★ INCLUDES 80-QUESTION PRACTICE EXAM

9th EDITION

✓ ALIGNED WITH
2022 FDA Food Code
ServSafe® Manager
CFP Standards

CERTIFICATION STUDY GUIDE

Food Safety for Managers

A complete, visual study guide for food safety certification exams — covering pathogens, the flow of food, HACCP, allergens, and everything a Person-in-Charge needs to pass on the first attempt.

BOSTON FOOD SAFETY
NEW ENGLAND'S #1 TRAINING INSTITUTE

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Contents

Fourteen chapters, an 80-question practice exam, and a quick-reference appendix.

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CHAPTER ONE

About the Exam & How to Use This Guide

> Before diving into the material, understand what you're preparing for. The ServSafe® Manager exam tests a manager's ability to protect the public from foodborne illness — not trivia. Every chapter in this guide is mapped to the exam's content domains.

IN THIS CHAPTER

- Exam format & passing score
- Content domain weights
- How to study efficiently
- Retesting policy
- Available languages
- Using the Things-to-Remember boxes

The ServSafe® Manager Exam

The ServSafe® Manager Certification verifies that a manager or Person-in-Charge has sufficient food safety knowledge to protect the public from foodborne illness. The credential is accredited by the American National Standards Institute (ANSI) under the Conference for Food Protection Standards, and it is accepted by most U.S. jurisdictions that require a Certified Food Protection Manager on staff.

90	80	70%	5
QUESTIONS	SCORED	TO PASS	YEARS VALID

QUICK FACTS

- **Format:** 90 multiple-choice questions; one correct answer per question.
- **Pilot questions:** 10 of the 90 are pilot questions that don't count toward your score, but you won't know which ones.
- **Scored questions:** 80. You need at least 56 correct to pass (70%).
- **Time limit:** 2 hours (paper) / 90 minutes (online proctored) — check your provider.
- **Languages:** Online — English, Spanish, Chinese. Print — English, Spanish/English, Korean/English, Chinese/English, French.
- **Retesting:** You may retest only if you failed or your certification is expiring. A new exam purchase is required for each attempt.

Content Domains — What's on the Exam

The ServSafe Manager exam is built from the 2016 (most recent) Job Task Analysis. Use this weighting to prioritize your study time.

#	Domain	Weight	Questions	Chapter in this guide
1	Management of Food Safety Practices	11.25%	9	Ch. 13, 14
2	Hygiene and Health	17.5%	14	Ch. 5
3	Safe Receipt, Storage, Transportation & Disposal	16.25%	13	Ch. 6, 7
4	Safe Preparation and Cooking of Food	18.75%	15	Ch. 8
5	Safe Service and Display of Food	10%	8	Ch. 9
6	Cleanliness and Sanitation	13.75%	11	Ch. 10
7	Facilities and Equipment	12.5%	10	Ch. 11, 12
	Scored total	**100%**	**80**	+ 10 unscored pilot

How to use this guide

Work through the chapters in order — each one builds on the last. After every chapter, check the *Things to Remember* box; those are the exam-level facts you must know cold. When you've finished all 14 chapters, take the 80-question practice exam in one sitting to simulate the real test. If you score below 80%, go back to the chapters covering the missed questions and re-read the summary boxes.

◎ **STUDY TIP**

Memorize the **four key temperatures** first: 41°F, 135°F, 165°F, and the danger zone (41–135°F). Roughly one-third of exam questions hinge on these numbers.

✎ **EXAM STRATEGY**

Read each question twice. Watch for words like *except*, *not*, *first*, and *minimum* — they flip the meaning of the answer.

02

CHAPTER TWO

Foundations of Food Safety

> Every food safety system starts with the same three questions: What can make food unsafe? Who is most at risk? And who is responsible? Master these basics and the rest of the exam becomes dramatically easier.

IN THIS CHAPTER

- What is foodborne illness
- Outbreak definition
- The CDC's five risk factors
- High-risk populations (TCS)
- Manager responsibilities
- Federal, state & local roles

What is Foodborne Illness?

A **foodborne illness** is any sickness caused by eating contaminated food or beverages. In the United States alone, the CDC estimates that 1 in 6 people — roughly 48 million Americans — get sick from contaminated food every year. About 128,000 are hospitalized and 3,000 die. Behind every statistic is a preventable failure in someone's food safety system.

📘 **DEFINITIONS YOU MUST MEMORIZE**

Foodborne illness: An illness caused by eating contaminated food or beverages.

Foodborne illness outbreak: When **two or more** people experience the same illness after eating the same food — and an investigation by state or local health officials confirms the food as the source. The "two-person" threshold is a common exam trap.

The Three Categories of Contamination

Every hazard that can contaminate food falls into exactly one of three categories. Knowing which is which is foundational for almost every other topic on the exam.

🦠 Biological

Living organisms or their toxins. This is the largest category and causes the most outbreaks.

- Bacteria (Salmonella, E. coli, Listeria)
- Viruses (Norovirus, Hepatitis A)
- Parasites (Anisakis, Giardia)
- Fungi (some molds, toxic mushrooms)
- Biological toxins (scombroid, ciguatera)

⚗ Chemical

Harmful substances that end up in food — usually from improper storage or poor sanitation.

- Cleaners, sanitizers, polishes
- Pesticides and insect sprays
- Toxic metals leached from brass, copper, zinc, or galvanized containers (especially with acidic foods)
- Machine lubricants not labeled food-grade

⚙ Physical

Foreign objects in food — either natural to the ingredient or introduced by handling.

- Bones in boneless fillets
- Shell fragments, pits, stems
- Glass, metal shavings, staples
- Hair, fingernails, bandages
- Dirt, jewelry, nail polish flakes

The CDC's Five Risk Factors

The Centers for Disease Control and Prevention (CDC) has identified five food-handling practices that cause most foodborne illness outbreaks. Every other topic in this guide is essentially a tool for controlling one of these five.

1. **Purchasing food from unsafe sources.** Food safety begins at purchasing. Always use approved, licensed suppliers that follow FDA and USDA guidelines.

2. **Failing to cook food to the required minimum temperature and time.** Heat is the single most powerful tool for killing pathogens.

3. **Holding food at unsafe time and temperature.** Keep TCS food out of the danger zone (41°F – 135°F). Time in the zone is cumulative.

4. **Cross-contamination.** Using the same utensils, cutting boards, or gloves for raw and ready-to-eat food transfers pathogens.

5. **Poor personal hygiene.** Unwashed hands and sick employees are the leading cause of viral foodborne illness outbreaks like Norovirus and Hepatitis A.

TCS Foods: Time & Temperature Control for Safety

A **TCS food** (Time/Temperature Control for Safety — formerly called "Potentially Hazardous Food") is a food that *requires* time and temperature control to keep bacteria from growing to dangerous levels. TCS foods are the highest-risk items in your kitchen, and nearly every rule about cooking, cooling, holding, and storage is designed to control them.

What makes a food "TCS"?

Three characteristics — bacteria love all three:

💧 Moisture

Water activity (a_w) above 0.85 supports bacterial growth.

🥩 Protein / Nutrients

Bacteria need food, and protein-rich foods are a feast.

⚖ Low Acidity

pH between **4.6 and 7.5**. Most fresh foods fall here.

Common TCS foods (learn this list)

Category	Examples
Animal products	Meat, poultry, fish, shellfish, eggs, dairy, milk
Cooked plant foods	Cooked rice, cooked beans, cooked pasta, baked potatoes
Cut or processed produce	Cut leafy greens, cut melons, cut tomatoes, sliced melons
Sprouts & seeds	Raw seed sprouts, bean sprouts, alfalfa sprouts
Garlic-in-oil mixtures	Untreated garlic-and-oil mixtures (supports *C. botulinum*)
Soy products	Tofu, heat-treated plant-based proteins
Prepared salads	Tuna salad, egg salad, pasta salad, potato salad

⚠ **COMMON TRAP: WHAT IS NOT TCS**

Whole intact fruits and vegetables, dry goods (flour, sugar, uncut crackers), properly canned commercial products, and acidic foods like pickles are generally **not** TCS. The moment you cut, cook, or add moisture — they usually become TCS.

High-Risk Populations

Some people have weaker or underdeveloped immune systems. For them, a dose of pathogens that would only mildly sicken a healthy adult can be hospitalizing or fatal. Know these groups:

People at higher risk

- **Preschool-age children** (age 4 and under)
- **Elderly** (age 65 and older)
- **Pregnant women**
- **People with compromised immune systems** — cancer patients, transplant recipients, HIV/AIDS patients, and anyone taking immunosuppressive drugs

Foods they should avoid

- Raw or undercooked animal products — rare burgers, runny eggs, raw seafood, sushi, raw oysters
- Raw sprouts (alfalfa, bean, etc.)
- Unpasteurized milk, juice, cheese
- Soft, French-style cheeses (brie, camembert, queso fresco) — Listeria risk
- Pâtés and meat spreads

📋 **THE CONSUMER ADVISORY**

When your menu includes raw or undercooked animal products (ordered rare, sushi-grade, etc.), the FDA Food Code requires a written **consumer advisory** on the menu: *"Consuming raw or undercooked meats, poultry, seafood, shellfish, or eggs may increase your risk of foodborne illness."* It must be **disclosed** (identify which items are raw/undercooked) and **reminded** (the risk statement itself).

Who's in Charge? Manager & Agency Roles

The Person-in-Charge (PIC)

The **manager or Person-in-Charge** is ultimately responsible for food safety in the establishment. A Certified Food Protection Manager must be able to demonstrate knowledge to the regulatory inspector and to perform or delegate the following duties:

- ☑ Train every food handler on their specific job and on food safety policies.
- ☑ Make sure employees understand and follow the reporting policy for illnesses and symptoms.
- ☑ Report confirmed foodborne illnesses and suspected outbreaks to the local health department.
- ☑ Monitor cooking, holding, cooling, and reheating temperatures every day.
- ☑ Cooperate fully and answer honestly during health inspections.
- ☑ Enforce correct handwashing, glove use, and dress code.
- ☑ Ensure only approved suppliers are used and deliveries are inspected.
- ☑ Keep records: shellstock tags, cooling logs, temperature logs, training logs.

The Government Agencies

FDA

Food and Drug Administration

Writes the **Food Code** — a model regulation that state and local jurisdictions adopt (in whole or in part). Regulates food sold across state lines and most foods *except* meat, poultry, and eggs.

USDA

U.S. Department of Agriculture

Inspects and regulates **meat, poultry, and eggs**. The USDA inspection stamp on a package confirms the product has been inspected for wholesomeness. The **FSIS** (Food Safety and Inspection Service) is the branch doing the inspecting.

CDC

Centers for Disease Control and Prevention

Investigates outbreaks, publishes illness data, and provides the science behind food safety rules. The CDC does *not* inspect restaurants.

