pass the exam, we recommend that you study the course book (optional handbook available in English or Spanish, or you may use a book from a previous course) and be able to read, write, and understand English, Spanish, or the language of the requested exam.
- ✓ If you require special accommodation, please advise us before registering.
- ✓ Directions to Manager Courses/Exams - fidelitiesafety.com/directions/ Other locations may be used from time to time. Please check your confirmation email closely to ensure you go to the correct location and at the correct time.

NOTE: Please bring a picture identification card (driver's license, state ID, military ID, student ID, or passport) to the course. A picture ID will be required at exam time. If you wear glasses for reading or for distance, please bring them to class. We recommend eating breakfast before the class since food will not be provided. Please review the refund, cancellation, and other policies on page C1.

If you have any questions, please do not hesitate to contact us.

Sincerely, *Fidelity Safety & Training LLC*

Refund, Cancellation, and Other Policies

If you wish to cancel your class/exam, request to do so with at least 14-day notice. A refund can be issued minus a 10% cancellation fee. The request shall be made by contacting us or replying to our email confirmation. You may send another employee in your place without penalty, but please notify us or reply to our email confirmation with the new attendee's full name and email address before the class/exam. If you wish to reschedule your class/exam, request to do so with at least two days' notice. The request shall be made by contacting us or replying to our email confirmation. Only one reschedule is permitted per registrant.

We charge the total price for no-shows or cancellations within 14 days of a scheduled class/exam. Absolutely no refunds will be issued for cancellations on the day of the class/exam — no matter how creative or legitimate the excuse. We know this can be firm, but our team needs time to communicate with many sources already committed—no refunds on any product or rental item(s) if purchased.

Purchase orders are only accepted by schools and other government agencies. Once an order is received, an invoice will be sent. Invoice payments are Net 30, and accounts 60 days past due are subject to interest at 1.5% per month.

If you pay by check and your check is returned due to insufficient funds, you or your company will be required to pay the face amount of the check and a service charge of up to \$25.00 for the first check and up to \$35.00 for each subsequent check that is returned for insufficient funds. Writing a check without sufficient funds may be a crime. California Civil Code section 1719 allows the payee of a bad check to recover three times the check amount, up to \$1500, if certain conditions are met. A cause of action under this law may be brought in small claims court if the claim does not exceed \$10,000 or in any other appropriate court.

If you pay by credit or a debit card and you later dispute the charge (before or after services have been provided), there will be a \$50 fee if your dispute is not successfully disputed.

CA Food Handler Card Law

On July 1, 2011, the new California Food Handler Card Law was enacted. All dishwashers, servers, cooks, bartenders, and others who handle or prepare food or beverages must obtain a CA Food Handler Card. Before paying for a course or exam from another provider, ensure the program certificate issuer is ANSI Accredited. If you possess a Certified Food Safety Manager Certificate, you do not need a Food Handler Card.

Our food handler program is an ANSI Accredited Program, and there is a 100% money-back guarantee of the purchase price if returned within 30 days of enrollment and if no more than lesson one has been studied. The course and examination take approximately 1.5 – 2.0 hours to complete, and upon successful completion, you can print a certificate and card. This card is good for three years in CA. The course and the exam are available in English and Spanish for only **\$9.95**. Contact us for additional discounts for employers with 40 or more employees.

Go to [MyFoodHandlerCard.com](https://www.MyFoodHandlerCard.com) to register or for more information.

Important Food Safety Times, Temperatures, and Measurements

- ✓ Temperature Danger Zone (TDZ) 41-135°F. The middle of the TDZ is 70-125°F.
- ✓ Bacteria can double their population every 20 minutes.
- ✓ Wash hands for 20 seconds. Wash/rub hands together for 10-15 seconds.
- ✓ The water temperature for hand washing must be at least 100°F through a mixing valve or combination faucet.
- ✓ A self-metering faucet shall provide water flow for at least 15 seconds without the need to reactivate the faucet.
- ✓ Meat, poultry, fish, sliced melons, and dairy must be received at 41°F or lower.
- ✓ Shelled eggs, live crustaceans, and shellfish must be received at an air temperature of 45° F or lower.
- ✓ Hot foods must be received at 135°F or higher.
- ✓ Frozen foods must be received frozen. Freezing may begin at 0°F / -18°C or lower.
- ✓ Food temperature measuring devices, scaled only in Fahrenheit, shall be accurate to ±2°F.
- ✓ Thermometer ice point calibration method: Hold for 30 seconds, calibrate to 32°F.
- ✓ Thermometer boiling point calibration method: Hold for 30 seconds and calibrate to 212°F.
- ✓ The air temperature in the refrigerator should be approximately 2°F lower than the required food temperature.
- ✓ Keep stored food and equipment at least 6 inches off the floor unless on pallets, dollies, etc.
- ✓ Immobile equipment must have a space of 4" from the countertop and 6" from the floor to allow for cleaning/sanitizing.
- ✓ Dry food storage rooms must be 50-70°F, and the relative humidity must be 50-60%.
- ✓ Fresh cold foods such as meat, poultry, fish, and dairy must be received and stored at 41°F or lower.
- ✓ Eggs are received and stored at 45°F or lower—once cooked, store at 41°F or lower.
- ✓ Potentially hazardous foods with expiration dates shall be held at 41°F or below for no more than seven days.
- ✓ Hold ROP foods (Reduced Oxygen Packaging) at 41°F or below for no more than 14 days.
- ✓ While heating/cooling foods, pass food through the middle of the danger zone (70-125°F) as quickly as possible.
- ✓ Thawing under running water; no more than 2 hours at water temp of 70°F or below.
- ✓ The cooking temperature for poultry, stuffing, and stuffed meats is 165°F for 15 seconds.
- ✓ The cooking temperature for pork, ham, bacon, fish, and eggs is 145°F for 15 seconds.
- ✓ The cooking temperature for ground meats or sausage is 155°F for 15 seconds.
- ✓ Fruits and vegetables that are cooked for hot holding shall be cooked to a temperature of 135°F.
- ✓ Potentially hazardous foods cooked or reheated in a microwave must reach 165°F and stand for 2 minutes.
- ✓ Cool foods from 135°F to 70°F within 2 hours, then to 41°F or lower within a total of 6 hours. (Two-Stage)
- ✓ When cooling thick foods in shallow pans, place the food in the pans no more than 2 inches deep.
- ✓ Reheat all potentially hazardous foods to 165°F for 15 seconds within 2 hours.
- ✓ Hold hot foods at 135°F or above and cold foods at 41°F or below. Check food temperatures every 2 hours.
- ✓ In-use utensils may be stored in a water container; water temperature must be maintained at least 135°F.
- ✓ During manual sanitizing (immersion in hot water), the water temperature must be at least 171°F.
- ✓ During mechanically sanitizing (machine), the sanitizing rinse water temperature must be at least 180°F.
- ✓ Chemical sanitizers are typically effective between 75°F and 120°F. Follow the label/directions on chemicals.
- ✓ Food contact surfaces: sanitize when you change foods or tasks and at least every 4 hours during continual use.
- ✓ Keep shellfish shell stock tags on file for 90 days from the date the last shellfish was used.
- ✓ Shucked Shellfish: the "sell by" or "best if used by" date for packages with a capacity of less than 1.89 L (one-half gallon) or the date shucked for packages with a capacity of 1.89 L (one-half gallon) or more.
- ✓ A smooth surface is free of pits/inclusions, with cleanability equal to or exceeding (100 grit) # 3 stainless steel.
- ✓ Fixed equipment spaced from adjoining equipment, walls, etc., shall not exceed 1 mm or one thirty-second inch.
- ✓ Screen openings shall protect against the entry of pests and be at least 16 mesh to 25.4 mm (16 mesh to 1 inch).
- ✓ An air gap between the water supply inlet and the flood level rim of the plumbing fixture, equipment, or nonfood equipment shall be at least twice the diameter of the water supply inlet and may not be less than 25 mm (1 inch).
- ✓ Don't alter lighting color; lighting must be at least 10-foot candles (ft-c) in food storage/walk-in refrigerators, 20 ft-c in food prep areas, and 50 ft-c in areas where knives, slicers, or other equipment are used.
- ✓ Potentially hazardous foods have a pH (acidity) greater than 4.6 pH (7 is neutral).
- ✓ Potentially hazardous foods have water activity (aw) greater than .86 aw (pure water is at 1.0).

Note: Your local health department or employer may require more stringent requirements. Additional times, temperatures, and measurements are available at the [FDA.gov](https://www.fda.gov) website.

Tiempos y Temperaturas Importantes para el Manejo Seguro de Alimentos

- Temperatura de la “Zona de Riesgo” 41-135°F.
- Lave sus manos por lo menos por 20 segundos, restriegue/enjuague sus manos durante 10-15 segundos.
- La temperatura del agua para lavar las manos debe ser de por lo menos 100°F.
- La carne, aves, pescados, melones cortados y lácteos deben ser recibidos a una temperatura de 41°F o menos.
- Huevos sin cáscara, crustáceos vivos, y mariscos deben ser recibidos a una temperatura ambiental de 45° F o menos.
- Comidas calientes deben ser recibidas a 135°F o más alta.
- Comidas congeladas deben ser recibidas a 0°F/-18°C o menos.
- Los termómetros deben ser precisos entre +/- 2 grados.
- Método de calibración de termómetro al punto del hielo: Sostenga por 30 segundos, calibre hasta alcanzar 32°F / 0°C.
- Método de calibración de termómetro al punto hirviendo: Sostenga por 30 segundos, calibre hasta alcanzar 212°F.
- Mientras maneje alimentos calientes o fríos, inspeccione la temperatura cada 2-horas.
- Inspeccione la temperatura de las comidas en dos sitios distintos por un mínimo de 15 segundos.
- La temperatura del aire del refrigerador debe ser aproximadamente 2°F mas baja que la temperatura requerida para el alimento. Por ejemplo, para mantener la carne a 41°F la temperatura del aire debe ser 39°F.
- Mantenga la comida almacenada al menos 6-pulgadas por encima del suelo.
- El equipo inmóvil debe tener un espacio de 4” desde la repisa de encima y 6” desde el piso para facilitar limpiar y desinfectar.
- Almacenamiento en seco de comidas debe mantener una temperatura de 50-70°F y la humedad relativa debe ser del 50 al 60%.
- La carne, aves, pescados, y lácteos deben ser guardados en una temperatura 41°F o menos.
- Los huevos pueden ser recibidos a una temperatura de 45°F o menos, una vez cocidos deben ser guardados a 41°F o menos.
- Alimentos potencialmente peligrosos deben ser mantenidos a una temperatura de 41°F o por debajo por no más de 7-días.
- Durante el calentamiento o enfriamiento de alimentos, estos deben pasar a través de la mitad de la temperatura de la zona de riesgo (70-125°F) lo más rápido posible.
- La descongelación de alimentos bajo el agua (mientras fluye) debe ser hecho por un periodo no mas largo de 2 horas y el agua debe tener una temperatura de 70°F o por debajo.
- La temperatura de cocción de aves, relleno, y carnes rellenas es 165°F por 15 segundos.
- La temperatura de cocción para el cerdo, jamón, tocino, pescado, y huevos es 145°F por 15-segundos.
- La temperatura de cocción para carnes molidas o chorizos es 155°F por 15-segundos.
- Alimentos potencialmente peligrosos cocinados en el microondas, debe alcanzar 165°F y dejarlos reposar por al menos 2-minutos.
- Enfríe comidas de 135°F a 70°F en 2 horas, luego a 41° F o mas bajo dentro de las siguientes 4 horas. (Método de Dos Fases)
- Cuando enfríe comidas gruesas en sartenes poco profundas, coloque la comida en el sartén no mas de 2 pulgadas de profundidad.
- Recaliente alimentos potencialmente peligrosos a 165°F por 15 segundos dentro de un periodo de 2-horas.
- Mantenga comidas calientes a 135 °F o mas alta y comidas frias a 45 ° F o mas baja, revise la temperatura cada 2 horas.
- Cuando desinfecte el equipo manualmente (inmersión en agua caliente), la temperatura del agua debe ser al menos de 171°F.
- Cuando desinfecte el equipo mecánicamente (maquinas), el agua de enjuague debe ser de al menos 180°F.
- Desinfectantes químicos son típicamente efectivos entre 75° F y 120° F. siga las direcciones de las etiquetas cuando use químicos.
- Mantenga las etiquetas de existencias de mariscos por 90-días desde el día que el último marisco fue usado.
- No altere el color de las luces y las luces deben ser de por lo menos 50 “foot candles” (medida de brillantez de la luz).
- Alimentos potencialmente peligrosos tienen un pH (acidez) mas alto que 4.6 pH (7 es neutral).
- Alimentos potencialmente peligrosos tienen actividad de agua (aw) mas alto que .86 aw (el agua pura es de 1.0)

Note: Su Departamento Local de Salud o empleador puede requerir medidas más estrictas.