Day-to-day enforcement — restaurant inspections, permits, plan review — is done by **state and local regulatory authorities**. That's who you call to report an outbreak, apply for a permit, request a variance, or notify of a menu or layout change.

✓ **THINGS TO REMEMBER — CHAPTER 2**

- A **foodborne illness outbreak** requires **2 or more** people to get sick from the same food.
- The **CDC's 5 risk factors**: unsafe source, wrong cook temp, wrong holding temp, cross-contamination, poor hygiene.
- TCS foods have **moisture + protein + low acid** (pH 4.6–7.5).
- The four high-risk groups: **young children, elderly, pregnant women, immunocompromised.**
- The FDA writes the **Food Code**; the USDA inspects **meat, poultry, eggs**; state/local authorities **enforce**.
- The consumer advisory must both **disclose** raw/undercooked items and **remind** of the risk.

03

CHAPTER THREE

Contamination: Biological, Chemical & Physical Hazards

Pathogens cause the vast majority of foodborne illness. In this chapter you'll learn what they are, how they grow, and — most importantly — how to stop them. The star of the show is the acronym **FAT TOM**.

IN THIS CHAPTER

- FAT TOM — how bacteria grow
- The Big 6 pathogens
- Norovirus & Hepatitis A
- Parasites & fish toxins
- Chemical contamination
- Physical hazards in food

Biological Hazards — The Main Threat

Biological hazards are living organisms — or toxins produced by living organisms — that cause illness when consumed. They include **bacteria, viruses, parasites, fungi,** and **biological toxins**. Pathogens are the biological hazards that actually make people sick; not every microorganism is a pathogen, but those that are produce **toxins** (poisons) or damage the body directly.

FAT TOM — The Six Conditions Bacteria Need to Grow

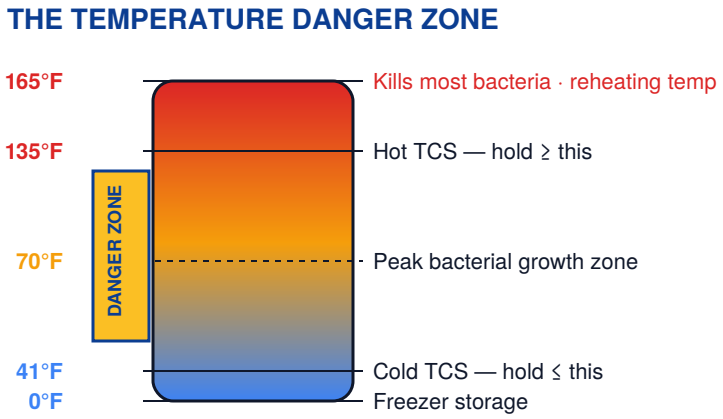
Bacteria are the largest category of foodborne pathogens and are the most common cause of foodborne outbreaks. Remove any one of these six conditions and you can stop bacterial growth.

F	A	T	T	O	M
FOOD	**ACIDITY**	**TEMP**	**TIME**	**OXYGEN**	**MOISTURE**
Nutrients, especially proteins & carbs	pH 4.6 – 7.5 is the sweet spot	Danger zone: 41°F – 135°F	4 hours max in danger zone	Some need it, some don't	Water activity a_w above 0.85

As a manager you have the most control over the two Ts — **Temperature** and **Time**. That's why almost every exam question about bacteria ties back to minimum cook temperatures, maximum holding times, or cooling schedules.

The Temperature Danger Zone

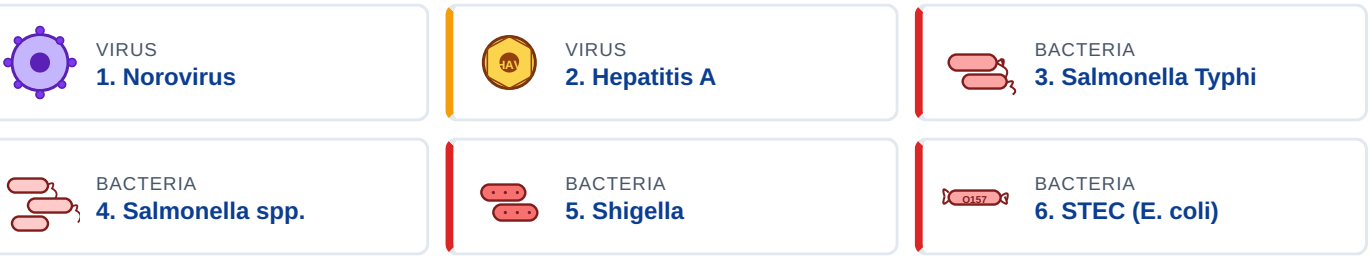
Between **41°F (5°C)** and **135°F (57°C)**, bacteria multiply rapidly. The fastest growth happens between 70°F and 125°F, where bacteria can double in number every 20 minutes. Keep TCS food *out* of the danger zone, or limit its total time inside to less than 4 hours.



The "Big 6" Pathogens

The FDA requires that any food handler diagnosed with — or showing symptoms of — one of the following six pathogens be **excluded** from the operation and reported to the health department. These are the heavyweights. Memorize the food they're linked to.

THE BIG 6 AT A GLANCE — VIRUS, BACTERIA, & SHAPES



Big 6 diagnosis = exclude the handler and report to the health department. Norovirus within 48 hrs; Hep A within 30 days.

1. Norovirus

VIRUS

LINKED FOOD	Ready-to-eat food touched by an infected handler; contaminated shellfish; salads, sandwiches, produce.
SYMPTOMS	Sudden onset vomiting and watery diarrhea, nausea, stomach cramps.
SOURCE	Fecal–oral route. Extremely contagious; very small infectious dose.
PREVENTION	Wash hands, exclude sick workers, no bare-hand contact with RTE food.
REPORTING	Diagnosed cases must be reported to the health department within **48 hours**. Norovirus causes the **most** foodborne illness cases in the U.S.

2. Hepatitis A

VIRUS

LINKED FOOD	Ready-to-eat food, shellfish from contaminated water, produce.
SYMPTOMS	Fever, fatigue, nausea, abdominal pain — then **jaundice** (yellow skin and eyes). Can take weeks to appear.
SOURCE	Fecal–oral route; infected food handlers.
PREVENTION	Vaccination, handwashing, no bare-hand contact with RTE food.
REPORTING	Diagnosed cases must be reported within **30 days**.

3. Salmonella Typhi

BACTERIA

LINKED FOOD	Ready-to-eat food and beverages contaminated by an infected handler.
SYMPTOMS	High fever, headache, weakness, abdominal pain, loss of appetite, rash. This is **typhoid fever**.
SOURCE	Infected humans; the bacteria can live in the bloodstream and intestines.
PREVENTION	Exclude sick handlers; cook food to minimum internal temps.

4. Nontyphoidal Salmonella (Salmonella spp.)

BACTERIA

LINKED FOOD	Poultry and eggs, meat, dairy, produce.
SYMPTOMS	Diarrhea, abdominal cramps, vomiting, fever.
SOURCE	The intestines of birds, mammals, reptiles.
PREVENTION	Cook poultry to 165°F, shell eggs to 145°F (or 155°F for pooled/held), prevent cross-contamination.

5. Shigella spp.

BACTERIA

LINKED FOOD	Food easily contaminated by hands (salads, produce); food contaminated by flies.
SYMPTOMS	Bloody diarrhea, abdominal cramps, fever.
SOURCE	Feces of infected people; spread by flies and poor hygiene.
PREVENTION	Wash hands; exclude sick handlers; control flies.

6. Shiga toxin-producing *E. coli* (STEC, incl. O157:H7)

BACTERIA

LINKED FOOD	**Ground beef**, raw seed sprouts, unpasteurized milk and juice, produce washed in contaminated water.
SYMPTOMS	Severe abdominal cramps, bloody diarrhea, vomiting. Can cause kidney failure (HUS) in young children.
SOURCE	Intestines of cattle.
PREVENTION	Cook ground beef to **155°F for 17 seconds**; buy from approved suppliers.

✎ EXAM MEMORY AID

Connect each pathogen to its signature food: **Norovirus → shellfish & RTE food** · **Hep A → jaundice** · **Salmonella → poultry/eggs** · **Shigella → salads & flies** · **STEC → ground beef**.

Other Important Pathogens & Toxins

Listeria monocytogenes

BACTERIA

LINKED FOOD	Deli meats, soft cheeses, unpasteurized milk, raw produce. Grows at refrigeration temperatures.
DANGEROUS FOR	**Pregnant women** (causes miscarriage), newborns, elderly, immunocompromised.
PREVENTION	Discard expired food; clean and sanitize deli slicers every 4 hours.

Clostridium botulinum

BACTERIA (TOXIN)

LINKED FOOD	Improperly canned food, reduced-oxygen packaged food (ROP), garlic-in-oil mixtures, baked potatoes in foil.
SYMPTOMS	Blurred or double vision, weakness, paralysis — can be fatal.
PREVENTION	Reject dented/bulging cans; keep ROP below 41°F; require variance for ROP.

Clostridium perfringens

BACTERIA

LINKED FOOD	Meat, poultry, stews, gravies — foods held at unsafe temperatures.
NICKNAME	"The cafeteria bug." Tied to slow cooling and poor hot-holding.
PREVENTION	Cool properly; hold ≥ 135°F; reheat to 165°F.

Bacillus cereus

BACTERIA

LINKED FOOD	Cooked rice, pasta, starchy foods left at room temperature.
NICKNAME	"The fried rice bug."
PREVENTION	Cool quickly; don't hold at room temperature.

Staphylococcus aureus

BACTERIA (TOXIN)

CARRIED BY	**Healthy people** — in the hair, nose, throat, and infected cuts/wounds.
LINKED FOOD	RTE food handled without gloves; salads with protein (tuna, egg, chicken).
KEY FACT	Produces a heat-stable toxin — **cooking will not destroy it**. Prevention is the only defense.

Parasites

Parasites need a host animal to live and reproduce. In food service, the most common source is **fish and seafood**. Commercial fish intended to be served raw or undercooked (like sushi) must be frozen by the supplier according to specific FDA parasite-destruction guidelines (e.g., -4°F for 7 days, or -31°F for 15 hours). Game

animals like venison and rabbit should come from inspected sources free of ticks, fleas, and other parasites. Produce washed in contaminated water can also carry parasites (e.g., *Cyclospora* on berries).

Fungi — Mold, Yeast & Mushrooms

Mold tolerates high acid and low moisture, so it grows on foods where bacteria cannot — jams, sliced tomatoes, hard cheeses. Some molds produce **mycotoxins** (like aflatoxins on peanuts and corn). Toxic wild mushrooms are responsible for occasional fatalities; always buy mushrooms from approved, licensed suppliers.

Biological Toxins in Seafood

Some fish carry toxins that are not destroyed by cooking. The manager's only defense is to purchase from approved sources.