Practice Examination

ANSWERS

- Dry food should not be stored C
- A. In a labeled and sealed container
 - B. In a room near the kitchen
 - C. Under an open staircase
 - D. In a designated food storage room with a temperature of 50-70°F
- Even if vacuumed packed, bacteria may be more likely to grow on which food? A
- A. Fresh fish
 - B. Carrots
 - C. Preserved meats
 - D. Rice
- Where would be the best location for a single thermometer in a refrigerator? C
- A. The top shelf of the unit
 - B. Back of unit
 - C. Warmest location
 - D. Near the front door
- Which would be a physical hazard? A
- A. Bone chips
 - B. MSG
 - C. Oven cleaner
 - D. Pasteurized apple juice
- Which would be a chemical hazard? C
- A. MSG
 - B. Garlic and oil mixtures
 - C. Pesticide over-spray on glassware
 - D. Pasteurized garlic and oil mixture
- Labels are required on all the following except: C
- A. Canned goods
 - B. Spray bottles of sanitizer solution
 - C. Dry pasta
 - D. Flour
- Which foods are not classified as Time/Temperature Control for Safety (TCS) Foods (hazardous foods)? C
- A. Cut melons and sliced tomatoes
 - B. Garlic and oil salad dressing
 - C. Pasteurized honey and dry pasta
 - D. Cooked rice and beans
- What type of jewelry may be worn during food handling? C
- A. Watch
 - B. Medical alert bracelet
 - C. Plain wedding ring
 - D. Bracelet
- Eggs shall be received at _____ or lower. B
- A. 41°F
 - B. 45°F
 - C. 55°F
 - D. 0°F

- Bathrooms and hand washing stations for employees must be supplied with D
- A. Hand sanitizer lotion
 - B. Hand lotion
 - C. Cloths for drying hands
 - D. Hot and cold running water
- Your first step to preventing pests should be A
- A. Good cleanliness and sanitation
 - B. Hiring a well-known pesticide control operator (PCO)
 - C. Using traps and pesticides
 - D. Leaving doors and windows open
- Food, plastic utensils, drinking cups, etc., should be stored D
- A. 4 inches from the floor
 - B. 12 inches from the wall
 - C. 4 inches from the wall
 - D. 6 inches from the floor and away from the wall
- Stationary kitchen equipment must be ____ inches from the countertop and _____ from the floor. A
- A. 4 inches, 6 inches
 - B. 6 inches, 6 inches
 - C. 6 inches, 4 inches
 - D. 4 inches, 4 inches
- Food waste/garbage should be stored A
- A. In a water-tight, nonabsorbent, pest-proof, easy-to-clean container
 - B. In a closable dumpster near the back door to the kitchen
 - C. In a plastic trash can outside of the building
 - D. In a plastic bag on the floor
- When sanitizing with hot water (171°F or above), items should be submerged for at least? D
- A. As long as necessary to kill microorganisms
 - B. 90 minutes
 - C. 60 seconds
 - D. 30 seconds
- Ground meats shall be cooked to a minimum internal temperature of A
- A. 155°F
 - B. 145°F
 - C. 170°F
 - D. 165°F
- Vegetables for hot holding shall be cooked to a minimum internal temperature of D
- A. 165°F
 - B. 155°F
 - C. 145°F
 - D. 135°F
- Kitchen ventilation systems are not designed to reduce A
- A. Noise and flying pests
 - B. Moisture and condensation
 - C. Smoke and heat
 - D. Odors and fumes

- Food workers diagnosed with a foodborne illness shall return to work only if C
- A. They are asked by the general manager
 - B. If they file a workers' compensation claim
 - C. If they have a doctor's note with no restrictions
 - D. If they agree to wear gloves
- Thawing foods can be done by all the following methods except A
- A. On the counter at room temperature
 - B. Cooking
 - C. In the refrigerator
 - D. Under potable water for no more than two hours
- Fish that eat toxic algae may contain C
- A. Botulism
 - B. Histamine
 - C. Ciguatoxin
 - D. Campylobacter jejuni
- The main goal of a HACCP program is to C
- A. Reduce employee illness and injury
 - B. Increase employee illness and injury
 - C. Reduce the risk of illness and injury from food
 - D. Increase the risk of illness and injury from food
- Ultra-pasteurized or UHT-treated foods may not need to be B
- A. Cooked
 - B. Refrigerated until opened
 - C. Cooked until opened
 - D. Frozen
- Gloves must be worn D
- A. When the food handler has bad acne
 - B. When food is classified as TCS/potentially hazardous
 - C. When required by food manufacture
 - D. When the food handler has an injury, cut, burn, or boil on the hand or wrist
- In HACCP, the Critical Control Point (CCP) is defined as A
- A. The last step where hazards can be eliminated or reduced
 - B. Cooking and cooling process
 - C. Cooling process
 - D. Proper handwashing
- If you receive vacuum-packed foods and one of the packages is bulging or swollen, you should B
- A. Keep it, and don't use it until the budging goes down
 - B. Discard or reject the delivery
 - C. Cook it immediately
 - D. Cool it immediately
- The best practice to prevent backflow is to A
- A. Make sure an air gap is present
 - B. Install a backflow prevention device, such as a vacuum breaker
 - C. Hire a professional plumber
 - D. Do not dispose of food products in sinks

- Which foodborne illness is not known as an infection? C
- A. Salmonella
 - B. Listeria
 - C. Botulism
 - D. Shigellosis
- Which practice below is not safe or appropriate? D
- A. Air dry clean dishware and store sanitizing chemicals below drying dishes
 - B. Remove apron before using the restroom
 - C. Use covered, leak-proof, and easy-to-clean trash receptacles
 - D. Use apron to dry hands or to wipe clean knives
- Identify the Critical Control Points (CCP) for mashed potatoes. B
- A. Receive, cook, cool, and reheat
 - B. Cook, hold, cool, and reheat
 - C. Hold, reheat, and hold
 - D. Cook, cool, hold, and store
- Produce shall be washed C
- A. At the time of delivery
 - B. After preparing
 - C. Before preparing
 - D. Within 36 hours of receiving
- Companies that sell shellfish are required to B
- A. Provide a copy of their business license
 - B. Provide shellstock tags with each package/crate
 - C. Hold shellstock tag for 90 days
 - D. Collect shellstock tags after 90 days
- While checking the temperature of hot foods at a buffet, you discover that the soup is below 135° F.
What should you do? D
- A. Discard the soup
 - B. Reheat the soup
 - C. Mix the cooler soup with a warmer batch
 - D. Discard the soup if it has been in the temperature danger zone longer than 4-hours
- Hot foods left in the temperature danger zone (below 135°F) for an unknown length of time, shall be C
- A. Reheated to 155°F
 - B. Reheated to 165°F
 - C. Disposed of immediately
 - D. Cooled to 41°F and then reheated to 165°F
- The air temperature of a refrigerator is discovered to be 50°F for an unknown length of time, what should occur next? C
- A. Cooked foods immediately
 - B. Rinsed and prepared
 - C. Check the temperature of the food, and if it is over 41°F, discard it immediately
 - D. Re-heat to an internal temperature of 165°F.
- When holding foods, keep hot foods at _____ above, and keep cold foods at _____ or below. A
- A. 135, 41°F
 - B. 165, 40°F
 - C. 165, 41°F
 - D. 140, 40°F

- When washing your hands, it should take you at least D
- A. 35 seconds
 - B. 30 seconds
 - C. 30 minutes
 - D. 20 seconds
- The pH or acidity level and water activity in TCS/potentially hazardous foods is C
- A. Greater than pH 4.6, greater than 4.6
 - B. Less than pH 4.6, greater than .86
 - C. Greater than pH 4.6, greater than .86
 - D. Less than pH 4.6, greater than 4.6
- When using the HACCP program, monitoring CCPs will include measuring _____ and _____. C
- A. Hand washing, sanitizing times
 - B. Food portions, sanitizing times
 - C. Time, temperature
 - D. Storage, temperature
- Toxic or poisonous chemicals should be stored B
- A. Away from food
 - B. Away from food in a separate location
 - C. Away from food and clean dishware
 - D. Away from food and other chemicals
- Cloths used for sanitizing, should be stored in _____ when not in use A
- A. Bucket of sanitizer solution
 - B. Warm water
 - C. With other cloths used for cleaning
 - D. Food prep sink
- The main propose of sneeze guards is to C
- A. Protect the food from employees
 - B. Prevent customers from touching the food
 - C. Protect the food from customers who might cough or sneeze
 - D. Prevent customers from sneezing
- Pesticide should only be applied by C
- A. Manager or supervisor
 - B. Maintenance personnel
 - C. State-certified pest control operators (PCO)
 - D. Certified Food Handler
- Hand washing is required for all the following except D
- A. After taking out the trash
 - B. After using the restroom
 - C. After shaking hands
 - D. After wrapping baked cookies
- TCS/Potentially hazardous foods in the refrigerator shall be stored for no more than A
- A. 7 days
 - B. 7 weeks
 - C. 7 months
 - D. 7 years

- Which statement about refrigerators and/or freezers is incorrect? D
- A. Monitor unit temperatures frequently
 - B. Do not store foods on the bottom (floor) of the unit
 - C. Do not line shelves
 - D. Do not clean refrigerators and/or freezers regularly
- Which is not an example of cross-contamination? C
- A. Using the same cutting board for raw meat and then salad
 - B. Wearing the same gloves for more than 4 hours
 - C. Washing hands after using the restroom
 - D. Raw foods dripping on ready-to-eat foods in the refrigerator
- An employee cuts their hand on a knife while slicing a head of lettuce. What “corrective action” should be taken? C
- A. Wash off the cutting board and knife
 - B. Clean and sanitize the slicer
 - C. Discard lettuce, wash hands and apply a clean bandage, sanitize utensils and cutting board
- When checking temperatures, thermometers should be placed A
- A. In the center and/or the thickest part of the food
 - B. In two locations near the edge of the food
 - C. On the bottom of the container
 - D. On the surface of the food
- Detergent is to clean, as sanitizer is to D
- A. Clean
 - B. Detergent
 - C. Grease
 - D. Sanitize
- First-in, first-out (FIFO) refers to B
- A. Proper rotation of trash and waste in the kitchen
 - B. Proper rotation of foods during storage
 - C. Improper rotation of foods during storage
 - D. A person responsible for closing the refrigerator door
- A swollen can of soup may indicate D
- A. It was temperature-abused
 - B. It was held at very cold temperatures
 - C. It contains hazardous molds
 - D. It may contain clostridium botulinum (botulism)
- Which of the following is the most frequent contributor to illness? B
- A. Undercooking
 - B. Improper food temperatures
 - C. Dirty aprons
 - D. The wrong concentration of sanitizer
- The temperature danger zone for Time/Temperature Control for Safety (TCS) Foods (hazardous foods) is A
- A. 41 to 135°F
 - B. 40 to 140°F
 - C. 39 to 140°F
 - D. 41 to 155°F

Cross-contamination can occur when

D

- A. Raw foods are stored above ready-to-eat foods
- B. Cutting boards are not clean and sanitized in-between use
- C. Sponges and cloths used on countertops are not adequately cleaned and sanitized
- D. All the above

In a HACCP plan, the Critical Control Point (CCP) for cooling a steak salad would be

C

- A. Cool to 41°F within eight hours
- B. Cool to 41°F within six hours or less
- C. Cool to 70°F in two hours or less, and then to 41°F within four hours or less
- D. Cool to 70°F in two hours or less, and then to 41°F within two hours or less

At a self-service bar, utensils should be placed.

A

- A. In the food
- B. On the lid of the container
- C. In water
- D. On a damp cloth

Fly zappers should not be installed?

D

- A. Over food prep surfaces
- B. Near the stove or other cooking equipment
- C. In the food storage areas
- D. All the above

Food Safety Handbook

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Introduction

Food establishment customers expect and deserve safe food and sanitary facilities. Most establishments provide these demands, but there are an estimated 76 million cases of foodborne illnesses in the United States each year and approximately 325,000 hospitalizations and 5,000 deaths. Foodborne illness is a disease that is carried or transmitted to people by food. When a foodborne outbreak occurs, there is a 'cost' to consumers, employees, and the food establishment. These costs can include:

- Pain and suffering for those who are ill and for their families
- Hospitalization or death
- Lowered employee morale and turnover
- Loss of sales, closure of business
- Reduced productivity and staff layoffs
- Embarrassment
- Lawsuits and court costs
- Increased insurance premiums

Foodborne Illness Outbreaks

The Centers for Disease Control and Prevention (CDC) defines an outbreak of foodborne illness as an incident in which two or more people experience the same illness after eating the same food. Foodborne illness is confirmed after a laboratory shows that a specific food is the source of the illness. The most common reported causes of foodborne illnesses include:

- Failure to cool foods properly
- Failure to cook and hold foods at the correct temperature
- Poor personal hygiene

There may be a few reasons why foodborne illness appears more prevalent than in the past. This may include a more substantial news media presence, new and stronger foodborne diseases, importation of food from other countries, more meals away from home, and an increase in the population of people with weakened immune systems.