Toxin	Associated Fish	Notes
Ciguatera	Reef fish: barracuda, grouper, snapper, amberjack	Fish eats toxic algae; cooking does not destroy.
Scombroid (histamine)	Tuna, mackerel, mahi-mahi, bluefish	Caused by time-temperature abuse after catch; cooking does not destroy.
Paralytic shellfish poisoning (PSP)	Shellfish from contaminated waters	Only buy shellfish with proper shellstock tags.
Systemic (puffer fish tetrodotoxin)	Puffer fish (fugu)	Highly regulated; specialized handling only.

Chemical Hazards

Chemical contamination happens when a harmful chemical ends up in food — usually because of improper storage, unlabeled containers, or the wrong equipment. The fix is almost always the same: **store chemicals separately, label everything, and use approved food-grade materials**.

Common sources

- Cleaners, sanitizers, polishes, degreasers stored above or near food
- Pesticides applied by untrained staff
- First-aid products (ointments, sprays) near food
- Toxic metals from brass, copper, zinc, or galvanized containers holding acidic foods like tomato sauce, lemonade, sauerkraut
- Non-food-grade lubricants on equipment
- Unlabeled spray bottles or squeeze bottles

Prevention

- Store chemicals **below** and **separate from** food and food-contact surfaces — never directly above
- Keep chemicals in original labeled containers; label secondary containers with the common name
- Keep a Safety Data Sheet (SDS) on file for every chemical (OSHA requirement)
- Only licensed Pest Control Operators apply restricted-use pesticides
- Use NSF/ANSI-certified food-contact equipment and materials

Safety Data Sheets (SDS, formerly MSDS)

OSHA requires an SDS on-site for every chemical used in the operation. The SDS includes:

- Product identification and manufacturer contact
- Hazard identification (flammable, corrosive, etc.)
- Safe handling, storage, and disposal instructions
- Personal protective equipment needed
- First-aid measures in case of contact, ingestion, or inhalation
- Long-term health effects

Physical Hazards

Physical contamination is foreign matter in food. Some of it is natural to the food itself (fruit pits, fish bones, shellfish pieces) and some of it is introduced through handling. Physical hazards cause injury — cut mouths, chipped teeth, choking — and trigger the most customer complaints.

Natural

- Bones in fillets or boneless chicken breasts
- Fruit pits, seeds, stems
- Seaweed or shell in shellfish
- Insect fragments on produce

Introduced

- Glass — from bulbs, dishes, measuring cups
- Metal — staples, wire brush bristles, shavings
- Plastic — from broken scoops or gloves
- Hair, fingernails, nail polish, jewelry
- Adhesive bandages without a glove cover
- Dirt, packaging staples, twist-ties

✓ **THINGS TO REMEMBER — CHAPTER 3**

- **FAT TOM:** Food, Acidity, Temperature, Time, Oxygen, Moisture.
- Temperature Danger Zone: **41°F to 135°F**.
- Max time in danger zone: **4 hours cumulative**.
- Viruses like **Norovirus and Hepatitis A** come from human feces and spread through unwashed hands.
- **Cooking does not destroy** heat-stable toxins from Staph, Botulinum, Scombroid, or Ciguatera.
- **Ground beef** is the signature food for Shiga toxin-producing *E. coli*.
- **Barracuda & reef fish** → ciguatera toxin.
- **Staphylococcus** lives naturally in the hair, nose, throat, and infected cuts of healthy people.
- Store chemicals **below** food, never above; keep an SDS on file for each.

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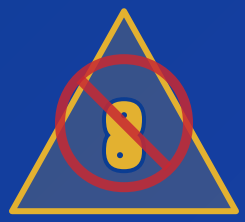


CHAPTER FOUR

Food Allergens

> Allergen incidents are one of the fastest-growing categories of food safety complaints. Unlike foodborne illness, allergic reactions can kill within minutes — and come from food that is otherwise perfectly safe.

IN THIS CHAPTER

- The Big 9 allergens
- Cross-contact vs. cross-contamination
- Symptoms of a reaction
- Communicating with guests
- Kitchen prevention
- Service-line controls

The "Big 9" Food Allergens

A food allergy is an immune system reaction to a specific protein in a food. Reactions range from mild (itching, hives) to severe (**anaphylaxis** — throat swelling, difficulty breathing, drop in blood pressure, death). The federal **FASTER Act of 2021** added sesame as the ninth major allergen, taking effect January 1, 2023. The U.S. now recognizes nine major food allergens that must be declared on food labels:

THE BIG 9 FOOD ALLERGENS — MEMORIZE THESE

Milk

Dairy & whey

Eggs

Whole, whites, yolks

Fish

Finned: salmon, tuna

Shellfish

Shrimp, crab, lobster

Tree Nuts

Almonds, walnuts, etc.

Peanuts

Legume, not a nut

Wheat

Bread, pasta, flour

Soybeans

Tofu, soy sauce

Sesame

Added 2021 (FASTER Act)

Allergen	Common hidden sources
Milk	Butter, cream, whey, casein, baked goods, many sauces
Eggs	Mayonnaise, pasta, baked goods, egg washes, some glazes
Fish (finned)	Worcestershire, Caesar dressing, some Asian sauces
Shellfish (crustaceans)	Shrimp, crab, lobster; shared fryer oil; paella
Tree nuts	Almonds, walnuts, pecans, cashews, pistachios — pestos, baked goods, granolas
Peanuts	Satay sauce, baked goods, some chili recipes, African cuisine
Wheat	Breads, pastas, sauces thickened with flour, soy sauce, beer
Soybeans	Tofu, tempeh, edamame, soy sauce, emulsifiers, many processed foods
Sesame NEW	Tahini, hummus, bagels, sushi, dressings, certain breads

Symptoms of an Allergic Reaction

Mild to moderate

- Itching in/around mouth, face, scalp
- Hives, rash, or red itchy skin
- Swelling of face, eyes, lips, tongue
- Abdominal cramps, vomiting, diarrhea
- Shortness of breath, wheezing

Severe — anaphylaxis (call 911)

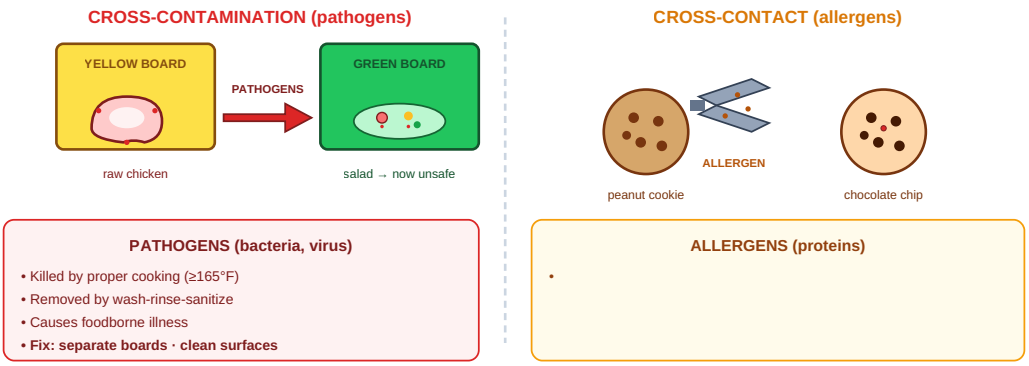
- Throat tightness, difficulty swallowing
- Inability to breathe
- Rapid drop in blood pressure / fainting
- Loss of consciousness
- Administer epinephrine (EpiPen) if available

Cross-Contact vs. Cross-Contamination

📘 IMPORTANT DISTINCTION

Cross-contamination — transfer of *pathogens* between food or surfaces. Example: raw chicken juice dripping onto lettuce.

Cross-contact — transfer of *allergens* between foods. Example: using the same tongs to serve peanut cookies and chocolate chip cookies, or frying shrimp and fries in the same oil. Cooking does *not* eliminate the allergen.



NOT destroyed by cooking • Traces can cause anaphylaxis • Affects guests with allergies only • Fix: dedicated tools · fryer · oil

Preventing Allergic Reactions

In the kitchen

- Use separate equipment, utensils, and prep areas for allergen-free orders
- Wash hands and change gloves before preparing an allergen-special order
- Use dedicated fryers for allergen-free items
- Identify allergen ingredients on the recipe card

At the service line

- Deliver special orders directly — do not place near other meals
- Use a different-colored plate or flag
- Never re-use oil, water, or tongs between allergen and regular food
- Clean and sanitize the prep surface before allergen orders

With the guest

- Have a staff member trained and ready to answer ingredient questions
- Read the ingredient list to the guest — do not guess
- If uncertain about an ingredient, tell the guest
- Know your restaurant's allergen response plan

✎ EXAM TIP

The best way to prevent allergic reactions is **always** to have a knowledgeable staff member available to answer questions about menu items and ingredients. That's the most commonly-tested answer for allergen scenarios.

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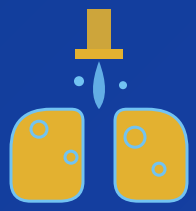


CHAPTER FIVE

Personal Hygiene

> Food handlers cause more outbreaks than any other factor. The good news: the controls are simple and cheap. Enforce them consistently and you eliminate most of your risk.

IN THIS CHAPTER

- Handwashing procedure
- When to wash hands
- Glove use & bare-hand contact
- Fingernails, jewelry, hair
- Reportable symptoms & illnesses
- Exclude vs. restrict

How Food Handlers Contaminate Food

Food handlers can introduce **biological, chemical, or physical** hazards into food. The most common pathways:

- Working while sick — especially with vomiting, diarrhea, jaundice, sore throat with fever
- Touching pimples, sores, cuts, or wounds
- Touching hair, face, or body and then food
- Failing to cover cuts with a bandage *and* a glove or finger cot
- Not washing hands thoroughly and often enough
- Sneezing, coughing, or spitting near food
- Wearing dirty clothing or improperly laundered aprons
- Using food-prep areas to eat, drink, smoke, or chew gum

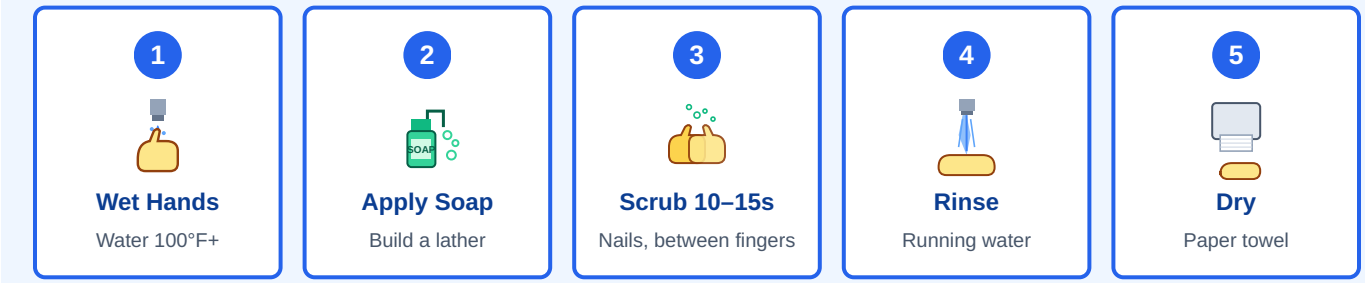
Handwashing — The Most Important Skill

Proper handwashing removes far more pathogens than sanitizer alone. Every establishment must have a **designated handwashing sink**, stocked with:

- Hot and cold running water (minimum **100°F**)
- Soap (liquid preferred)
- A way to dry hands — disposable paper towels or an air dryer
- A trash can
- Signage reminding employees to wash hands

Handwashing sinks are for handwashing *only* — never for washing produce, dumping mop water, or rinsing utensils.