High-Risk People

Population demographics show an increase in the percentage of people at high risk for contracting a foodborne illness. These individuals include:

- Young children
- Elderly people
- Pregnant women
- People with weakened immune systems
- People taking medication

Time/Temperature Control for Safety (TCS) Foods

All foods can become contaminated and hazardous. However, some foods are classified as potentially hazardous or TCS foods because microorganisms can multiply rapidly. These foods usually have the following characteristics:

- History of foodborne illness outbreaks
- Moist, with a water activity (aw) above 0.86
- Neutral or slightly acidic. (Bacteria prefer a pH of greater than 4.6 to approximately 7.5)
- High in nutrients (food/protein)

The FDA Food Code identifies the following TCS Foods:

- ✓ Meat and poultry (cooked & raw)
- ✓ Cooked meat products such as stews, gravy, and soups made with meat or meat stock
- ✓ Meat or fish salads
- ✓ Seafood and shellfish
- ✓ Sliced melons or other sliced or shredded produce such as lettuce or tomatoes
- ✓ Sprouts and leafy greens
- ✓ Cooked rice, beans, and potatoes (heated plant foods)
- ✓ Milk and eggs, including dishes made with them, such as hollandaise sauces, custards, etc.
- ✓ Garlic and oil mixtures that have not been heat treated/processed/pasteurized
- ✓ Tofu and other soy products

Food Hazards

Humans and the environment introduce contamination and food safety hazards, and some occur naturally. Food safety hazards are classified into three categories:

1. **Biological hazards** include certain bacteria, viruses, parasites, and fungi. Certain plants, mushrooms, and fish carry harmful toxins. Intoxications are harmful toxins in contaminated foods. Infections are pathogens that grow in the intestines.
2. **Chemical hazards** include pesticides, cleaning supplies, toxic metals from improper cookware and equipment, and naturally occurring chemicals, such as some types of plants, mold, and fish.
3. **Physical hazards** are foreign objects that get into the food, such as hair, metal staples, toothpicks, dirt, broken glass, fingernails, bandages, and metal fragments from dull can openers.

Causes of Foodborne Illness

Bacteria cause most foodborne illnesses and contamination. However, there are several factors that cause foodborne illness. These can be placed into three categories: 1) time-temperature abuse, 2) cross-contamination, and 3) poor personal hygiene.

Time-Temperature Abuse: Food that remains too long in an unfavorable temperature will allow the growth of microorganisms. This includes:

- Failure to cool foods properly
- Failure to hold or store food at the required temperatures
- Failure to cook or reheat foods to the required temperatures
- Preparing food a day or more in advance

Cross-Contamination: This occurs when microorganisms are moved from one surface or food to another. Cross-contamination occurs when:

- Adding raw, contaminated ingredients to foods
- Using contaminated cleaning cloths
- Contaminated hands (i.e., touching raw foods then handling ready-to-eat foods)
- Raw foods are stored above ready-to-eat foods
- Foods drip or touch ready-to-eat foods
- Food contact surfaces are not sanitized (i.e., cutting raw chicken and then using the same cutting board and knife to cut vegetables)

Poor Personal Hygiene: People with poor personal hygiene can contaminate food or food contact surfaces and cause illness. These people may be employees who:

- Do not properly wash their hands after using the restroom or whenever they become contaminated
- Touch raw food, then touch ready-to-eat food
- Cough or sneeze on food or in their hands and do not wash afterward
- Touch or scratch sores or cuts, and then touch food

Microorganisms

There are four types of microorganisms that can contaminate food and cause foodborne illnesses:

- 1) **Fungus** (mold) is a spoilage microorganism. Its appearance, smell, and taste may not be very appealing. It typically does not cause illness.
- 2) **Bacteria** (the most common microorganism) cause food to spoil and/or to be diseased. Some bacteria can survive freezing and high temperatures.
- 3) **Viruses** rely on a living host (human being) to survive. Viruses are usually transmitted to food by a food handler's improper personal hygiene. Some can survive freezing and high temperatures.
- 4) **Parasites** need to live in or on a host such as hogs, (trichinosis) fish, chicken, or cows to survive. Proper cooking and freezing will kill parasites.

Most foodborne microorganisms grow rapidly at temperatures between 70 - 125°F also known as the “Middle of the Temperature Danger Zone”

Bacteria

By knowing more about bacteria, it is the first step in controlling the most common reasons why food becomes unsafe. Some essential characteristics of bacteria include:

- They can be carried by humans, animals, food, water, and insects
- Under favorable conditions, they can reproduce rapidly
- Some can survive freezing
- Some can cause spoilage and/or disease
- Some cause illness by producing toxins

Fat-Tom

For bacteria to grow and reproduce, they need adequate time, proper temperatures, food, appropriate pH (acidity), ample moisture, and oxygen. Fat-Tom is an acronym that describes the conditions that most foodborne illnesses (except viruses) need to grow.

Food, such as proteins and carbohydrates, is needed for the microorganisms to grow. They can be found in meat, poultry, dairy, and eggs, and more.

Acidity. Microorganisms do not typically grow well in highly acidic foods. Bacteria prefer a pH (acidity) of 4.6 to approximately 7.5 (7 is neutral).

Temperature of the food must stay out of the temperature danger zone (TDZ) (41-135°F). Microorganisms grow well in the temperature danger zone. Exposing microorganisms outside the temperature danger zone will not necessarily kill all of them, but it may slow their growth or kill the harmful levels of microorganisms.

Time is needed for sufficient and harmful microorganisms to grow. Bacteria can double their population every 20 minutes. If contaminated food remains in the temperature danger zone for four hours or more, dangerous microorganisms can grow.

Oxygen is needed for some microorganisms to grow.

Moisture is needed for most microorganisms to grow. Bacteria prefer water activity (aw) above 0.86.

Major Foodborne Illnesses

Bacteria

Foodborne Illness	Salmonellosis	Shigellosis	Listeriosis
Bacteria	Salmonella	Shigella	Listeria
Illness	Bacterial Infection	Bacterial Infection	Bacterial Infection
Symptoms	Abdominal cramps, headache, nausea, fever, diarrhea...	Diarrhea (may be bloody), abdominal pain, flu-like symptoms	Nausea, vomiting, diarrhea, headache, persistent fever, chills, backache...
Incubation Period	6 to 48 hours; usually 12-36 hours	12 to 50 hours; usually 1 to 3 days	3 to 70 days; usually about 3 weeks
Source	Water, soil, insects, domestic and wild animals, human intestinal tract	Human intestinal tract, flies; frequently found in water polluted by feces	Soil, water, and damp areas. Humans, domestic animals, and fowl
Foods Involved	Poultry, poultry salads, meat, fish, shrimp, eggs, custards, sauces, pastry creams, tofu, protein foods, sliced melons, raw sprouts, fresh produce.	Salads (potato, tuna, shrimp, chicken, macaroni), lettuce, raw vegetables, milk, dairy, moist and mixed foods.	Unpasteurized milk, cheese, ice cream, yogurt, raw vegetables, poultry, meats, seafood, prepared/chilled deli foods.

Bacteria

Foodborne Illness	Staphylococcal	Clostridium	Bacillus Cereus
Bacteria	Staphylococcus	Clostridium	Bacillus cereus
Illness	Bacterial Intoxication	Toxin-Mediated Infection	Bacterial Intoxication or Toxin-Mediated Infection
Symptoms	Nausea, abdominal cramps, diarrhea...	Abdominal pain, diarrhea, nausea (fever, headache, vomiting absent)	Nausea, vomiting, sometimes abdominal cramps or diarrhea.
Incubation Period	1 to 7 hours; usually 2 to 4 hours	8 to 22 hours; usually 10 to 12 hours	30 minutes to 6 hours; usually 6 to 15 hours
Source	Skin, hair, nose, throat, infected sores, animals.	Humans and animals (intestinal tracks), soil, and soil contaminated w/ feces.	Soil, dust, and cereal crops.
Foods Involved	Reheated foods, ham and other meats, poultry, egg products, sandwiches, milk and dairy products, potato salads, and salad dressings.	Cooked meat, meat products, poultry, stew, gravy, and beans that have been improperly cooled.	Rice products, starchy foods, sauces, puddings, soups, casseroles, and pastries.

Bacteria

Foodborne Illness	Botulism	Campylobacteriosis	E. coli 0157:H7
Bacteria	Clostridium botulinum	Campylobacter jejuni	Escherichia coli
Illness	Bacterial Intoxication	Bacterial Infection	Bacterial Infection or Toxin-Mediated Infection
Symptoms	Vomiting and constipation or diarrhea may be present initially, progresses to fatigue, weakness, vertigo, blurred or double vision, possible death.	Diarrhea (watery or bloody), fever, nausea, vomiting, abdominal pain, headache, and muscle pain.	Diarrhea (watery or bloody), severe abdominal pain, and vomiting may cause kidney failure in some people, severe symptoms for the young.
Incubation Period	4 hours to 8 days, usually 12 to 36 hours.	Usually 2 to 5 days, with a range of 1 to 10.	3 to 8 days, usually 3 to 4 days.
Source	Present on almost all foods of either animal or vegetable origin, soil, and water.	Domestic animals (sheep, pig, cattle, poultry, and pets); the intestinal tracks of wild animals	Animals, particularly in the intestinal tracks of cattle and humans.
Foods Involved	Under processed or temperature abuse, canned low-acid foods, baked potatoes, stews, MAP foods...	Unpasteurized milk and dairy, raw poultry, contaminated water.	Raw and undercooked ground beef, imported cheeses, unpasteurized milk and apple juice, roast beef, mayonnaise, lettuce...

Viruses

Foodborne Illness	Hepatitis A	Norwalk Virus Gastroenteritis	Rotavirus Gastroenteritis
Bacteria	Hepatitis A virus	Norwalk	Rotavirus
Illness	Viral Infection	Viral Infection	Viral Infection
Symptoms	Mild or no illness, then the sudden onset of fever, general discomfort, fatigue, headache, nausea, loss of appetite, vomiting, abdominal pain, jaundice	Nausea, vomiting, diarrhea, abdominal cramps, headache, and mild fever	Infection Vomiting and diarrhea, abdominal pain, and mild fever (illness more common in children than adults)
Incubation Period	10 to 50 days	10 to 50 days	Usually 1 to 3 days
Source	Human intestinal and urinary tracts; contaminated water wash hands	Human intestinal tract and contaminated water	Human intestinal tract; contaminated water
Foods Involved	Water; ice; shellfish; salads; cold cuts and sandwiches; fruits; milk; dairy; vegetables	Water; shellfish (especially raw or steamed); raw vegetables; fresh fruits and salads; contaminated water	Water and ice; raw and ready-to-eat foods (such as salads, fruits, and hors d'oeuvres); contaminated water

Parasites

Bloodborne Illness	Trichinosis	Giardiasis	Cyclosporiasis
Bacteria	Trichinella spiralis	Giardia duodenalis	Cyclospora cayetanensis
Illness	Parasitic Infection	Parasitic Infection	Parasitic Infection
Symptoms	Nausea, diarrhea, abdominal pain, occasional vomiting, swelling around the eyes, fever, chills...	Fatigue, nausea, intestinal gas, weakness, weight loss, and abdominal pain	Watery diarrhea, loss of appetite, weight loss, gas, cramps, nausea, vomiting, mild fever...
Incubation Period	2 to 28 days	Usually 1 to 2 weeks	Days to weeks, about one week
Source	Domestic pigs, wild game such as bears and walruses	Wild animals, domestic animals (dogs/cats), the intestinal tract of humans	The intestinal tract of humans and contaminated water supplies
Foods Involved	Undercooked pork or wild game, pork, and non-pork sausages	Water, ice, salads, and other raw vegetables	Water, marine fish, raw milk, raw produce

Foodborne Classifications

Intoxication - Most foodborne illnesses result from microbial contamination, but biological and chemical toxins are responsible for many foodborne illnesses. Foodborne intoxication occurs when a person eats food containing a biological toxin that was produced or ingested by a plant or animal. Toxins in seafood, plants, and mushrooms arise naturally and are not caused by the presence of microorganisms. A person does not need to eat live organisms to become ill; it is just the toxins they produce. Symptoms of foodborne intoxication typically appear quickly, within a few hours. The following foodborne illnesses are classified as intoxications: *Bacillus cereus*, *clostridium botulinum* (botulism), and *staphylococcus aureus*.

The following are common seafood and plant/mushroom toxins:

- **Ciguatera** (see.wah.TEAR.a) ciguatoxins are found in predatory tropical fish that feed on smaller fish and eat certain types of algae. Cooking will not protect against this toxin, so it is very important to purchase fish such as amberjack, barracuda, grouper, and snapper from approved and reputable suppliers.
- **Shellfish** may contain toxins from the algae they feed on. Cooking will not protect against this toxin, so it is very important to purchase shellfish from approved and reputable suppliers that can certify they are harvested from safe waters.
- **Scombroid** (SKOM.broyd) toxins are a very common form of illness caused by fish toxins. It is likely to occur when certain types of fish are time-temperature abused, and bacteria on the fish produce the toxin, histamine. This toxin cannot be destroyed by cooking or freezing, so it is very important to purchase tuna, mackerel, bluefish, skipjack, and swordfish from approved and reputable suppliers.
- **Mushroom** toxins and illnesses are almost always associated with the consumption of wild mushrooms. This toxin cannot be destroyed by cooking or freezing, so it is very important to purchase mushrooms from approved and reputable suppliers.

Foodborne infections result from an illness caused by eating food contaminated by living organisms that multiply in the body or grow in the intestines. Symptoms of a foodborne infection do not typically appear immediately. The following foodborne illnesses are classified as infections: *campylobacter*, *escherichia coli*, *listeria*, *salmonellae*, *shigella*, and *vibrio*.