The 20-Second Procedure



Total time: ~20 seconds · Pay special attention to under fingernails and between fingers · Use the paper towel to turn off the faucet and open the restroom door.

When to Wash Hands

Far more often than most handlers realize. Wash every time you:

- Start a shift or return from break
- Use the restroom
- Cough, sneeze, blow your nose, or touch your face/hair
- Eat, drink, smoke, or chew gum
- Handle garbage or cleaning chemicals
- Handle money, credit cards, or phones
- Shake hands or touch a customer
- Switch between raw food and ready-to-eat food
- Touch any soiled surface
- Before and after handling allergen-special orders
- **Before putting on gloves** (gloves don't replace handwashing)
- After handling dirty equipment or utensils
- Any time your hands become contaminated

> ⚠ **HAND SANITIZER IS NOT A SUBSTITUTE**
>
> Hand sanitizer (alcohol-based, FDA-approved) may be used *after* proper handwashing — never *instead*. Sanitizer cannot remove dirt, soil, or protein-rich organic matter where bacteria hide. Also: never apply sanitizer to a surface that directly touches food.

Gloves, Nails, Hair & Jewelry

Single-Use Gloves

Gloves are an additional barrier — they don't replace clean hands. The FDA Food Code requires gloves (or another barrier like tongs, deli paper, or spatulas) for **all bare-hand contact with ready-to-eat food**.

Change gloves:

- When they become soiled or torn
- Before beginning a new task
- After handling raw meat, poultry, or seafood and before handling RTE food
- After handling allergen ingredients before handling allergen-free items
- After touching anything that could contaminate them (face, hair, phone, money)
- Every **4 hours** during continuous use

> ⟳ THE "4-HOUR RULE"
>
> Change gloves every 4 hours of continuous use. The same rule applies to **in-use utensils**: clean and sanitize every 4 hours (or keep them in the food at ≥ 135°F, or on ice at ≤ 41°F).

Cuts, Sores & Wounds

Condition	Action
Uninfected cut/wound on hand	Cover with an **impermeable bandage or finger cot**, *then* put on a single-use glove. Double protection.
Infected cut/wound (pus, redness, swelling)	**Restrict** the handler from working with food, utensils, or clean equipment until healed.
Uninfected wound on arm	Cover with an impermeable bandage.

Fingernails, Nail Polish & Artificial Nails

Long, polished, or artificial nails harbor bacteria and can break off into food. The rules:

- Keep nails short, trimmed, and filed smooth
- No nail polish or artificial nails *unless* wearing intact single-use gloves
- No false eyelashes, artificial nails with charms, or chipped polish

Hair, Beards & Clothing

- Food handlers must wear effective **hair restraints** — hat, hairnet, visor, or ponytail restraint

- Facial-hair restraints (beard covers) are required when facial hair is long
- Wear clean clothes or a clean apron; change aprons that become soiled
- Aprons should be removed before using the restroom or taking out trash
- Store personal items (coats, bags) away from food and prep surfaces

Jewelry

The only jewelry allowed on hands or arms while preparing food is a **plain-band ring** (wedding band). Everything else — watches, bracelets, medical-ID bracelets, stoned rings, fitness trackers — must be removed before handling food or working in prep areas.

Eating, Drinking & Smoking

Prohibited in prep, cooking, service, and warewashing areas because saliva on hands contaminates food. The *only* drinking allowed: from a container with a **tight-fitting lid** and a **straw**, kept in a designated area. Bottles, cans, mugs, and open cups are not permitted. Employees should eat, drink, and smoke only in designated break areas.

Reporting Illness — Exclude vs. Restrict

Food handlers must report illness and symptoms to the PIC. The PIC then decides whether to **restrict** (keep them at work but away from food) or **exclude** (send them home). Some illnesses must also be reported to the local health department.

Symptoms That Must Be Reported

Any of these → report immediately to the Person-in-Charge. Likely action: exclude from work.

The "Big 6" Reportable Diagnoses

If a food handler is **diagnosed** with any of these, the manager must report to the health department. Each has its own reporting deadline:

Illness	Reporting deadline
Norovirus	Within 24–48 hours
Hepatitis A virus	Within 30 days
Salmonella Typhi	Report immediately
Nontyphoidal Salmonella	Report immediately
Shigella spp.	Report immediately
Shiga toxin-producing *E. coli* (STEC)	Report immediately

Restrict vs. Exclude — The Decision

🟡 RESTRICT

Employee can stay on the clock but cannot handle food, clean equipment, or unwrapped single-service items.

Can do: cashier work, greeting, handling packaged food, wrapped utensils, cleanup, paperwork.

When to restrict:

- Sore throat with fever (general population)
- Uncovered infected wound

🔴 EXCLUDE

Send the employee home. They may not enter food-prep, service, or dish areas.

When to exclude:

- Vomiting or diarrhea
- Jaundice
- Diagnosed with any Big 6 pathogen
- Sore throat with fever — if you serve a *high-risk population* (hospital, nursing home, daycare, preschool)

When Can an Excluded Worker Come Back?

- **Vomiting or diarrhea:** symptom-free for at least **24 hours** (some jurisdictions require 48 hours — check your local rule).
- **Jaundice / Hepatitis A:** approval from the health department *and* a written release from a medical practitioner.
- **Big 6 diagnoses:** written release from a medical practitioner and/or health department, per state rules.

✓ THINGS TO REMEMBER — CHAPTER 5

- Handwashing sink must have **100°F water minimum**. Total procedure ~20 seconds; scrub **10–15 seconds**.
- **No bare-hand contact** with ready-to-eat food.
- Change gloves every **4 hours** of continuous use, or when contaminated, torn, or switching tasks.
- Hand sanitizer is optional — it never replaces handwashing.
- Infected cut/wound: **RESTRICT**. Uninfected cut: bandage + glove (double protection).
- Only **plain-band rings** allowed on hands.
- Employees may drink only from a **container with lid and straw** in designated areas.
- **Exclude** for vomiting, diarrhea, jaundice, or any Big 6 diagnosis. Return after 24 hours symptom-free for V/D.
- Norovirus report window: 48 hours · Hepatitis A: 30 days.

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CHAPTER SIX

The Flow of Food: Purchasing & Receiving

> The "flow of food" is the path a food item takes through your operation — from supplier to guest. Every step is a chance for contamination. Defense starts at the back door.

IN THIS CHAPTER

- Approved suppliers
- Receiving temperatures
- Inspection criteria
- When to reject a delivery
- Shellfish tags & Grade A milk
- Key packaging signs

THE FLOW OF FOOD — EVERY STEP IS A CONTROL POINT

This book covers each stage in order — Ch 6 begins at Purchase & Receive.

Approved, Reputable Suppliers

Food must come from an **approved, reputable supplier** — one that has been inspected and meets all applicable local, state, and federal laws. In an audit or outbreak investigation, a supplier relationship is one of the first things the health department reviews.

KEY CONCEPT

Food *never* comes from unregulated sources: home kitchens, an employee's backyard garden, or a hobbyist's canned goods. Suppliers must have a HACCP plan and be subject to inspection by federal (FDA or USDA) or state authorities.

Inspecting the Delivery Truck

Before product is unloaded, check that the delivery vehicle is clean, that raw and ready-to-eat items are properly separated, and that the interior temperature is appropriate for the product being delivered. Refuse the delivery if the truck itself shows signs of pest activity, contamination, or temperature abuse.

Receiving Temperatures — Critical Limits

Every TCS delivery must be checked with a calibrated thermometer. Use the specific rules below. Memorize these numbers — they show up on nearly every exam.

Product	Receive At	Notes
Cold TCS food (most meat, dairy, cut produce)	**41°F or lower**	Standard rule
Live shellfish (oysters, clams, mussels)	**Air temp 45°F or lower**; internal ≤50°F	Cool to 41°F within 4 hours
Shucked shellfish	**45°F or lower**	Cool to 41°F within 4 hours
Shell eggs	**Air temp 45°F or lower**	Clean, uncracked, Grade A or better
Milk	**45°F or lower**	Grade A, pasteurized. Cool to **41°F within 4 hours**
Live lobsters, oysters in the shell	Air temp ≤45°F; keep alive	Reject dead animals
Hot TCS food	**135°F or higher**	Must never have dropped below
Frozen food	Frozen solid	Reject if ice crystals or fluid-stains in package

How to Take the Temperature

- **Meat, poultry, seafood (packaged):** insert the thermometer stem or probe into the thickest part of the food.
- **ROP, MAP, sous-vide, or vacuum-sealed food:** insert the probe between two packages. If the reading is borderline, fold a package around the stem — do *not* puncture the seal unless necessary.
- **Live shellfish and shell eggs:** measure the *air* temperature in the truck.
- **Milk:** open a carton and insert the probe, or measure surface temperature with a thermocouple.

When to Reject a Delivery

🔴 Reject — Food

- Wrong temperature
- Abnormal color, odor, or texture
- Slimy meat, dull fish eyes
- Moldy or rotten produce
- Broken or cracked shell eggs
- Evidence of thawing-and-refreezing (ice crystals, large amounts of package frost, freezer burn, fluid stains on box)

🟡 Reject — Packaging

- Tears, holes, or punctures
- Dents on seams or rims of cans
- Swollen/bulging cans (*botulism risk*)
- Rust, leaks, or stains
- Missing, unreadable, or bypass-printed labels
- Expired use-by or sell-by date

🔴 Reject — Documentation

- No USDA inspection stamp on meat/poultry
- No Grade A label on milk & dairy
- Missing shellstock identification tag
- Tags not attached to the correct container
- Signs of pests — droppings, nests, gnaw marks

Shellstock Identification Tags

Live molluscan shellfish (oysters, clams, mussels) arrive with a **shellstock identification tag** attached to the sack or container. The tag lists the harvester, the harvest location, and the date of harvest.

⭐ **EXAM ESSENTIAL**

Shellstock tags must remain **attached to the container until it is empty**, then kept **on file for 90 days** from the date the last shellfish was sold or served. In an outbreak, these tags are how the health department traces back to the harvest bed.

USDA Inspection Stamps

All meat, poultry, and egg products sold in interstate commerce must carry a **USDA inspection mark** (a round or shield-shaped stamp). Dairy requires a **Grade A** label. Fish does *not* require a federal inspection stamp, but shellfish must come from an approved source on the FDA's Interstate Certified Shellfish Shippers List (ICSSL).

Key Drops & After-Hours Deliveries

When deliveries arrive outside of business hours ("key drops"), the delivery must still meet all receiving standards. The supplier needs prior approval, and items must be inspected as soon as possible after opening. Until inspection, goods should be stored at the correct temperature.

✓ THINGS TO REMEMBER — CHAPTER 6

- Food must come from an **approved, reputable supplier** — never from home or unregulated sources.
- Cold TCS: **41°F** or lower. Hot TCS: **135°F** or higher.
- Shell eggs, live shellfish: air temperature **45°F** or lower.
- Milk: **45°F** or lower on receipt; cool to **41°F** within 4 hours. Grade A, pasteurized.
- Reject: swollen/bulging cans, dented seams, leaking packaging, signs of pests.
- Reject frozen food with **large ice crystals** or fluid stains — signs of thaw/refreeze.
- Shellstock ID tags stay with the container, then on file **90 days**.
- Meat & poultry need a **USDA inspection stamp**; milk needs a **Grade A** label.

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CHAPTER SEVEN

The Flow of Food: Storage

> Once food is through the back door, the clock starts. Correct storage protects food from cross-contamination, time-temperature abuse, and contaminants from the facility itself.

IN THIS CHAPTER

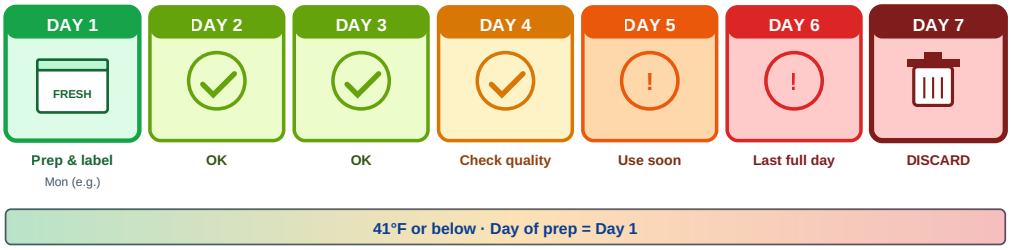
- Labeling and date-marking
- FIFO rotation
- Refrigerator storage order
- Dry storage rules
- Chemical separation
- Proper container use

Labeling & Date Marking

Every food storage container that doesn't stay in its original packaging must be clearly **labeled** with the common name of the food (or a statement identifying it). Ready-to-eat TCS food that has been prepared on-site and will be held more than 24 hours must also be **date-marked**.

> ⭐ **EXAM ESSENTIAL — THE 7-DAY RULE**
>
> Ready-to-eat TCS food prepared in-house may be stored at **41°F or below for a maximum of 7 days**. **The day of preparation counts as day 1.** After 7 days, the food must be discarded. If the product is held at a warmer (but still legal) temperature of 42–45°F, the hold time drops to 4 days.

THE 7-DAY DATE-MARKING CALENDAR

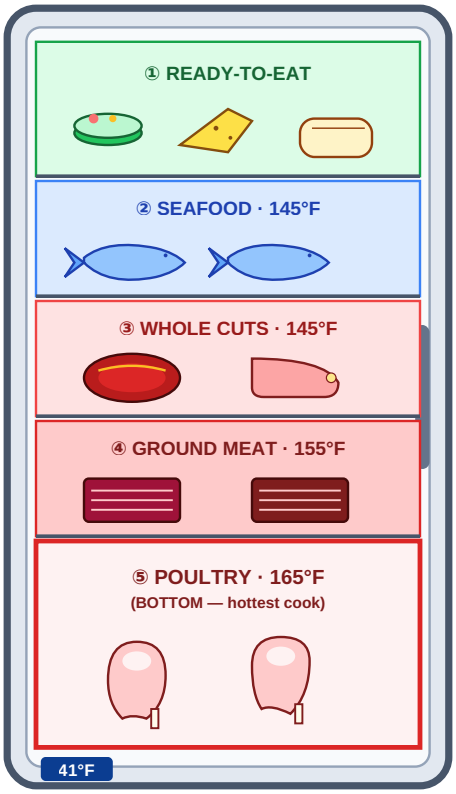


Warmer storage (42–45°F) shortens the hold to 4 days total. After Day 7, discard.

First In, First Out (FIFO)

Rotate stock so that the oldest product is used first. Place newly received items *behind* older items and pull from the front. Discard anything past its use-by date.

Refrigerator Storage Order



In a single refrigerator holding multiple raw animal foods, store items so that juices from the highest-temperature-cook item cannot drip onto a lower-cook item. The order — top shelf to bottom shelf — is based on each item's *minimum internal cooking temperature*.

> 💡 **Memory aid:** Raw poultry lives at the *bottom* because it needs the *hottest* cook (165°F). Its juices can't drip down onto anything safer.

When Raw and Cooked Must Share a Cooler

If raw and cooked/ready-to-eat items must share the same cooler, keep cooked and RTE foods **above** raw animal foods. If a supplier delivers products sealed in the manufacturer's original closed packaging, the storage-order rule is relaxed, but good practice is to still follow it.

Dry Storage & General Rules

- Store food **at least 6 inches (15 cm) off the floor**.
- Keep food out of restrooms, locker rooms, garbage rooms, mechanical rooms, janitor closets, and stairwells.
- Do not store food *under* exposed sewer or water pipes.
- Dry-storage rooms: **50–70°F** and **50–60% relative humidity**.
- Keep containers tightly covered. Once the original packaging is opened, transfer to a labeled food-grade container with a tight lid.
- Rotate stock FIFO; discard expired product immediately.

Container Choice

Use only **food-grade containers** — approved plastic, stainless steel, or glass. Never store food in galvanized metal (zinc can leach into acidic food), painted wood, or containers that previously held chemicals. Never use a pesticide container for food storage, ever, even if it has been washed.

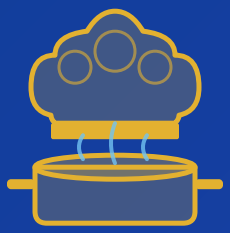
⚠ CRITICAL — CHEMICAL SEPARATION

Cleaners, sanitizers, pesticides, polishes, and other chemicals must be stored in a **separate area, away from and below food, food-contact surfaces, utensils, linens, and single-service items**. Chemicals must be in their original container or clearly labeled with the common name, and stored in a dedicated cabinet or room.

✓ THINGS TO REMEMBER — CHAPTER 7

- Label and date-mark in-house ready-to-eat TCS food. Maximum **7 days at 41°F**, day of prep = day 1.
- **FIFO:** oldest in front, newest in back.
- Refrigerator order top to bottom: **RTE → seafood → whole meat → ground meat → poultry**.
- Store food **6 inches off the floor**, never in restrooms, locker rooms, or under sewer pipes.
- Dry storage: **50–70°F, 50–60% humidity**.
- Chemicals live in their own cabinet — **below and separate** from food.

08



CHAPTER EIGHT

The Flow of Food: Preparation & Cooking

> Cooking is your single most powerful tool for destroying pathogens — but only if food reaches the right *internal temperature* for the right *amount of time*. Prep work (thawing, washing, handling) has its own set of rules that keep the food safe until it hits the heat.

IN THIS CHAPTER

- Safe thawing methods
- Preventing cross-contamination
- Washing produce
- Minimum internal cook temps
- Microwave cooking
- Partial cooking & consumer advisory

Thawing — Four Approved Methods

Frozen food must be thawed using a method that keeps the food out of the temperature danger zone. There are **only four approved thawing methods**. Thawing on the counter at room temperature is **never** allowed.

THE ONLY 4 APPROVED THAWING METHODS

❌ **NEVER:** on the counter at room temperature, in warm water, in the sun, or by leaving out overnight. The outer layers warm into the danger zone before the core thaws.

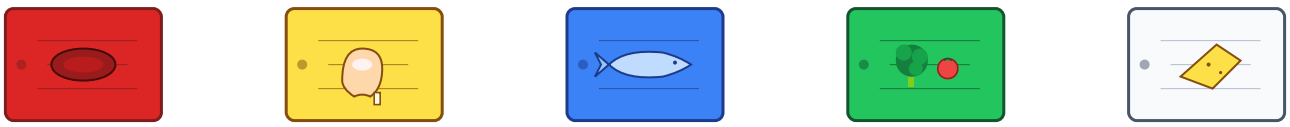
⚠ **NEVER**

Never thaw food at room temperature, in warm water, in the sun, or by leaving it out overnight. The outer layers will warm into the danger zone long before the core thaws, giving pathogens hours to multiply.

Preventing Cross-Contamination During Prep

- Use **separate cutting boards, utensils, and equipment** for raw animal foods and for ready-to-eat foods — or wash, rinse, and sanitize between uses.
- Color-coded cutting boards are a common tool: red for raw meat, yellow for poultry, blue for seafood, green for produce, white for dairy or RTE.
- Only prep *one type* of food at a time on a given surface, then clean and sanitize before switching to the next type.
- Take out only what you can prep in a **short period** (typically ≤ 2 hours); return product to refrigeration the moment you're done with it.

COLOR-CODED CUTTING BOARD SYSTEM



RED — Raw meat

YELLOW — Poultry

BLUE — Seafood

GREEN — Produce

WHITE — Dairy / RTE

Washing Produce

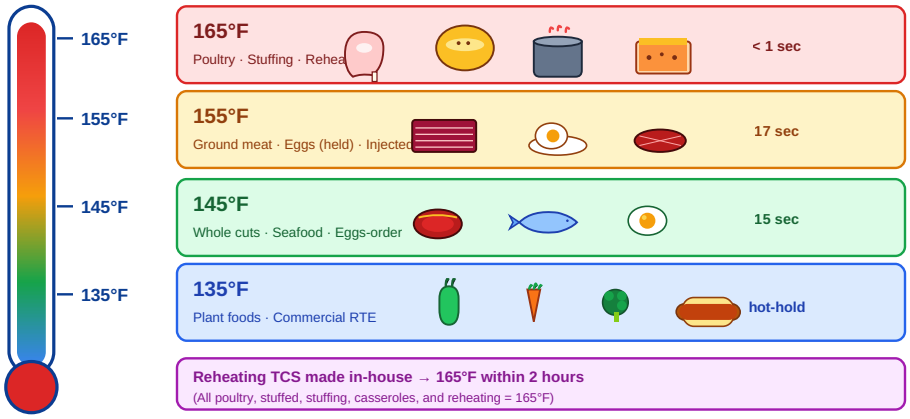
- Wash all fresh fruit and vegetables thoroughly in **running drinkable water slightly warmer than the produce**, just before prepping or serving. Cooler water can cause the produce to pull contamination inside through the stem scar.
- Use a vegetable brush for firm items (cucumbers, melons, root vegetables). Even melons with inedible rinds must be washed — the knife will drag rind contamination into the flesh.
- Remove and discard damaged, wilted, or bruised leaves.
- Refrigerate cut melons, cut leafy greens, cut tomatoes, and raw sprouts — they are **TCS** once cut.
- Approved produce-wash chemicals may be used if labeled for the intended use. Plain soap or detergent is *not* approved.