Toxin-mediated infection is an illness caused by eating food contaminated by living microorganisms that produce toxins when they are inside the human body or intestines that can make you ill. The following foodborne illnesses are classified as toxin-mediated infections: *bacillus cereus*, *clostridium perfringens*, and *escherichia coli*.

Chemical contaminants are a common form of foodborne illness and usually consist of toxic metals, pesticides, and chemicals. The following are chemical contaminants:

- **Toxic metals** are utensils and equipment that contain toxic metals such as lead, copper, brass, and zinc. Acidic foods can cause the metals to leach from the item and contaminate the food. Use only food-grade materials.
- **Chemicals and pesticides**, if used or stored improperly, can contaminate food. Chemicals should be stored away from food and equipment in a locked, cool, and dry storage area. Follow the chemical manufacturer's recommendations and always label containers. If possible, store in their original container and obtain a Safety Data Sheet (SDS) from the chemical supplier.

Food Allergies

Some people are allergic to food additives and preservatives such as sulfites, nitrates, and monosodium glutamate (MSG). Nitrites are preservatives used by the meat industry, and sulfites are used to preserve the freshness and/or color of certain foods, such as dried and preserved fruits and vegetables. MSG enhances flavor in many packaged foods and is generally considered safe by the federal government. Employees or menus should inform customers of items containing these potential allergens.

Personal Hygiene

A good personal hygiene program is the first and best defense against a foodborne illness outbreak. People are both the cause and the victims of foodborne illness incidents. A good personal hygiene program includes specific policies. Training and enforcing those policies can minimize your risk of causing a foodborne illness. Food handlers contaminate food when:

- They have a foodborne illness
- They have a gastrointestinal illness
- They have infected wounds or injuries
- They touch anything that may contaminate their hands

Bad personal behaviors by food handlers can also contribute to contaminated food. These behaviors may include:

- Nose picking
- Touching clothing, apron, the face, ear, scalp, hair, or any part of the body
- Coughing and sneezing into hands
- Spitting in the establishment

Food handlers must pay close attention to their work habits, personal habits, and what they do with their hands. Hand washing should be done often. A good personal hygiene program is the key to preventing foodborne illnesses. This program may include:

- Hygienic hand practices
- Maintaining personal cleanliness
- Reporting illnesses
- Maintaining good health
- Avoiding unsanitary conditions, actions, and habits
- Wearing a clean uniform and following dress codes

Food Handler Attire

Clean, proper attire plays a role in the prevention of foodborne illnesses. Dirty clothes can harbor microorganisms and should be changed and cleaned daily or as necessary. Food handlers should obey all dress codes, and managers should make sure that food handlers observe the following guidelines:

- Wear a hair restraint
- Wear a beard restraint if needed
- Wear clean clothes or uniforms daily

- Food handlers should put on work clothes at work
- Remove aprons when leaving food-prep areas
- Wear appropriate shoes, slip-resistant and closed-toe
- Remove your watch and jewelry before preparing or serving food

Employee Illnesses

There are a few legal requirements to notify the local health department of certain types of illnesses that may threaten the safety of the food, workers, or customers. In the State of California, however, the doctor or laboratory treating the ill employee is required to make this notification to the local health authorities if someone has been diagnosed with:

- Salmonella Typhi
- E. coli 0157
- Hepatitis A Virus
- Shigella

Food handlers must report health problems or injuries to the manager before working with food, preferably before coming to work. If employees become ill or injured at work, they must report it to their supervisor immediately. Employees are not required to notify their employer if they have AIDS or Hepatitis B since there is no immediate threat to the safety of the food. Often, the local health authorities will provide specific guidelines for managers to follow if ill employees are allowed to work or if they have been diagnosed with a foodborne illness.

Managers should exclude food handlers diagnosed with an illness due to:

- Salmonella Typhi
- E. coli 0157
- Hepatitis A Virus
- Shigella

Before returning to work, employees diagnosed with the above illnesses must provide documentation from a doctor or other professional medical provider that they are free from the infectious agent.

Managers should exclude food handlers from coming in contact with food or sanitized utensils or equipment if they have symptoms caused by illness, infection or other sources that are associated with an acute gastrointestinal illness, such as:

- Diarrhea
- Vomiting
- Jaundice
- Sore throat with fever

Managers should exclude food handlers with a lesion on their hand or exposed portions of the wrist containing pus, such as a boil or infected wound that is open or draining. Food handlers may work if the wound can be bandaged with an impermeable cover and a glove is also worn.

Employee medication should be kept away from food and food preparation areas. However, if employee medication must be kept under refrigeration, it should be labeled and placed in a covered container stored away from food.

Hand Washing and Hand Care

All establishments should have a hand washing policy in place as well as training in effective hand washing. Managers should monitor employees to ensure they wash their hands properly and when necessary.

Hand sanitizers should only be used after proper handwashing and never used in place of handwashing. Hand sanitizers should be dry before handling food or food preparation equipment. Food handlers must wash their hands:

- After using the restroom
- Before and after handling raw foods
- After touching hair, face, or body
- After smoking, eating, drinking, or chewing gum or tobacco
- After clearing tables or busing dirty dishes
- After coughing, sneezing, or using a handkerchief or tissue
- After using cleaning or sanitizing chemicals
- After touching clothing or aprons
- After taking out the trash or garbage
- After touching anything that might contaminate hands

Six (6) steps to proper handwashing (about 20 seconds):

- 1) Wet your hands with warm-to-hot running water (100 - 108°F)
- 2) Apply soap from a dispenser
- 3) Rub hands together for 10-15 seconds
- 4) Clean under fingernails and between fingers
- 5) Rinse hands thoroughly under running water
- 6) Dry hands with individual use of disposable paper towels or a hand dryer

Taking Care of Your Hands - Hands require regular care to prevent the transfer of contaminants to food or food contact surfaces. Fingernails should be kept short, and nail polish and artificial nails are not prohibited. If a food handler has cuts, sores, or scratches on their hand(s), they must wear gloves. Before putting on gloves, the food handler must wash their hands and apply a clean bandage. Gloves may not be able to protect food from contamination if a food handler has an injury or open wound on their lower arm or wrist. Reassign employees to non-food prep or service areas if there is a risk of contamination. Eating, drinking, and smoking are prohibited in food service areas because employees can contaminate their hands by touching their mouths, cigarette butts, glass, or utensils.

Gloves

Gloves may never be used in place of handwashing. Food handlers must wash their hands before putting on gloves or changing into a fresh pair. Gloves are for single use only and should never be washed and re-used. To prevent cross-contamination, gloves should be removed or changed:

- If they become soiled or torn
- Before beginning a new or different task
- At least every four hours during continual use
- As often as necessary
- If hands touch anything that might contaminate them
- After handling raw meat and before handling cooked or ready-to-eat foods

Purchasing & Receiving

Suppliers - Using reliable and reputable suppliers and producers lessens the chance of receiving contaminated products. Never accept prepared foods from home to be sold to consumers. All suppliers should meet your expectations and follow all laws. Your supplier should deliver food at proper temperatures, use clean equipment and trucks, use leak-proof and durable packaging, agree to your delivery schedule, and allow you to inspect their facility, trucks, and inspection reports.

Government Inspections and Grading - Meat, poultry, and eggs must have the **USDA inspection** stamp, which indicates that the meat and processing plants have been inspected for sanitary standards by the USDA or state department of agriculture. **USDA grading** stamps on products indicate the level of quality but are not mandatory.

The following are a few general purchasing and receiving guidelines:

- Label all goods with the use-by or delivery date
- Inspect delivered goods immediately and place them in storage as soon as possible
- Store frozen foods immediately
- Check the temperature of refrigerated or frozen goods at the time of delivery
- Check shipments for damaged boxes, leaks, signs of re-freezing, or pest infestation
- Purchase from reputable suppliers who get their products from manufacturers that are licensed, reputable, and follow all applicable health regulations
- Schedule deliveries during off-peak times

Receiving Guidelines

Product	Accept Criteria	Reject Criteria
Meat Receive at 41°F or lower	Beef: bright cherry red in color Lamb: light red in color Pork: lean pink meat, white fat in color Texture: firm, springs back when touched	Color: brown or greenish; brown, green, or purple blotches; white or green spots Texture: slimy, sticky, or dry Packaging: broken cartons, dirty wrappers Odor: sour odor
Poultry Receive at 41°F or lower	Color: no discoloration Texture: firm, springs back when touched Odor: none Other: received packed on self-draining crushed ice or in chill packs	Color: purple or green discoloration around the neck; dark wingtips (red okay) Texture: stickiness under the wings or around joints Odor: abnormal, unpleasant odor
Fish Receive at 41°F or lower	Color: bright red gills, shiny skin Odor: mild ocean, seaweed smell Eyes: bright, clear, full Texture: firm, springs back when touched Other: received on crushed, self drained ice	Color: dull gray, dry skin Odor: strong fishy or ammonia smell Eyes: cloudy, red-rimmed, sunken Texture: soft, leaves imprint when touched
Produce	Receive temperatures will vary	Insect infestation, mold, cuts, mushiness, discoloration, wilting, dull appearances, unpleasant odors, and tastes. Cut melons must be received at 41°F or lower
Dairy Receive at 41°F or lower	Milk: sweetish flavor Butter: sweet flavor, uniform color, firm texture Cheese: typical flavor and texture and uniform color Other: Milk must be grade A, and purchase only pasteurized dairy products	Milk: sour, bitter, or moldy taste Butter: sour, bitter, or moldy taste, uneven color Cheese: unnatural mold, uneven color, abnormal flavor
Eggs (shelled) Received at an air temp of 45°F or lower	Odor: none Shells: clean and unbroken Condition: firm, high yolks that are not easy to break and whites that cling to the yolk	Odor: abnormal smell Shells: dirty or cracked
<p>Note: Eggs must be purchased from government-inspected suppliers and display a mandatory inspection stamp. They must be delivered in trucks capable of documenting air temperature during transportation and should be delivered within a few days of the packing date. Once shelled eggs are received, they may be stored immediately at 45°F or lower. Once eggs are cooked, they must be stored at 41°F or lower.</p>		

Receiving Guidelines (continued)

Product	Accept Criteria	Reject Criteria
<p>Shellfish (Clams, mussels, oysters) Received at 45°F or lower</p>	<p>Odor: mild ocean or seaweed smell Shells: closed and unbroken Condition: if fresh, they are received alive</p>	<p>Odor: strong fishy smell Shells: open and broken Condition: dead on arrival Texture: slimy, sticky, or dry</p>
<p><i>Shellfish</i> - Must be purchased from certified shellfish suppliers listed on Public Health Service FDA lists or lists of state-approved suppliers. Shellfish must be received with the shellstock identification tag, which must remain in the original container. Operators must write the date of delivery on the tags. Shellstock tags, from the last shellfish used, must be kept on file for 90 days. The tags are required to list the harvester's ID number, date harvested, location, type and quantity of shellfish, dealer's name and address, shipper's certification number, and the following statement, "This tag is required to be attached until the container is empty and after that kept on file for 90 days." Do not mix different batches of shellfish.</p> <p><i>Raw shucked shellfish</i> must bear a label with the name, address, and certification number of the shucker-packer and the "sell-by" date for packages smaller than 1.87 liters (one-half gallon).</p>		
<p>Crustacea (Lobster, shrimp, crabs)</p>	<p>Odor: mild ocean or seawater smell Shells: hard and heavy for lobsters and crabs Condition: if fresh, they must be received alive</p>	<p>Odor: strong fishy smell Shells: soft Condition: dead on arrival, tail fails to curl when lobster is picked up</p>
<p>Canned Goods</p>	<p>Can and seal are in good condition</p>	<p>Swollen ends, leaks and flawed seals, rust, dents, no labels</p>
<p>Hot Foods Receive at 135°F or higher</p>	<p>Appropriate containers that can maintain temperatures</p>	<p>Inappropriate containers</p>
<p>Aseptically Packed & UHT Foods</p>	<p>Package and seal intact and in good condition. Store at 41°F when opened</p>	<p>Leaking, punctured, or broken packaging</p>
<p>Dry Goods Receive at room temperature</p>	<p>Package intact and in good condition</p>	<p>Packaging: holes, tears, punctures, moisture, or water stains Product: contains insects, insect eggs, or rodent droppings; has an abnormal color or odor, spots of mold, or a slimy appearance</p>
<p>Refrigerated & Frozen Processed Foods</p>	<p>Packaging intact and in good condition</p>	<p>Both frozen & refrigerated: torn packages, holes; expired use-by dates Frozen Food: dry texture, abnormal color, evidence of thawing and/or re-freezing, large ice crystals on the product or packaging</p>
<p>MAP, ROP, vacuum-packed and sous vide packaged foods</p>	<p>The package is intact and in good condition Frozen: receive at 0°F or lower Refrigerated: receive at 41°F or lower unless specified by the manufacturer</p>	<p>Leaking packages, expired code date, unacceptable product color, the product appears slimy or has bubbles</p>

Thermometers

Monitoring the time and temperature of food is critical, and one of the tools to do this includes thermometers. If food is in the temperature danger zone (41°F to 135°F) for longer than four hours, it must be disposed of. The four-hour time limit starts when the food is removed from the properly cooled/heated delivery truck and continues through storage, preparation, and cooking. The most common thermometers used in the food industry are bi-metallic stemmed and digital thermometers.