Minimum Internal Cooking Temperatures

This is the most tested table in the entire exam. Each temperature must be held for the specified time, measured by inserting a calibrated thermometer into the **thickest part** of the food.

Food	Min Internal Temp	Hold Time
Poultry (whole or ground — chicken, turkey, duck)	**165°F (74°C)**	< 1 sec (instantaneous)
Stuffing with fish, meat, or poultry	**165°F**	< 1 sec
Stuffed meat, seafood, poultry, or pasta	**165°F**	< 1 sec
Dishes with **previously cooked TCS** ingredients (casseroles)	**165°F**	< 1 sec
Ground meat (beef, pork); ground or chopped seafood	**155°F (68°C)**	17 seconds
Mechanically tenderized / injected meat	**155°F**	17 seconds
Ratites (ostrich, emu)	**155°F**	17 seconds
Eggs held for service (buffet, hot hold)	**155°F**	17 seconds
Seafood (fish, shellfish, crustaceans)	**145°F (63°C)**	15 seconds
Whole cuts of beef, veal, lamb, pork (steaks, chops, roasts)	**145°F**	15 seconds (4 min for roasts)
Eggs cooked to order for immediate service	**145°F**	15 seconds
Fruit, vegetables, grains, legumes that will be hot-held	**135°F (57°C)**	no min. time
Commercially-processed RTE foods being reheated for hot-holding (franks, cheese sticks)	**135°F**	no min. time
Reheating TCS food made in-house for hot-holding	**165°F**	15 seconds, within 2 hours

COOKING TEMPERATURE LADDER — 135 / 145 / 155 / 165



> 💡 **MEMORY AID — 135 / 145 / 155 / 165**
>
> **135** plant foods & commercial RTE for hot-hold · **145** whole-muscle beef/pork/lamb/fish & eggs-immediate · **155** ground & injected meats & eggs-held · **165** anything poultry, stuffing, stuffed, and all reheating.

Roasts — The Long-Time / Low-Temperature Rule

Whole roasts of beef, pork, veal, and lamb may be cooked at lower minimum temperatures if the internal temperature is held long enough. Examples: **145°F for 4 minutes**, **140°F for 12 minutes**, **130°F for 112 minutes**. These are approved alternatives based on FDA tables; use only with a formal cooking procedure.

Microwave Cooking — Special Rules

Microwaves heat unevenly. When cooking **raw animal food** in a microwave:

- Cook to a minimum of **165°F** internal temperature.
- Cover the food to retain moisture.
- Rotate or stir halfway through cooking.
- Let the food **stand covered for at least 2 minutes** after cooking to allow heat to equalize.
- Check the temperature in two or more locations.

Consumer Advisory & Partial Cooking

If your operation serves raw, undercooked, or partially cooked animal food directly to the customer — such as rare hamburgers, oysters on the half shell, sushi, steak tartare, or Caesar dressing with raw egg — you must provide a **consumer advisory**. It consists of:

- **Disclosure:** the menu discloses which items are raw or undercooked (marked with an asterisk and a disclaimer).
- **Reminder:** a statement explains that eating raw or undercooked animal foods can increase risk of foodborne illness, especially for people with certain medical conditions.

⚠ NEVER SERVE TO HIGH-RISK GROUPS

Regardless of consumer advisory, **never** serve raw or undercooked animal products to **children in schools or daycares**, or to residents of **hospitals, nursing homes, assisted-living, or preschools**. Menu items for these groups must meet the full minimum internal cook temperatures.

Partial Cooking ("Par-Cook")

Food may be partially cooked earlier in the day only if every step is followed:

1. Initial cooking: **no more than 60 minutes**.
2. Cool immediately using the 2-stage process (see Ch 9), or continue cooking without interruption.
3. Freeze or refrigerate until ready to finish.
4. Final cooking must reach the product's standard minimum internal temperature.
5. Document the process — most jurisdictions require a written variance.

✓ THINGS TO REMEMBER — CHAPTER 8

- Four thawing methods only: **fridge · running water ≤70°F · microwave (then cook) · during cooking**. Never at room temp.
- Wash produce in running water **just before** prep/service. Cut leafy greens, melons, tomatoes, sprouts = TCS.
- Key cook temps: **165 poultry · 155 ground · 145 whole cuts/fish/immediate eggs · 135 plant**.
- Microwave raw animal: **165°F**, cover, stir, then **rest 2 minutes**.
- Reheating for hot-hold: **165°F for 15 seconds within 2 hours**.
- Consumer advisory required if raw/undercooked animal food is served — never to high-risk populations.

09

CHAPTER NINE

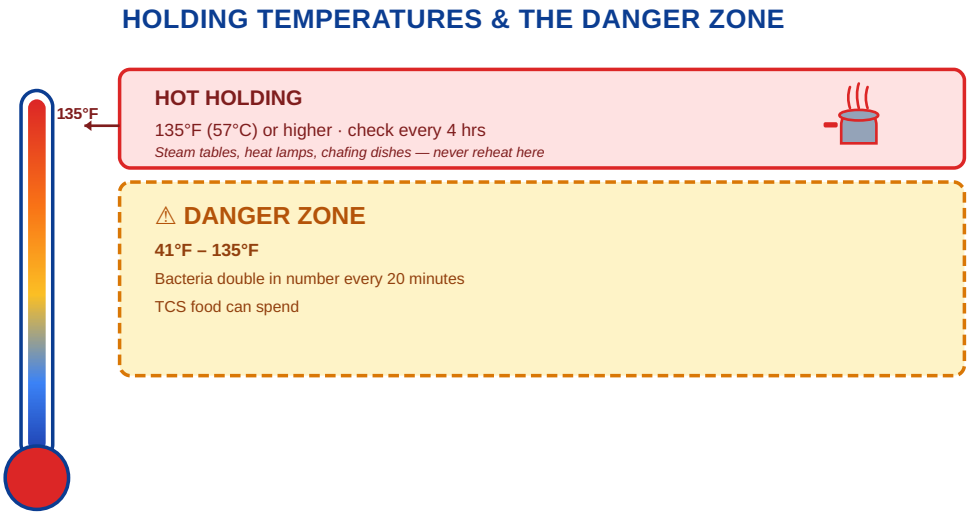
The Flow of Food: Holding, Cooling, Reheating & Service

Cooking kills pathogens — but what happens *after* cooking is where most operations slip up. This chapter is all about the clock and the thermometer: keeping hot food hot, cold food cold, and moving food through the danger zone as fast as possible.

IN THIS CHAPTER

- Hot- and cold-holding temperatures
- 2-stage cooling
- Cooling methods
- Reheating for hot-hold
- Time as a public health control
- Service, self-service & off-site

Holding Temperatures



no more than 4 hours cumulative in this zone before it must be discarded. Fastest growth: 70°F – 125°F COLD HOLDING 41°F (5°C) or lower · check every 4 hrs Refrigerators, ice baths, cold wells — pre-chill before service 41°F

HOLDING RULES

- Never use hot-holding equipment (steam tables, heat lamps) to *reheat* food — it can't heat fast enough through the danger zone.
- Never mix freshly cooked food with food already in the hot-hold unit.
- Stir food regularly to distribute heat.
- Cover hot-hold items to retain heat and protect from contamination.
- If food falls below 135°F: discard if below for > 4 hours, or reheat to 165°F for 15 s (only once).

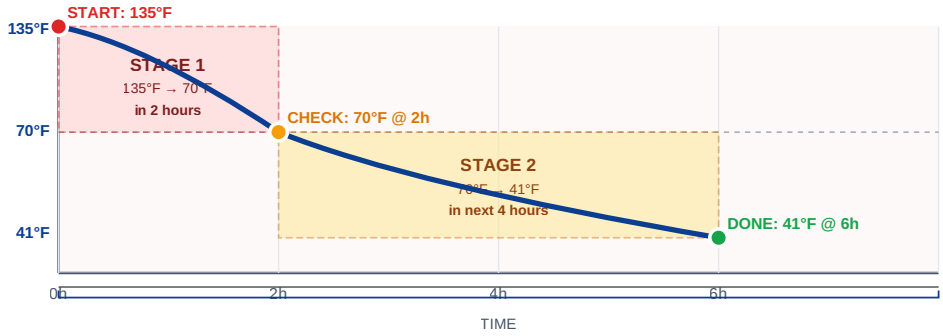
Cooling — The Two-Stage Method

Cooling is one of the highest-risk steps in the flow of food. Pathogens that survived cooking (spores of *C. perfringens*, *C. botulinum*, *B. cereus*) can germinate and explode in population if food lingers in the danger zone.

⭐ **EXAM ESSENTIAL — THE 2-STAGE COOLING RULE**

Stage 1: Cool food from **135°F to 70°F within 2 hours**.
Stage 2: Cool food from **70°F to 41°F (or lower) within the next 4 hours**.
Total: 135°F → 41°F in **6 hours maximum**. If stage 1 is not met in 2 hours, the food must be reheated to 165°F and cooled again, or discarded.

THE TWO-STAGE COOLING TIMELINE



If Stage 1 is not met in 2 hours, reheat to 165°F and cool again, or discard the food.

Cooling Methods — How to Actually Get There

Simply placing a hot pot in the refrigerator will not cool it fast enough. Use active methods that increase surface area and air exposure:

❄ Blast chiller

Best option. Designed specifically to rapidly chill hot food. Pulls food through the danger zone in a fraction of the time.

🧊 Ice-water bath

Place the hot container into a larger basin of ice water. Stir frequently to release heat from the center.

🥶 Ice paddle (wand)

A plastic wand filled with ice or water and frozen — inserted into soups and sauces, stirred to cool from the inside.

📏 Shallower portions

Transfer food to shallow hotel pans (2 inches deep). More surface area = faster heat loss.

🥩 Smaller pieces

Break large cuts of meat into smaller portions before cooling.

❄ Add ice / cold water

For soups and stocks, replacing part of the water with ice cools it while bringing it to correct consistency.

Refrigerator Storage of Cooling Food

- Leave food **uncovered** or loosely covered during cooling so heat can escape.
- Place pans on the top shelf of the cooler, with space around them for air circulation.
- Once food has reached 41°F, cover tightly and date-mark.
- Use a calibrated thermometer to verify each stage — don't assume.