Bi-metallic Stemmed Thermometers - This inexpensive thermometer is often the most common and best type and should be capable of measuring temperatures from 0°F to 220°F. The thermometer should have an adjustable calibration nut, dimple or temperature marking, easy-to-read indicator head, and accurate to within + or - 2°F.

Digital Thermometers - These digital displays come with interchangeable temperature probes to measure air, cooking surface, liquid, and food temperatures. They are available in a selection of styles and sizes to fit in a pocket or to mount on equipment.

Calibrating Thermometers - There are two ways to calibrate a thermometer: the ice-point or boiling-point method. The ice-point method is preferred because the boiling-point method is sometimes not as reliable due to altitude and atmospheric pressure.

Ice-Point Method	Boiling-Point Method
<ol style="list-style-type: none">1) Fill a large glass with crushed ice, then add water until the glass is full and mix well.2) Put the probe or stem into the ice water, submerging the sensing area.3) Wait 30 seconds, and do not let the stem touch the bottom or sides of the glass.4) Hold the adjusting nut with a tool and rotate the head of the thermometer until it reads 32°F, or press the reset button on a digital thermometer.	<ol style="list-style-type: none">1) Bring water to a boil in a deep pan.2) Put the probe or stem into the boiling water, submerging the sensing area.3) Wait 30 seconds, and do not let the stem touch the bottom or sides of the pan.4) Hold the adjusting nut with a tool and rotate the head of the thermometer until it reads 212°F, or press the reset button on a digital thermometer.

Checking Food Temperatures

Meat, Poultry & Fish

Insert the thermometer stem or probe in the center or thickest part.

Packaged Food (Refrigerated or Frozen)

Insert the stem or probe between two packages without puncturing the package.

Milk & Other Liquids

Insert the stem or probe into the container without touching the sides or bottom and submerging the sensing area.

Bulk Milk or Liquids

Fold the bag over the stem or probe without puncturing the container.

Live Shellfish

Insert the stem or probe into the middle of the carton or case between the shellfish.

Shucked Shellfish

Insert the stem or probe into the container until the sensing area is completely submersed.

Points about Thermometers -

- Wait a minimum of 15 F from the time the stem or probe is inserted into the food
- Calibrate thermometers daily, before each shift or after the shock of being dropped or extreme temperature change
- Wash, rinse, sanitize, and air dry thermometers before and after each use to prevent cross-contamination
- Keep the storage cases clean and sanitized
- Never use glass thermometers
- Place the stem or probe in the thickest part of the meat, usually the center
- It is a good practice to take at least two readings in different locations
- When taking temperatures of liquids, do not touch the sides or bottom of the container with the stem or probe
- Food in a serving line should be temperature-checked every two hours

Safe Food Storage

The primary key to storing food safely, is to keep food out of the temperature danger zone and prevent contamination. There are many storage concepts and methods to store food properly.

Use the ***FIFO*** method (first in, first out) whenever possible. In this method of stock rotation, new supplies are shelved based on the “use by” or expiration date so that the oldest products are used first. Products with the earliest “use by” or expiration dates are stored in front of products with later dates. All items should be marked with an expiration date when received or stored after preparation.

Food, utensils, serving dishes, paper goods, or other food-contact items should not be stored in lockers or dressing rooms, toilet facilities, garbage rooms, mechanical equipment rooms, rooms with plumbing, under open stairwells, or with any other source of contamination.

TCS/Potentially hazardous ready-to-eat foods should be discarded if not used within seven days of preparation. The day the food was prepared was day one. TCS/Potentially hazardous foods in reduced oxygen packaging (ROP) may be held at 41°F or lower for no more than 14 days.

Refrigerated Storage - The following should be considered when food is stored in refrigerators:

- Do not overload the refrigerator or line shelves with foil, which may prevent airflow and make the unit work harder to stay cold.
- Do not cool hot foods in the refrigerator, which may cause the refrigerator temperature to rise into the temperature danger zone.
- Use calibrated thermometers to monitor food temperatures regularly.
- Thermometers should be placed in the warmest part of the unit.
- The air temperature in the refrigerator must be approximately 2°F lower than the required food temperature. For example, to hold meat at 41°F, the air temperature must be 39°F.
- Cover foods adequately to prevent cross-contamination.
- Store food in clean, covered, food-grade containers. Label with contents, delivery date, and/or “use by” date, and at least 6 inches off the floor.

- Raw fish, meat, and poultry should be stored separately from cooked and ready-to-eat foods whenever possible to prevent cross-contamination. If separate storage is unavailable, always store prepared or ready-to-eat foods above raw fish, meat, and poultry.
- Foods should be stored in the following top-to-bottom order: fish; whole cuts of beef; pork; ham, bacon, and sausage; ground beef and ground pork; poultry.

Freezer Storage - Freezing does not kill all microorganisms but slows their growth. Follow these guidelines for storing food in freezers:

- Frozen food should be stored at temperatures that will keep food frozen.
- Check unit and food temperatures regularly.
- Use FIFO.
- Never re-freeze thawed food until it has been thoroughly cooked.
- Defrost freezers regularly and move food to another unit while defrosting.
- Check foods that may be damaged by lengthy freezing.
- Do not place warm foods in the freezer; it may raise the temperature inside the unit.
- Store foods in their original containers or wrap them tightly in moisture-proof containers.
- Label containers with contents, delivery date, and/or “use by” date.

Dry Storage - Use the following guidelines for storage of dry foods:

- Keep foods at least 6 inches off the floor and out of direct sunlight.
- Storerooms should be dry, cool, and well-ventilated.
- The temperature of the storeroom should be between 50-70°F.
- The relative humidity of the storeroom should be between 50-60%.
- Store foods in their original containers or, if opened, store products in airtight containers labeled with contents, delivery date, and/or “use by” date.
- Use FIFO.

Storage Requirements

Product	Storage Temperature	Other Information
Meat	41°F or lower	Store in airtight, moisture-proof materials.
Poultry	41°F or lower	Store ice-packed poultry “as is” in self-draining containers. Change the ice often and sanitize the container regularly. Whole birds can be loosely wrapped and should be used in 3 to 4 days. Fresh refrigerated parts should be used within 1 to 2 days.
Fish	41°F or lower	Store ice-packed fish “as is” in self-draining containers. Change the ice often and sanitize the container regularly. Fish can be stored this way for up to 3 days. Keep fillets and steaks in original packaging or tightly wrapped in moisture-proof wrappings. Store frozen fish in moisture-proof wrappings. Fish meant to be eaten raw (except oysters and certain tuna species) must be frozen to the following temperatures before being served: - 4°F or lower for 7 days (168 hours) -31°F or lower for 15 hours in a blast freezer
Shellfish & Crustacea	45°F or lower	Store alive in the original container. Keep shellstock tags on file for 90 days from the date the last shellfish was used. Some may be stored in a display tank if approved by the local health department.
Eggs (Shell)	45°F or lower	Keep eggs stored until immediately before use. Use all eggs within a few weeks of purchase. Once cooked, store eggs at 41°F or lower.
Dairy	41°F or lower	Keep tightly covered and away from foods with strong odors. It is recommended that cheese or foods with mold that are not a natural part of the product should be discarded.
Ice Cream & Frozen Yogurt	6 to 10°F	Use FIFO and check expiration dates.
Fresh Produce	Depends on product	Whole raw and raw cut produce delivered packed on ice can be stored that way. It should be washed before preparation to remove dirt and pesticides and not before storage.
Canned & Dry Foods	50 to 70°F	Check for insects or rodent damage, and keep rooms dry and the humidity low. Flour, cereal, and grain should be in airtight containers.
Aseptic & UHT Foods	Room temperature	Store at 41°F or lower once opened.
MAP, ROP, Vacuum Packed, Sous Vide	41°F or lower, or follow directions	Discard the product if the expiration date has passed and/or if the package is torn, slimy, bulging, or has bubbles (possible growth of clostridium botulinum). Bacteria can continue to grow in vacuum-packed foods.

Food Preservation

Humans have attempted to preserve food from the beginning of time to prevent starvation. Modern techniques have extended the time that foods can be preserved, and the amount of time they can be stored. Preservation techniques include:

- Refrigeration (41°F or lower slows down microorganism growth)
- Commercial Chilling (34°F or lower)
- Freezing (0°F/-18°C or lower, killing parasites and stopping the growth of microorganisms)
- Pasteurization (Heat treatment, 161°F for 15 seconds, destroys pathogens and many spoilage organisms. Pasteurized foods should still be refrigerated during transport and storage.)
- Ultra-Heat Treatment (Also known as ultra-pasteurization, 269°F for 1 second, provides extended shelf life, destroys all pathogenic and spoilage organisms)
- Sterilization (Kills all organisms, 250°F for 15 minutes)
- Salt, Sugar, Nitrates & Nitrites (Chemical preservation)
- Controlled atmospheres (MAP or modified atmosphere packaging), reduced oxygen packaging (ROP) – reducing oxygen around the food, dehydration – reducing the amount of water, and smoking foods)

Food Preparation

Two of the leading factors in foodborne illness are temperature abuse and cross-contamination. Temperature abuse can occur anytime TCS/potentially hazardous food is exposed to the temperature danger zone (41°F to 135°F). These foods may not be exposed to the temperature danger zone for more than four hours. The exposure time accumulates during each stage of handling from the time food arrives at the receiving dock to the time it is cooled. Ensure the safety of your guests and employees by training your employees in the principals of time, temperature, and sanitation.

Time & Temperature Abuse

Follow these guidelines to prevent time and temperature abuse:

- Discard food if it is in the temperature danger zone for four hours or more. This includes time spent in the temperature danger zone during receiving, storage, preparation, and cooking, and then again during holding, cooling, and reheating.
- Take action, including retraining if time and temperature policies are not being met.
- Have thermometers available in locations where they are needed. Document temperatures and times taken on simple forms near the equipment and food.
- Train employees on how to take temperatures properly.
- During food heating or cooling, pass it through the *middle* of the temperature danger zone (70°F and 125°F) as quickly as possible. Microorganisms grow faster in the middle of this range.
- When preparing food, take out only as much food from storage as you can prepare at one time.
- Cook, hold, cool, and reheat food properly.

Cross-Contamination

Follow these guidelines for preventing cross-contamination:

- After each task, clean and sanitize all work surfaces, equipment, and utensils.
- Employees should wash their hands after each task when handling raw food.
- Cloths or towels used for spills should not be used for anything else. Use disposable towels or different colored towels for different tasks.
- Consider using single-use disposable gloves when preparing or serving food.
- Assign specific equipment such as cutting boards, utensils, and containers to each type of food product. For example, use one set of cutting boards and utensils for poultry and another for meat or produce.
- Prepare raw meats, fish, and poultry in separate areas or at different times from produce or cooked and ready-to-eat foods.

Thawing Foods

When food is thawed, the microorganisms that were not killed by freezing continue to grow and multiply as food is exposed to the temperature danger zone during thawing. There are only four acceptable ways to thaw food:

- 1) In a refrigerator, at temperatures of 41°F or lower.
- 2) Submerged under running potable water at 70°F or lower for no more than two hours.
- 3) In a microwave oven, if the food will be cooked immediately after thawing.
- 4) As part of the cooking process, if the product meets the required minimum internal cooking temperature.

Preparing Special Foods

When food is prepared, some basic principals must be followed to prevent time and temperature abuse and cross-contamination. Some food types require special attention.

Meat, Fish, and Poultry - These types of food require special care to prevent cross-contamination. Follow these guidelines when preparing meat, fish, and poultry:

- Use sanitized workplaces, cutting boards, and utensils.
- Put raw, prepared meats back into storage as quickly as possible, or cook them as soon as possible.
- Take only as much out of storage as you can prepare at one time.

Salads - Protein salads such as egg, chicken, tuna, pasta, and potato salads have been known to cause outbreaks of foodborne illness since they are not typically cooked after preparation. Follow these guidelines to prevent or kill microorganisms that may have been introduced during preparation:

- Ensure that the protein ingredients have been properly cooked, held, cooled, and stored before making the salad.
- Leave food in the refrigerator until ready to be mixed.
- Prepare small batches avoid large amounts sitting out at room temperature.
- Leftovers used for salads should only be one or two days old. Cooked leftover meat must be discarded within seven days.

Eggs and Egg Mixes - Eggs are another TCS/potentially hazardous food and require special care during preparation because they support the rapid growth of microorganisms. Follow these guidelines when using eggs:

- Consider using pasteurized eggs when preparing dishes requiring little or no cooking. This may include mayonnaise, eggnog, Caesar salad dressing, and hollandaise sauce.
- Promptly clean and sanitize all utensils and equipment used when preparing eggs.
- High-risk operations such as hospitals, nursing homes, and schools must always serve pasteurized eggs.
- Handle pooled eggs (cracked open and combined in a shared container) carefully. Pooled eggs must be cooked or stored promptly after mixing at 41°F for no more than two hours.

Fruits & Vegetables - Refrigerate and hold cut melons at 41°F or lower. Discard cut melons after four hours if they have been in the temperature danger zone.

- Do not use sulfites on any produce that will be served raw.
- Ensure that fruits and vegetables do not come in contact with surfaces exposed to raw meat and poultry.
- Wash vegetables and fruits thoroughly under running water before cutting, cooking, or combining with other ingredients. Do not wash vegetables and fruits until ready to serve or prepare. Pay special attention to leafy greens, such as spinach and lettuce. Remove the outer leaves, pull them completely apart, and rinse thoroughly.

Breading & Batters - Breading and batters can be hazardous if made with milk or eggs. Use caution to prevent temperature abuse and cross-contamination. Follow these guidelines:

- Prepare in small batches and store what you don't need at 41°F or lower in a covered container.
- Make batters with pasteurized egg products whenever possible.
- Throw away unused batter or breading after each shift, and never use batter or breading for more than one product at a time.
- When breading food that will be cooked later, quickly store the breaded food in the refrigerator.

Ice –

- Ice used to chill foods should never be used as an ingredient in food or beverages.
- Use sanitized containers and an ice scoop to transfer ice from the ice machine to other containers. Ice must be made from potable/drinking water.

Cooking Food

Cooking food to the required minimum internal temperature is the only way to kill microorganisms, but it does not destroy spores or toxins that microorganisms create. Proper and safe handling of the food before it is cooked is essential to preventing microorganisms from growing and producing spores or toxins.

The minimum internal temperature at which microorganisms are destroyed varies depending on the food. Minimum internal cooking standards have been developed for most foods and are shown in the following table. These temperatures must be reached and held for a specified amount of time. Use properly calibrated thermometers to measure the internal temperature of food. Measure internal temperatures in the thickest part of the food and take at least two readings in different locations.

Cooking Requirements

Product	Minimum Internal Cooking Temperatures	Other Cooking Requirements and Recommendations
Poultry, Stuffing, Stuffed Meats, Casseroles, and dishes combining raw and cooked food	165°F for <1 second	Poultry has more types and higher counts of microorganisms and should be cooked thoroughly. Stuffing acts as an insulator, preventing heat from reaching the meat's center. Cook stuffing separately.
Pork, bacon, and fully cooked ham	145°F for 15 seconds Ham - 140°F to reheat	This temperature is high enough to destroy Trichinella larvae that may have infested the pork. Three-minute rest time.
Ground or Flaked Meats; hamburger, ground pork, flaked fish, ground game animals, sausage	155°F for 15 seconds	*Grinding meat mixes the microorganisms, cook thoroughly. Alternative cooking temperatures: 155°F for 17 seconds; 150°F for 1 minute; 145°F for 3 minutes.
Beef and Pork Roasts	(Well) 145°F for 3 mins (Rare) 130°F for 112 mins	Rare roast cooked in an oven. Three-minute rest time.
Beef Steaks; Veal; Lamb; Commercially Raised Game Animals	145°F for 15 seconds	Three-minute rest time.
Fish Foods Containing Fish	145°F for 15 seconds 145°F for 15 seconds	Stuffed fish should be cooked to 165°F for 15 seconds. Fish that have been ground, chopped, or minced should be cooked to 155°F for 15 seconds.
Shell Eggs	145°F for 15 seconds	Cook egg dishes to 165°F for 15 seconds. When cooking to order, only take out as much as you need.
Vegetables	If hot holding, cook to 135°F before holding	Cooked vegetables shall be held at 135°F, discard if not held at or above this temperature after 4 hours.
Potentially Hazardous/TCS Foods Cooked in Microwave	165°F; let food stand for 2 minutes after cooking	Cover the food, rotate, or stir halfway through the cooking process, allow food to stand covered for 2 minutes after cooking, check temperature in a couple of different places.

*For meats that are ground, mechanically tenderized, or injected with flavor, add 10°F to the cooking temperature. Cook to 155°F for 17 seconds.

Cooling Foods

Food must be cooled as quickly as possible when not served right away. There are two acceptable methods of cooling foods: (Always use an approved thermometer to monitor temperatures.)

- 1) **One-Stage (four-hour) Method** - Cool hot, cooked food to 41°F within four hours.
- 2) **Two-Stage Method** - (Recommended by the FDA Model Food Code) Hot, cooked food must be cooled to 70°F within two hours and then cooled to 41°F or lower within four hours.

These factors affect how quickly the food will cool:

- The size or amount of the food being cooled. A large stockpot of beef stew may take four times as long to cool as a pot half the size.
- Food density. The denser the food, the slower it will cool. For example, refried beans will take longer to cool than vegetable broth.
- The container in which food is stored. Stainless steel transfers heat from food faster than plastic. Shallow pans (approximately 2 inches deep) allow the heat from food to disperse faster than deep pans.

Note: Placing hot food in the refrigerator or freezer to cool it may not move food through the temperature danger zone quickly enough. It may also raise the temperature of the surrounding food items, placing them in the temperature danger zone.

Use any of these methods, or a combination of them, to properly cool foods:

- Reduce the quantity of food you are cooling. Cut large food items into smaller pieces or place the food into smaller containers.
- Stir foods to cool them faster.
- Use blast chillers.
- Use ice-water baths. Place the food into shallow pans or smaller pots and, place in ice water, and stir frequently and /or stir with ice paddles.
- Add ice or cool water as an ingredient. This method works for recipes that require water as an ingredient, such as stew or soup.

Storing Cooked Foods - If foods have not been cooled before storage, they can be placed in shallow pans (approximately 2 inches deep) and stored on the top shelves in the refrigerator. Leave shallow pans uncovered if they are protected from overhead contamination. Once the food items have cooled to 41°F or lower, they can be tightly covered. Follow the FIFO method when storing food. Write the date the product was prepared on the storage container or label.

Reheating Time/Temperature Control for Safety (TCS) Foods (Potentially Hazardous Foods)

When previously cooked food is reheated for hot holding, take it through the temperature danger zone as quickly as possible. Food must be reheated to an internal temperature of 165°F for 15 seconds within two hours. If the food does not reach this temperature within two hours, discard it.

Foods that are reheated for immediate service to a customer, such as chicken on a chicken sandwich, may be served at any temperature if the chicken was properly cooked, cooled, and stored.

It is a recommended practice to reheat food only once. However, if the food has been properly cooked, cooled, and reheated, it can be reheated more than once.

Corrective Actions - Corrective action is necessary anytime the temperature and time standards are not met when cooking, cooling, and reheating food.

- ✓ Discard food that spends over four hours in the temperature danger zone (41°F to 135°F). This includes time spent during receiving, storage, preparation, and cooking, and again during holding, cooling, and reheating.
- ✓ Discard food being reheated if it has not reached 165°F for 15 seconds within two hours.
- ✓ During the *two-stage cooling method*, discard food if it has not reached 70°F within two hours.

Serving Guidelines

Food servers need to be as safe as the kitchen staff. Servers can contaminate food simply by handling the food contact area of utensils or plates. When holding food for service, keep hot foods hot and cold foods cold. Any conflict between food quality and food safety must always be decided in favor of food safety. Kitchen staff and servers should:

Do's -

- Use serving utensils with long handles to prevent the server's hands from entering the container.
- Clean and sanitize utensils before and after each task for different food items at least every four hours.
- Participate in good personal hygiene programs.
- Handle utensils, dishes, and glassware properly.
- Use appropriate containers, such as stainless steel, to prevent possible metal poisoning from lead, brass, and copper.
- Use metal or plastic scoops or tongs to get ice.
- Servers must wash their hands before handling place settings or food.
- Store utensils in the food, with the handle extended above the container's rim. They can also be placed on a clean, sanitized food-contact surface.
- Cloths used for cleaning or spills should be disposable, or a moist cloth that has been stored in a detergent solution should be used. (Chlorine solution of 100 ppm or quats of 200 ppm.)

Don'ts -

- Never touch cooked or ready-to-eat foods with bare hands. Use gloves or utensils to handle these foods.
- Never stack glassware, cups, or dishes when serving.
- Never assign one employee to do more than one job during a shift. Serving food, setting tables, washing dishes, and clearing tables are separate tasks.
- Never re-serve unpackaged items such as rolls, breadsticks, or tortilla chips.

Hot Food Holding

Do's -

- Use only hot-holding equipment that can keep foods at 135°F or higher.
- Keep foods covered and stir at regular intervals.
- Measure and log internal food temperatures at least every two hours.
- Discard hot foods after four hours if they have not been held at or above 135°F.

Don'ts -

- Never use hot-holding equipment to reheat foods.
- Never mix freshly prepared food with foods being held for service.

Cold Food Holding

Do's -

- Use only cold-holding equipment capable of holding foods at 41°F or lower.
- Keep foods covered.
- Measure and log internal food temperatures at least every two hours.
- Discard cold foods after four hours if they have not been held at or below 41°F.

Don't -

- Do not store foods directly on ice, except molluscan shellfish. Raw poultry and raw fish that are received immersed in ice in shipping containers may remain in that condition while in storage awaiting preparation, display, service, or sale.

Reserving Food

Employees should know the rules about re-serving foods that have been previously served to customers.

- Never re-serve plate garnishes such as fruit or parsley to another customer.
- Never re-serve uncovered condiments.
- Do not re-serve breadbaskets, even if they have not been used.
- Linens used to line bread baskets must be changed each time a customer is served.
- Do not combine leftovers with fresh foods such as butter or salsa.
- Re-serve only unopened condiments such as crackers or breadsticks.
- Do not re-serve anything to at-risk people, such as nursing home residents or hospital patients.

Self-Service

Self-service areas such as buffets and food bars can be easily contaminated. Employees should monitor this area closely, and the employees should be trained in food safety practices. If possible, assign an employee to the self-service area to replenish items, hand out fresh plates, and to provide polite tips about food bar etiquette. Other food bar rules include:

- Protect food in the bars with sneeze guards or food shields. Contact your local health department for more information.
- Identify all food items for the customers and employees.
- Keep hot foods hot and cold foods cold.

- Measure and log internal food temperatures at least every two hours.
- Use FIFO and replenish food on a timely basis. Never mix fresh food with existing food.
- Keep raw food away from ready-to-eat foods to prevent cross-contamination.
- Do not let customers use soiled plates or utensils for refills.

Off-Site Delivery

Many facilities such as hospitals, schools, restaurants, and caterers prepare food at one location and then deliver it to remote locations. The chance of contamination increases as the time and distance from point to point increases. Here are more rules for delivery operations:

- Use insulated, rigid food containers to maintain food temperatures above 135°F or below 41°F.
- Check food temperature before leaving the kitchen and then again upon arrival at the serving site.
- If containers or delivery vehicles are not maintaining proper food temperatures at the end of the route, review the delivery route's length or the equipment's efficiency.
- Keep vehicles and transport containers clean and sanitized.
- Containers should be sectioned off to prevent food from mixing, leaking or spilling.
- Practice and enforce good personal hygiene.
- Check and log internal food temperatures regularly.
- Take corrective action if food is not at the proper temperature. Within two hours, reheat hot foods to 165°F for 15 seconds before serving. Re-chill cold foods to 41°F or below within four hours.
- Label foods with instructions for proper storage, shelf life, and reheating for employees at off-site locations.

Catering

Caterers may bring prepared food or cook food on-site in a mobile unit, a temporary unit, or the customer's kitchen.

- Ensure safe drinking water for cooking, warewashing, and handwashing, as well as adequate power for holding and cooking equipment.
- Deliver raw meats frozen and wrapped on ice. Deliver milk and dairy products in a refrigerated vehicle or on ice. Use insulated containers for all TCS/potentially hazardous foods and keep food cold with ice or frozen gel-ice packs.
- Serve cold foods in containers on ice. If that isn't possible, record the time when the TCS/potentially hazardous food was first taken out of cold storage, and then discard the food after four hours.
- Keep raw and ready-to-eat products separate. For example, store raw chicken separately from ready-to-eat salads.
- Use only single-use items. Make sure customers get a new set of disposable tableware for refills.
- Arrange proper garbage disposal away from food-prep and serving areas.
- Provide instructions for proper storage, shelf life, and reheating if food is left with the customer after the event.

HACCP System

The **Hazard Analysis Critical Control Point (HACCP)** system enables establishments to consistently serve safe food by identifying and controlling possible hazards (biological, chemical, or physical) and reducing illness or injury throughout the flow of food. The HACCP process uses a combination of proper food handling procedures, monitoring techniques, and record-keeping to help ensure that food will be served safely. This section will provide you with a basic understanding of HACCP. If your establishment wants to develop and implement a plan, it will require more information.

In general, a HACCP system will help you to do the following:

- 1) Identify foods and procedures that are most likely to cause foodborne illness.
- 2) Develop procedures that will reduce the risk of a foodborne illness outbreak.
- 3) Monitor procedures to keep food safe.
- 4) Verify that the food you serve is consistently safe.

Prerequisite Program - A prerequisite program, or standard operating procedures (SOPs), can help support the HACCP system. They may include the following:

- Personal hygiene program
- Proper facility design
- Choosing good suppliers
- Creating supplier specifications
- Proper cleaning and sanitation
- Appropriate equipment maintenance

Principals of HACCP - The HACCP plan is based on seven fundamental principles. Each principle builds upon the information gained from the previous principal. Principals One, Two, and Three help design the system, Principals Four and Five help implement it, and Six and Seven help maintain the system and verify its effectiveness.

Critical Control Point (CCP) - A CCP is the last step where you can intervene to prevent, control, or eliminate the growth of microorganisms before the food is served to customers. Monitoring CCP will always include measuring time and temperature.