Reheating

⭐ **REHEATING FOR HOT-HOLDING**

TCS food that was cooked and cooled, then reheated for *hot-holding*, must reach **165°F (74°C) for 15 seconds within 2 hours**. The 2-hour window is a hard limit — it's how long food may spend in the danger zone while being reheated.

- Commercially processed ready-to-eat food (hot dogs, cheese sticks) reheated for hot-holding: **135°F is sufficient**, since it was already made under FDA oversight.
- TCS food reheated for *immediate service* (a single plate, microwaved to order) has no specific temperature requirement — but it should still be hot enough to be palatable.
- Never reheat on a steam table, hot-holding cabinet, or heat lamp — they can't move food through the danger zone fast enough.
- Food may only be reheated for hot-holding **once**. After that, discard.

Time as a Public Health Control (TPHC)

When refrigeration or hot-holding is not practical (buffet tables, delivery, catering), time alone may be used to control pathogen growth — but only with a **written procedure** that specifies how the food will be tracked and discarded.

Starting Condition	Maximum Time	End of time:
Cold food held **above 41°F** without temp control	**4 hours** if starting at 41°F	Serve or discard
Cold food held **above 41°F** but never above 70°F	**6 hours** (requires monitoring food temp; discard if > 70°F sooner)	Discard — *not* returned to cold-hold
Hot food held **below 135°F** without temp control	**4 hours**	Serve or discard

⚠ **TPHC RULES**

- A written plan must exist *before* using time as a control.
- Food must be clearly labeled with the time it was removed from temperature control.
- Food may not be put back into the cooler for later use.
- Any food still out at the end of the time window must be discarded — no exceptions.

Service

Serving Food Safely

- Handle plates by the bottom or edge; hold glasses by the base or stem, not the rim.
- Hold utensils by the handle; never by the food-contact portion.
- Store ice scoops outside the ice bin, on a clean surface.
- No bare-hand contact with ready-to-eat food (see Ch 5).
- Do not re-serve uncovered bread, rolls, butter, or condiments to another customer. Packaged, unopened items (individual jelly, crackers) may be re-served if they are intact and condition is good.

Self-Service Buffets & Salad Bars

- Keep food protected by a **sneeze guard** (food shield) between the food and customers.
- Label each food so customers know what they're touching.
- Maintain correct holding temperatures — cold ≤41°F, hot ≥135°F.
- Provide a separate utensil for each dish, stored with the handle up (or on a clean surface).
- Customers may not re-use dirty plates for additional servings. Stock clean plates at the start of the line.
- Monitor the buffet continuously to prevent customer contamination.

Off-Site Service (Catering, Delivery, Mobile)

- Transport TCS food in insulated containers that can hold proper temperatures. Use thermometers.
- Separate raw and ready-to-eat items during transport.
- Use only approved potable water at the off-site location.
- Store garbage away from food-prep and service areas.
- If the off-site facility lacks running water, a handwashing station with water, soap, and paper towels must be provided.

✓ **THINGS TO REMEMBER — CHAPTER 9**

- Cold hold: **41°F or lower**. Hot hold: **135°F or higher**. Check every 4 hours.
- Cooling: **135°F → 70°F in 2 hr; 70°F → 41°F in next 4 hr**. Total 6 hours.
- Use blast chillers, ice baths, ice paddles, shallow pans — never just "put it in the fridge."
- Reheat for hot-hold: **165°F for 15 s within 2 hours**. Only reheat once.
- TPHC: **4 hours max** without temperature control (either hot or cold).
- Self-service: sneeze guards, clean plates each trip, no customer contact with utensils-to-food.

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CHAPTER TEN

Cleaning & Sanitizing

Cleaning removes dirt; sanitizing reduces pathogens to safe levels. They are two different steps — and you can't sanitize a dirty surface. This chapter covers chemicals, dishwashing, and the test that's heavily represented on every exam: the sanitizer concentration chart.

IN THIS CHAPTER

- Cleaning vs. sanitizing
- Types of cleaners
- Chemical sanitizer chart
- Three-compartment sink
- High-temp vs. chemical dishmachines
- Wiping cloths & cleaning schedule

Cleaning ≠ Sanitizing

🧽 Cleaning

Removes food residue, dirt, and grease from a surface. Done with water, detergent, and physical action. A surface can look clean yet still harbor pathogens.

✨ Sanitizing

Reduces pathogens on a *cleaned* surface to safe levels. Done with heat (high-temp water) or chemical sanitizers. Sanitizing does **not** substitute for cleaning.

The sequence is always: **Scrape** → **Wash** → **Rinse** → **Sanitize** → **Air-Dry**.

Types of Cleaners

Type	Purpose	Examples
Detergent	General cleaning — cuts grease & dirt	Dish soap, all-purpose kitchen cleaner
Solvent cleaner (degreaser)	Heavy grease on grills, hoods, fryers	Oven/grill cleaner
Abrasive	Tough, baked-on soil	Scouring pads, gritty powders
Acid cleaner (delimer)	Mineral deposits (scale) on dishmachines, coffee urns	Descaler, lime remover

Chemical Sanitizers — The Big Three

Three chemicals are approved for sanitizing food-contact surfaces: **chlorine**, **iodine**, and **quaternary ammonium compounds ("quats")**. Each has specific concentration, temperature, water-hardness, pH, and contact-time requirements. A sanitizer **test strip or kit** must be on hand and used regularly.

Sanitizer	Concentration	Water Temp	Water pH	Contact Time
Chlorine (bleach)	50–99 ppm	≥ 75°F (chlorine) / 100°F (others)	≤ 10	**7 seconds minimum**
Iodine	12.5–25 ppm	≥ 68°F	≤ 5.0	**30 seconds minimum**
Quats (quaternary ammonium)	Per manufacturer (commonly 200 ppm)	≥ 75°F	Per manufacturer	**30 seconds minimum**

⭐ **EXAM ESSENTIAL — MEMORIZE THIS CHART**

These numbers appear on almost every ServSafe exam. If you remember nothing else: **Chlorine 50–99 ppm · 7 s**, **Iodine 12.5–25 ppm · 30 s**, **Quats per manufacturer · 30 s**.

THE THREE APPROVED SANITIZERS & THEIR TEST STRIPS

Always use a test strip to verify concentration — too weak fails to sanitize, too strong leaves toxic residue.

Factors Affecting Sanitizer Effectiveness

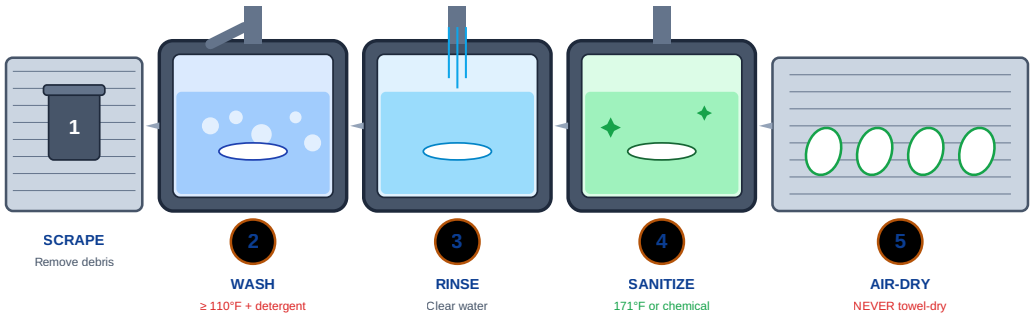
- **Concentration:** too weak = fails to sanitize; too strong = toxic residue and surface damage.
- **Temperature:** sanitizers generally require water warm enough to react.
- **Contact time:** surface must stay wet for the minimum time.
- **Water hardness:** hard water weakens quats.
- **pH:** chlorine loses effectiveness in alkaline water.

The Three-Compartment Sink

When a dishmachine is not available, a three-compartment sink is used for manual ware-washing. The procedure has **five steps**:

1. **Scrape** and pre-rinse items to remove food debris.
2. **Wash** in the first compartment: clean detergent solution at **≥ 110°F (43°C)**. Scrub with a brush or scouring pad. Change water when it becomes dirty or greasy.
3. **Rinse** in the second compartment with clean water, or spray with a pressure nozzle. Change when it becomes cloudy.
4. **Sanitize** in the third compartment — either:
   - *Heat:* immerse for **at least 30 seconds in water ≥ 171°F (77°C)**.
   - *Chemical:* use one of the three approved sanitizers at proper concentration and contact time.
5. **Air-dry** on a clean, sloped drainboard. **Never towel-dry** — it recontaminates.

THE 5-STEP THREE-COMPARTMENT SINK PROCESS



⚠ **KEEP SINKS SEPARATE**

A three-compartment sink cannot be used for preparing food, washing produce, or washing hands. Handwashing has its own dedicated sink; food prep has a separate prep sink.

Dishmachines

Commercial dishmachines are either **high-temperature** (using hot water to sanitize) or **chemical** (using sanitizing chemical injected into a final rinse).

	High-Temperature Machine	Chemical Machine
Wash water	≥ 150°F	≥ 120°F (check manufacturer spec)
Final rinse	**180°F at manifold** (165°F for stationary-rack machines) — measured *at the dish surface*	**120°F or higher** — enough to activate the chemical
How it sanitizes	Heat of final rinse	Injected chemical (chlorine, iodine, or quats)
Check with	Irreversible-registering thermometer or temperature-sensitive strip	Sanitizer test strip for that chemical

- Scrape and pre-rinse items before loading the rack.
- Load dishes so spray reaches all surfaces — don't overlap.
- Air-dry completely — never stack wet dishes.
- Clean the machine itself per manufacturer's schedule (usually daily).

Cleaning Program & Wiping Cloths

Cleaning Schedule

Every operation must maintain a written **master cleaning schedule** covering:

- What needs to be cleaned
- Who cleans it
- When it is cleaned (shift, daily, weekly, monthly)
- How — the procedure, chemicals, and tools used

When to Clean & Sanitize Food-Contact Surfaces

- After each use, between different types of raw animal food, or when switching from raw to ready-to-eat.
- After any potential contamination (spill, touch, interruption).
- At least every **4 hours** during continuous use of TCS food.
- Throughout the shift if food residues become visible.

Wiping Cloths

Dry wiping cloths

Used to wipe away spills or food residue from surfaces. Keep clean. Separate cloths for different tasks (raw meat vs. counters).

Wet wiping cloths

Stored *in sanitizer* at proper concentration between uses. Never left out on counters. Change sanitizer water regularly (cloudy or weak = change).

Storing Cleaning Tools & Chemicals

- Store tools and supplies in a **dedicated area**, away from food and utensils.
- Chemicals in original containers or labeled with common name.
- Keep an **SDS** (safety data sheet) for each chemical.
- Mops and brooms hung up to air dry (not stored head-down).
- Dump mop water into a designated **service sink**, never into a food-prep or handwash sink.