Examples of CCPs: a) If a piece of fish becomes contaminated during preparation, cooking to an internal temperature of 145°F for 15 seconds is the last step to eliminate the growth of microorganisms. b) As part of a HACCP plan for gravy, the cooling process is a CCP and should be cooled by following proper cooling methods. c) Cooking ground meat to an internal product temperature of 155°F for 15 seconds. Below is the flow of food and a table to identify the critical control points:

Receiving	Storage	Preparation	Cooking	Serving	Holding	Cooling	Reheating
NO	NO	NO	YES-CCP	NO	YES-CCP	YES-CCP	YES-CCP

See page 53 for a sample HACCP Plan.

Sanitation & Pest Management

When designing an establishment, you must consider how every area of it will be kept clean. The building and all equipment must be installed and easy for employees to clean. Areas and equipment that are not adequately cleaned will allow bacteria, viruses, and molds to grow. Facilities should be arranged so that contact with contaminated sources such as garbage or dirty tableware, utensils, and equipment is unlikely. Consider the following when designing an establishment:

- Select materials for walls, floors, and ceilings to make the surfaces easier to clean.
- Arrange equipment and fixtures to comply with local standards.
- Design the layout of utilities to prevent contamination and make cleaning easier.
- Manage solid waste properly to avoid contaminating food and attracting pests.

Materials for Interior Construction - The most important consideration when selecting construction materials is how easy it will be to clean and maintain. Different construction materials for floors, walls, and ceilings have advantages and disadvantages when constructing a new facility or simply remodeling an existing one. In this stage of planning, consult with experts in these areas.

Facility Considerations

Dry Storage - A well-designed dry storage area should be easy to clean and have good air circulation. Consider these guidelines:

- Shelves, table surfaces, and bins should be made of corrosion-resistant metal, such as stainless steel or food-grade plastic.
- The area should be free of exposed steam pipes or heating ducts. They can raise the temperature of the room enough to affect the food.
- The area should be free of exposed water or sanitation pipes. Leaks or moisture from dripping condensation can promote microbial growth.
- Outside windows and doors must have screens that are sixteen mesh to the inch, and all cracks in walls and floors must be filled to keep pests out.

Restrooms - Establishments should have separate restroom facilities for customers and employees. If this is not possible, customers must not pass through food preparation areas on their way to the restroom. Restrooms must have:

- Fully equipped hand washing stations and self-closing doors.
- They should be stocked with toilet paper; trash receptacles must be provided if disposable towels are used.
- Covered waste containers must be provided in women's restrooms to dispose of sanitary supplies.
- Restrooms should be cleaned from top to bottom at least once a day.
- Restrooms must be available to employees and customers during work/business hours.

Handwashing Stations – Hand washing stations must only be used for handwashing and conveniently located so that employees will be encouraged to wash their hands often. Stations are required in food preparation areas, service areas, equipment-washing areas, and restrooms. A hand washing station must be equipped with the following items:

- Hot and cold running water under pressure. Hand washing must be done with warm-to-hot water.
- Soap is required, and dispensed is preferred.

- Most local codes require establishments to supply disposable paper towels in hand-washing stations. Installing at least one hot-air dryer in a handwashing station may provide an alternate method for drying hands if paper or cloth towels run out. Common cloth towels are not permitted because they can transmit contamination from one person's hands to another.
- Waste containers are required if disposable paper towels are provided.

Garbage and Waste Management – All garbage, trash, and recycled goods should be stored well away from food preparation and food storage areas. Garbage and trash located outside should be in a locked area away from the back door and air intake vents. Outdoor containers should not leak, be covered with lids, and placed on a concrete or asphalt pad that is smooth, curbed, and sloped to drain. Garbage containers should be made from durable, pest-proof material and cleaned after each pickup. Never leave garbage or trash in food establishments overnight.

Equipment Sanitation

Clean-in-Place Equipment - Some equipment, such as ice machines or soft-serve ice cream or frozen yogurt machines, are designed to be cleaned in place by flushing detergent, hot water, and sanitizing solution through it. This process should be done daily unless otherwise indicated by the manufacturer. Cleaning and sanitizing solutions must:

- Remain within a fixed system of pipes for a predetermined amount of time.
- Not leak into the rest of the machine.
- Reach all food-contact surfaces.

Refrigerators and Freezers - When purchasing a refrigerator or freezer, make sure that it is National Sanitary Foundation (NSF) certified or Underwriters Laboratories (UL) classified for sanitation (or the equivalent).

Blast Chillers and Tumble Chillers - Blast chillers are designed to quickly move food through the temperature danger zone. Many blast chillers can cool food quickly. Once chilled to safe temperatures, the food can then be stored in conventional refrigerators or freezers. Tumble chillers are also designed to cool food quickly.

Cutting Boards - Consider the following points when selecting a cutting board:

- Synthetic cutting boards are often preferred over wooden boards because they can be cleaned and sanitized in a ware-washing machine or by immersion in a compartment sink.
- Wooden cutting boards, if allowed by local codes, must be made from non-absorbent hardwood (such as oak or maple), free of seams and cracks, and they must transfer no odor or taste.
- To prevent cross-contamination, use separate cutting boards for raw and cooked foods, and wash and sanitize cutting boards after every use.

Choosing and Installing Kitchen Equipment

Well-designed kitchens make the job of keeping food safe easier. Generally, an efficient kitchen design is a more sanitary kitchen design.

- Plan your kitchen layout so that it is easy to clean, minimizes chances for cross-contamination, and minimizes the time foods spend in the temperature danger zone.

- Portable equipment, such as equipment on casters that employees can move, is often easier to clean and clean around than permanently installed equipment.
- Permanently installed equipment must be either mounted on legs at least six (6") inches off the floor or sealed to a masonry base.
- Immobile table-mounted equipment should be mounted on legs that will provide a minimum clearance of four (4") inches between the base of the equipment and the countertop.
- All cracks or seams over 1/32" must be filled with a non-toxic sealant.

Water Supply - Unsafe water can carry bacteria, viruses, and parasites. Water that is safe to drink is called potable water. Potable sources of water include the following:

- Approved public water mains.
- Private water source that is regularly maintained and tested.
- Bottled drinking water.
- Closed potable water containers filled with potable water.
- On-premise water storage tanks.
- Water transport vehicles that are adequately maintained.

If non-potable water is allowed by local codes, its use is generally limited to the following:

- Air conditioning
- Cooling equipment not used for cooling food
- Fire protection or sprinklers
- Irrigation (for outdoor grass and plants)

Improper plumbing design can cause serious health concerns. Improperly installed or poorly maintained plumbing, which allows the mixing of potable and non-potable water, has been implicated in outbreaks of typhoid fever, dysentery, Hepatitis A, Norwalk virus, and other gastrointestinal illnesses. Only licensed plumbers should install and maintain plumbing systems in an establishment.

Cross-Connections - The most significant challenge to water safety comes from cross-connections. A cross-connection is a physical link through which contaminants from drains, sewers, or wastewater can enter a potable water supply. For example, a faucet below the rim of a sink, a hose in a mop bucket, and a drain line for the ice machine extending into the floor drain are all examples of cross-connections. Cross-connection is dangerous because it allows the possibility of backflow. Backflow is the unwanted reverse flow of contaminants through a cross-connection into a potable water system. It can occur whenever the pressure in the potable water supply drops below the pressure of the contaminated supply.

To prevent cross-connections like this, do not attach a hose to a faucet unless a backflow prevention device, such as a vacuum breaker, is attached. Threaded faucets and connections between two piping systems must have a vacuum breaker or other approved backflow prevention device.

The only completely reliable device to prevent backflow is an air gap. An air gap is an air space that separates a water supply outlet from any potentially contaminated source. Air gaps must be at least one (1") inch. A sink may make use of air gaps to prevent backflow. The air space between the faucet and the flood rim of the sink is one air gap. Another may be located between the drainpipe of the sink and the floor drain of the establishment.

Sewage - Sewage and wastewater are contaminated with bacteria, viruses, and parasites. The facility must have adequate drainage to handle all wastewater produced. Areas subject to heavy water exposure should have floor drains. Drainpipes carrying wastewater or sewage must be clearly identified so they cannot be confused with those carrying potable water. Backups of wastewater from sinks or washing machines are very serious. A backup of raw sewage is a cause for the immediate closure of the establishment, correction of the problem, and thorough cleaning.

Ventilation - Adequate ventilation in food-preparation areas removes condensation, humidity, odors, gases, grease, and airborne dirt and mold that can cause contamination. Ventilation must be designed so that hoods, fans, guards, and ductwork do not drip onto food or equipment. Hood filters or grease extractors must be tight-fitting, easy to remove, and cleaned regularly to prevent a buildup of grease or condensation from collecting on the walls or ceiling. A professional company should also thoroughly clean the entire hood and ductwork periodically.

Cleaning & Sanitizing

Cleaning removes food, grease, and other soil types from a surface. Detergents are commonly used to aid with cleaning. Sanitizing is reducing the number of microorganisms on that surface to safe levels. To be effective, cleaning and sanitizing must be a two-step process. Surfaces must first be cleaned and rinsed before being sanitized.

Everything in your operation must be kept clean; however, any surface that comes in contact with food must be cleaned and sanitized. All food-contact surfaces must be washed, rinsed, and sanitized:

- After each use.
- When you begin working with another type of food.
- Any time you are interrupted during a task.
- At four-hour intervals, if the items are in constant use.

Two methods can be used to sanitize surfaces: heat or chemical sanitizing. Which one you use depends on the application.

Heat Sanitizing - The higher the heat, the shorter the time required to kill microorganisms. The most common way to heat sanitize tableware, utensils, or equipment is to immerse or spray the items with hot water (171°F or above). Use a thermometer to check water temperature when heat sanitizing by immersion. Another way to check the water temperature of a machine is to attach temperature-sensitive labels and tapes or a high-temperature probe to the items being cleaned and sanitized.

Chemical Sanitizing - Chemical sanitizing is done in two ways: 1) By immersing a clean object in a specific concentration of sanitizing solution for a required period of time; or 2) by rinsing, swabbing, or spraying the object with a specific concentration of the sanitizing solution.

Each sanitizing agent has different usage requirements, such as concentration and temperature. Liquid bleach offers several benefits because it is inexpensive, easy to find, and easy to use. The rule of thumb for using bleach is usually two tablespoons per gallon, approximately 100 parts per million (ppm) for sanitizing, and one tablespoon per gallon, about 50 parts per million (ppm) for other cleaning. Another factor to consider is temperature.

You should always use your chlorine test strips to ensure proper levels and follow the manufacturer's directions on the label. Restaurant supply houses carry a stabilized chlorine product that can take higher temperatures, but the bleaches found in stores must be used at temperatures below 100°F. Room temperature to lukewarm water works well with store-bought bleaches to provide an effective sanitizer. Scented or oxygen bleaches are not acceptable as sanitizers for food-contact surfaces. Household bleaches are permitted only if the labels indicate they are EPA-registered.

The three most common types of sanitizers used in the restaurant and foodservice industry are chlorine, iodine, and quaternary ammonium compounds (quats). The best place to store these sanitizers is away from food in the dishwashing area, separated from clean dishes and utensils. The advantages and disadvantages of using each type are as follows:

Advantages and Disadvantages of Different Sanitizers

Types	Advantages	Disadvantages
Chlorine 55 - 120°F	Most commonly used, kills a wide range of microorganisms, leaves no film, is inexpensive, is effective in hard water, 7 second contact time.	Less effective in pH ranges outside 6 to 7.5, dirt quickly inactivates these solutions, adversely affected by temp above 115° and, and sanitizer evaporates more quickly, corrosive to some metals such as stainless steel and aluminum when misused.
Iodine 75 - 120°F	Effective at low concentrations, color indicates presence, not as quickly inactivated by dirt as chlorine.	Less effective than chlorine, less effective at pH levels above 5.0, more expensive than chlorine, may stain surface, becomes corrosive to some metals at temps above 120°F, 30 second contact time.
Quats 75 - 140°F	Not as quickly inactivated by dirt as chlorine, is non-corrosive, nonirritating to skin, and works in most temperature and pH ranges.	Leaves film and does not kill certain types of microorganisms, hard water reduces effectiveness, 30-second contact time.

Factors Influencing the Effectiveness of Sanitizers - Different factors influence the effectiveness of chemical sanitizers. The most critical include contact time, selectivity, temperature, and concentration.

A test kit for the specific sanitizer should be used to test its concentration in the sanitizing solution. Test kits are usually available from the manufacturer or a restaurant supplier. A sanitizing solution must be changed when it is visibly dirty or when the sanitizer concentration has dropped below the required amount. Water that is too hot may also give a false reading.

Machine Warewashing

Most tableware, utensils, pots, and pans can be cleaned and sanitized in warewashing machines. Most warewashing machines sanitize by using either hot water or a chemical-sanitizing solution.

High-Temperature Machines -

- These machines rely on hot water to clean and sanitize.
- The temperature of the final sanitizing rinse must be at least 180°F. For stationary-rack single-temperature machines, the final sanitizing rinse must be at least 165°F. The surface temperature of utensils must reach a temperature of 160°F.
- Ensure your warewasher has a built-in thermometer to measure the water temperature at the manifold, where it sprays into the tank.
- Check that the machine is operating at the proper temperatures daily.

Chemical-Sanitizing Machines -

- These machines use chemicals to sanitize. Always follow the manufacturer's instructions.
- Warewashing machines that use chemical sanitizing generally require water temperatures from 120°F to 140°F.
- The rinse-water temperature in these machines should be between 75°F and 120°F for the sanitizer to be effective.

Warewashing Machine Operation Guidelines - All warewashing machines should be operated per manufacturers' instructions. No matter what machine you use, there are some general procedures to follow to clean and sanitize tableware, utensils, and related items.

- Check the machine for cleanliness and clean it as often as needed, but at least once a day. Fill tanks with clean water. Clear detergent trays and spray nozzles of food and foreign objects. Use an acid cleaner on the machine at least once a week to remove mineral deposits caused by hard water.
- Make sure detergent and sanitizer dispensers are properly loaded.
- Scrape, rinse, or soak items before washing—pre-soak items with dried-on food.
- Load warewasher racks correctly and use racks designed for the items being washed. Make sure that all surfaces are exposed to the spray action. Never overload racks.
- Check temperatures and pressure. Follow manufacturers' recommendations or data plates.
- Check each rack for soiled items as it comes out of the machine. Run dirty items through again until they are clean. If you use proper equipment and procedures, most items will need only one pass.
- Air-dry all items. Towels or cloths may contaminate items.
- Keep your warewashing machine in good repair.

Manual Warewashing

Establishments that do not have a warewashing machine may use a three-compartment sink to wash items (some local regulatory agencies allow the use of two-compartment sinks; others require four-compartment sinks). These sinks may also be used to wash larger items as well. A properly set up warewashing station will include:

- An area for scraping or rinsing food into garbage containers.
- Drainboards to hold both soiled and clean items.
- A thermometer is placed in each sink to measure water temperature.
- A clock with a second hand. This will allow employees to time how long items have been immersed in the sanitizing sink.
- An area for scraping or rinsing food into garbage containers.
- Drainboards to hold both soiled and clean items.

Before washing items, clean and sanitize each sink and all work surfaces. Follow these steps when washing and sanitizing all tableware, utensils, and equipment:

Step 1: Rinse, scrape, or soak all items before washing to keep the wash water clean.

Step 2: Wash items in the first sink in a detergent solution. Water temperature should be at least 110°F. Use a brush, cloth, or nylon scrubber to loosen the remaining soil. Replace the detergent solution when the suds are gone, or the water is dirty.

Step 3: Immerse or spray-rinse items in the second sink. The water temperature should be 171°F. Remove all traces of food and detergent. If using the immersion method, replace water when it becomes cloudy or dirty.

Step 4: Immerse items in the third sink in hot water or a chemical-sanitizing solution. If hot water immersion is used, the required water temperature is at least 171°F. Items must be immersed for thirty seconds. If chemical sanitizing is used, the sanitizer must be mixed at the proper concentration. (Check at regular intervals with a test kit.) Water must be the correct temperature for the sanitizer used.

Step 5: Air-dry all items on a drainboard.

Cleaning and Sanitizing Equipment

All equipment must be kept clean, and all food-contact surfaces must be sanitized. Train all employees how to clean and sanitize each type of equipment properly.

Stationary Equipment - Equipment manufacturers will usually provide cleaning instructions. Food-contact surfaces may require a different cleaning or sanitizing solution than non-food-contact surfaces. Always clean and sanitize equipment after changing tasks, coming in contact with raw TCS/potentially hazardous foods, or coming in contact with ready-to-eat foods. In general, follow these steps:

- Turn off and unplug equipment before cleaning.
- Remove food and soil from under and around the equipment.
- Remove all detachable parts, manually wash, rinse, and sanitize them, or run them through a dishwasher if permitted. Allow them to air dry. When washing sharp parts such as slicer blades, turn the blades away from yourself and wipe away from sharp edges.
- Wash and rinse fixed food-contact surfaces, then wipe with chemical-sanitizing solution.

- Keep cloths used for food-contact and non-food-contact surfaces in separate, properly marked containers of sanitizing solution.
- Air dry all parts, then reassemble per directions. Tighten all parts and guards. Test equipment at recommended settings, and then turn it off.
- Re-sanitize food-contact surfaces that were handled when putting the units back together by wiping them with a cloth that has been submerged in a sanitizing solution.

In some cases, you may be able to spray-clean fixed equipment. Check with the manufacturer first. If allowed, spray each part with a solution in the right concentration for two or three minutes.

Immobile equipment should have a space of at least 4 inches from the countertop and 6 inches from the floor and underside to allow for cleaning/sanitizing.

Cleaning Tools and Supplies - Cleaning tools and supplies should be cleaned and sanitized before being put away. Toxic chemicals, such as pesticides and corrosives, should be stored in a locked area or metal cabinet away from food and prep areas. The area should be well-lighted so employees can identify chemicals easily.

Hazardous Materials

Chemicals are helpful and necessary to keep an establishment clean, sanitary, and pests-free. When used correctly, they may pose little threat to an employee's safety. When misused, they may become a health hazard that can cause injury.

Because of the potential danger of chemicals used in the workplace, the Occupational Safety and Health Administration (OSHA) requires employers to comply with their Hazard Communication / Right-to-Know standard. Employers must comply with OSHA's standards by developing a hazard communication program for their establishment. A hazard communication program must include the following components:

- ✓ An inventory of the hazardous chemicals used at the establishment
- ✓ Chemical labeling procedures
- ✓ Safety Data Sheets (SDS)
- ✓ Employee training
- ✓ A written plan addressing hazard communication standards

Safety Data Sheets (SDS) - OSHA requires that chemical manufacturers and suppliers provide an SDS for each hazardous chemical at your establishment. These sheets are a part of an employee's right to know about the hazardous chemicals they work with and must be kept in an accessible location. SDS sheets contain the following information about the chemical:

- Information about safe use and handling
- Physical, health, fire, and reactivity hazards
- Precautions
- Appropriate personal protective equipment (PPE) to wear when using the chemical
- First-aid information and steps to take in an emergency
- Manufacturer's name, address, and phone number
- Date the SDS was prepared
- Hazardous ingredients and identity information

Pest Management

Pests such as insects and rodents can pose severe problems for establishments. Not only are they unsightly to customers, but they also damage food, supplies, and facilities. The greatest danger from pests is their ability to spread diseases, including foodborne illnesses.

If you wait until there is evidence of pests in your establishment, you may already have a significant infestation. Once pests have infested a facility, it can be challenging to eliminate them. Developing and implementing an integrated pest management (IPM) program will help prevent pests from invading your establishment by treating all pest problems systematically.

For your program to be successful, you must work closely with a licensed pest control operator (PCO). These professionals use safe, up-to-date methods to prevent and control pests effectively. Prevention is critical in pest control, and using pesticides to solve your problem should be your last resort. Removing pests requires an ongoing program, and the best pest prevention technique is to practice good housekeeping, cleanliness, and sanitation.

The Pest Management Program - There are three basic rules of a pest management program:

- 1) Deny pests access to the facility.
- 2) Deny pests food, water, and a hiding or nesting place.
- 3) Develop a program or IPM.

Denying Pests Access - Pests can enter an establishment in one of two ways. They are brought in with deliveries or enter through openings in the building itself. To prevent pests from entering your establishment, pay attention to the following areas:

Deliveries -

- Use reputable suppliers.
- Check all deliveries before they enter your establishment.
- Refuse shipments that have signs of a pest infestation. For example, egg cases, larvae, webbing, and body parts (legs, wings, etc.).

Deny Food and Shelter - Pests are usually attracted to damp, dark, dirty places. A clean and sanitary establishment offers them little in the way of food and shelter. The stray pests that might get in cannot thrive or multiply in a clean kitchen. Use metal flashing, concrete patches, or heavy-duty metal screens to seal holes and openings in walls effectively.

Identifying the Problem – Inspect and monitor the food facility and learn how to spot signs of pests and determine what kind they are. Cockroaches carry disease-causing microorganisms and generally feed in the dark. If you see a cockroach during the day, it might mean you have a significant infestation. Cockroach signs include a robust oily odor, droppings that look like grains of black pepper, and/or egg cases, which are capsule-shaped and brown, dark red, or black. You have a serious health problem if you have rodents because they eat and ruin food, damage property, and can spread disease. Signs of rodents include shiny, black droppings that turn gray as they get older, gnawing on surfaces as they attempt to reach food, tracks across dusty or greasy surfaces, nesting materials such as paper, cloth, or other soft materials, and holes in dirt or other materials used for nesting in burrows.

Controlling Insects – Controlling insects can be done with chemicals or physical controls. A PCO must apply chemical controls such as baits or insecticides. Physical controls include sticky boards, sticky fly paper, or fly zappers. Fly zappers should be placed away from food or other sanitized locations to prevent dead flies from being blown or falling from the zapper.

Using and Storing Pesticides - Rely on your PCO to decide when pesticides should be used in your establishment. Pesticides should only be applied by licensed and certified PCOs. PCOs are trained to determine the best pesticide for each pest and how and where to use it. If you store pesticides, follow these guidelines:

- Keep pesticides in their original containers.
- Store pesticides in locked cabinets away from food storage and food preparation areas. Store them separately from cleaning supplies.
- Store aerosol or pressurized spray cans in a cool place. Exposure to temperatures higher than 120°F (49°C) could cause them to explode.
- Check local regulations before disposing of pesticides. Many are considered hazardous waste.
- Dispose of empty containers per manufacturers' directions and local regulations. Rinse bottles and non-aerosol cans three times in a utility sink. Never use a food prep or warewashing sink. Crush bottles and cans and wrap them in paper. Keep them separate from other trash.
- Keep a copy of the corresponding SDS and chemical labels on the premises.

Regulatory System

In the United States, there are three levels of government control. 1) Federal, 2) state and 3) local. At the federal level, the U.S. Department of Agriculture (USDA), the Food and Drug Administration (FDA), and the U.S. Public Health Service (USPHS) are directly involved in the food inspection process.

- **USDA** - The USDA is responsible for inspection and quality grading of meats, meat products, poultry, dairy, eggs, and egg products, and fruits and vegetables shipped across state boundaries.
- **FDA** - The FDA writes recommendations for food service regulations and inspects food service operations that cross state borders, such as planes and trains. The FDA also shares the responsibility for inspecting food-processing plants with the USDA.
- **USPHS** - The USPHS inspects cruise ships that cross international borders.

The Food Code - The Model Food Code is written by the FDA and lists the government's recommendations for food service regulations. The Food Code is intended to assist state health departments in developing regulations for food service inspection programs. It is not an actual law, but the FDA recommends state adoption.

Health Inspections - Establishments with high standards for sanitation and food safety consider health department inspections only as a supplement to their self-inspection. Health department inspections may only be performed during regular business hours, by appointment, or at any other responsible time. Below are suggestions on how to work with the local health department during an inspection:

- 1) Ask for identification
- 2) Cooperate and answer all questions the best that you can
- 3) Take notes during the inspection
- 4) Keep the meeting professional
- 5) Prepare to provide records requested by the inspector
- 6) Discuss violations and time frames for corrective action
- 7) Follow up and correct the problem(s).

Sample HACCP Plan

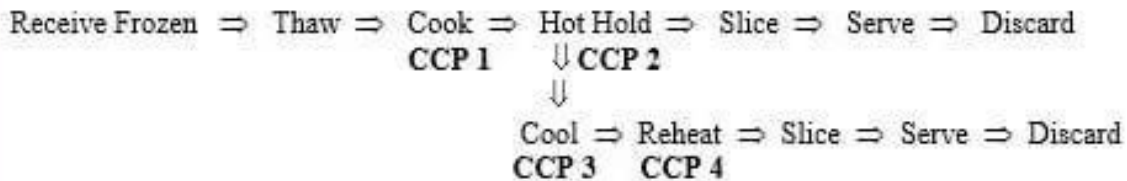
HACCP Plan Sample

Facility: Tony's Roast Beef House Preparer: Tony

Date: 1/9-2017

Food Item: Beef Roast / Sliced Beef

Flow diagram or descriptive narrative of the food preparation steps for the food item:



HACCP CHART

Critical Control Points (CCPs)	Monitoring Procedures	Corrective Actions
1. <u>Cook</u> to an internal temperature of 145°F for a minimum of 3 minutes	Check the temperature of the product's center with a calibrated stem thermometer	Continue to cook
2. <u>Hot Hold</u> at a minimum of 140°F (Maximum of 4 hours)	Check internal temperature of the product every hour	If internal temp. is less than 140°F for more than 1 hour-Discard. If internal temp. is less than 140°F for 1 hr. or less – rapidly reheat to 165°F for 15 seconds.
3. <u>Cool</u> so that internal temp Is less than 70°F in 2 hrs., and less than 45°F in an additional 4 hours	Check the internal temperature of the product at one hour intervals	Discard product
4. <u>Reheat</u> to an internal Temperature of 165°F for at least 15 seconds	Check the internal temperature of the product	Discard the product if it fails to reach 165° within 2 hours

Equipment Utilized at each Critical Control Point (include type and quantity of each unit)

CCP 1: Convection Oven (2)

CCP 2: Heat Lamps (4)

CCP 3: Walk-in Cooler (1)

CCP 4: Convection Oven (2)