✓ **THINGS TO REMEMBER — CHAPTER 10**

- **Clean first, then sanitize.** A dirty surface can't be sanitized.
- Sanitizer chart: **Chlorine 50–99 ppm · 7 s · 75°F+**. **Iodine 12.5–25 ppm · 30 s · 68°F+**. **Quats per mfr · 30 s · 75°F+**.
- 3-comp sink: wash ≥110°F, rinse, sanitize (heat 171°F+ 30s OR chemical), **air-dry**.
- High-temp dishmachine rinse: **180°F at manifold** (165°F stationary rack).
- Clean and sanitize food-contact surfaces every **4 hours** of continuous TCS use.
- Wet wiping cloths live **in sanitizer**, not on the counter.

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CHAPTER ELEVEN

Facilities, Equipment & Utilities

A safe kitchen starts with a safe physical plant. This chapter covers how to choose equipment that can be cleaned, how to protect your water supply, and what the health department looks for in your facility.

IN THIS CHAPTER

- Equipment certification (NSF, UL)
- Installation: floor clearance & coving
- Calibrating thermometers
- Plumbing — backflow & air gaps
- Lighting, ventilation, garbage
- Handling emergencies

Equipment Certification

All food-contact equipment should be certified by a recognized third-party agency:

- **NSF International (NSF/ANSI)** — the industry standard mark on commercial kitchen equipment. Certifies that the equipment is designed to be cleaned, has food-grade surfaces, and meets construction standards.
- **UL (Underwriters Laboratories) EPH** — also certifies equipment for food safety; look for the "UL EPH" mark.

Characteristics of Food-Safe Equipment

- Nonabsorbent, smooth, corrosion-resistant (stainless steel is the standard).
- Easy to clean, nontoxic, durable.
- Resistant to pitting, chipping, cracking, and scratching.
- Permits easy visual inspection.

Installing Equipment

- **Floor-mounted stationary equipment:** either sealed directly to the floor, or mounted on **legs at least 6 inches (15 cm) high** so you can clean beneath.
- **Tabletop equipment:** sealed to the counter, or mounted on legs **at least 4 inches (10 cm) high**.
- **Coving:** a curved, sealed edge where floor meets wall, eliminating the right-angle corner where dirt and pests accumulate.
- **Floors, walls, ceilings** must be smooth, durable, and easy to clean.

Thermometers

Every operation needs thermometers — both for cooking and for verifying that refrigerators and hot-holding units are working.

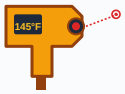
FOUR TYPES OF THERMOMETERS

Bimetallic Stem

Thick foods (roasts) · insert full sensing area 2–3" · ±1.8°F

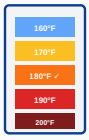
Digital / Thermocouple

Thin foods, liquids · sensor at tip · fastest read



Infrared (Laser)

Surface temps only · **NOT** internal food



Temp-Indicator Strip

Dishmachine rinse verification · single-use

Calibrating a Bimetallic Stemmed Thermometer

Calibrate before each shift, after a drop, and any time the accuracy is in doubt. The **ice-point method** is the most common:

1. Fill a glass with crushed ice; add cold tap water to the top.
2. Insert the thermometer stem so the sensing portion is fully submerged.
3. Wait about 30 seconds or until the needle stops.
4. Without removing the stem from the ice bath, turn the calibration nut until the needle reads **32°F (0°C)**.

The **boiling-point method** (adjust to 212°F / 100°C in boiling water) is also valid but less convenient.

Plumbing & Water Supply

- **Potable water only** for drinking, handwashing, food prep, and dishwashing. Must come from a municipal source or an approved well.
- **Cross-connections** are illegal — a physical link between potable water and any other source (a hose submerged in a mop bucket, for example).
- **Backflow** is the reverse flow of contaminants into potable water. **Back-siphonage** happens when negative pressure pulls dirty water into a clean line.

TWO WAYS TO PREVENT BACKFLOW

- **Air gap:** a vertical, unobstructed space between the end of a water-supply line and the flood-level rim of a fixture. Must be at least **twice the diameter** of the supply pipe, and never less than 1 inch. The only 100% reliable method.
- **Vacuum breaker / backflow-prevention device:** a mechanical valve that blocks reverse flow. Required on hose-bib faucets in mop sinks and similar fixtures.

Drains

Indirect waste drains from food-prep sinks, dishmachines, and ice machines must discharge through an **air gap** into a floor drain — not be directly connected to the sewer. A sewer backup discharging into food-contact surfaces is a common source of contamination.

Lighting, Ventilation & Garbage

Lighting Levels

Location	Minimum (foot-candles / lux)
Prep areas (checking food, reading labels)	**50 fc / 540 lux**
Areas where utensils/equipment are cleaned	**20 fc / 215 lux**
Buffet and display; handwash sinks; restrooms	**20 fc / 215 lux**
Walk-in coolers, dry storage	**10 fc / 108 lux**

All light bulbs in food-prep, storage, and service areas must be **shatter-resistant or shielded** — required to prevent glass contamination if a bulb breaks.

Ventilation

- Exhaust hoods over cooking equipment remove smoke, grease, and heat.
- Clean hood filters regularly to prevent fire and grease build-up.
- Ventilation must prevent condensation on walls and ceilings.

Garbage & Waste

- Containers must be leakproof, waterproof, pest-proof, and easy to clean.
- Remove trash from prep areas frequently — don't let it accumulate.
- Dumpsters: close lids tightly, keep the dumpster area paved and clean, wash the dumpster on a regular schedule.
- Dumpsters should be placed on a flat, graded surface — well away from the building and any air intake.

Emergencies — Imminent Health Hazards

Certain emergencies are **imminent health hazards** — the operation must stop food service immediately and notify the health department before reopening.

🔴 Must close

- Loss of potable water supply
- Sewage backup in food-prep areas
- Loss of electricity or refrigeration
- Fire, flood, or structural damage
- Major pest infestation

🟡 Before reopening

- Fix the cause of the hazard
- Clean and sanitize affected areas
- Discard all potentially contaminated food
- Contact the local health department for inspection/ approval

⚫ Power outage — food rules

- Keep coolers and freezers closed — a full freezer can hold safely for ~48 hours
- Cold TCS food may be held on TPHC (4 hours then discard)
- Hot food may be held on TPHC (4 hours then discard)
- After restoration, verify all food temperatures before serving

✓ THINGS TO REMEMBER — CHAPTER 11

- Food-contact equipment should be **NSF** or **UL EPH** certified.
- Floor equipment on **6" legs**; tabletop on **4" legs** or sealed.
- Calibrate a bimetallic thermometer to **32°F in ice water**; accuracy ±1.8°F.
- **Air gap** = most reliable backflow prevention. Vacuum breakers on mop-sink hoses.
- Prep-area lighting: **50 foot-candles**. Shatter-resistant bulbs everywhere food is handled.
- Imminent health hazards (power loss, sewage backup, flood, fire, infestation) = **close** and call the health department.

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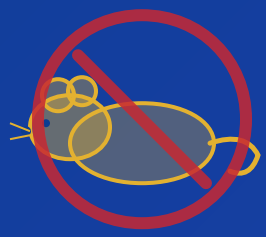

CHAPTER TWELVE

Integrated Pest Management

Rodents, insects, and birds carry pathogens on their bodies and in their droppings. Successful pest control is prevention-first: deny pests entry, food, water, and shelter. The last line of defense is a licensed professional.

IN THIS CHAPTER

- The IPM approach
- Denying entry
- Denying food, water, and shelter
- Signs of infestation
- Working with a PCO
- Safe pesticide storage

Integrated Pest Management (IPM)

IPM combines three approaches: **deny pests access** to your facility, **deny pests food, water, and shelter**, and **work with a licensed Pest Control Operator (PCO)** to eliminate infestations. Spraying pesticides alone is not an IPM program.

THE THREE MAJOR PESTS IN FOODSERVICE

RODENTS

Mice fit through ¼" · rats through ½" holes. Look for **droppings**, **gnaw marks**, **tracks**.

COCKROACHES

Active at night. Strong **oily odor**, **droppings** (pepper-like), **egg cases**.

FLIES

Carry pathogens on body & legs. Screens must be **16 mesh** per inch. Use **air curtains**.

Deny Access

- Inspect every incoming delivery for pests before accepting; refuse any with droppings, chewed packaging, or live insects.
- Keep exterior doors, windows, and vents **tightly closed and screened** (screens: 16 mesh per square inch).
- Install **air curtains** or fans above doorways that must stay open.
- Seal cracks and holes in floors, walls, and ceilings — rodents can fit through a hole as small as 1/4 inch (mice) or 1/2 inch (rats).
- Eliminate gaps around pipes and cables entering the building.
- Keep exterior dumpster areas clean and at least 10 feet from the building.

Deny Food, Water, and Shelter

- Store food and supplies **6" off the floor** in sealed, pest-proof containers.
- Clean spills immediately — especially grease, sugar, and crumbs.
- Empty garbage cans regularly; keep them covered.
- Fix leaking pipes, clogged drains, and standing water.
- Remove clutter and boxes that give pests hiding places.
- Rotate stock (FIFO) — old boxes become nesting sites.

Signs of Infestation

Pest	Signs to Look For
Roaches	Strong oily smell; droppings like pepper or coffee grounds; egg cases (casings); shed skins; seen at night or when lights come on
Mice	Droppings 1/8–1/4" long; gnaw marks; urine stains (fluoresce under UV light); shredded paper/fabric nests; greasy rub marks along walls
Rats	Capsule-shaped droppings 1/2–3/4" long; burrows outside; gnaw marks (they chew through wood, drywall, even soft metal); rub marks
Flies	Visible flies, maggots in garbage, egg clusters on moist surfaces

Working With a Pest Control Operator

- Hire only a **licensed PCO**. Keep a copy of the license and the service contract on file.
- The PCO determines treatment methods and pesticide selection.
- Before scheduled treatment: remove food, utensils, and single-service items from the area (or cover securely).
- After treatment: clean and sanitize surfaces before returning food.
- Store pesticides **in their original containers, locked**, in a dedicated area away from food. Keep SDS on file for each chemical.
- Only the PCO (or a trained employee supervised by the PCO) should apply pesticides.

✓ **THINGS TO REMEMBER — CHAPTER 12**

- IPM = **deny entry · deny food/water/shelter · work with a PCO**.
- Seal gaps; install screens; clean spills; fix leaks; empty garbage.
- Roaches = oily smell + pepper-like droppings. Mice/rats = droppings + gnaw marks + rub marks.
- Use a **licensed PCO**. Keep contract + SDS on file.
- Store pesticides **locked**, in original containers, separate from food.

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CHAPTER THIRTEEN

Food Safety Management & HACCP

A food safety management system (FSMS) is the set of policies, procedures, and controls you use to prevent foodborne illness. HACCP — Hazard Analysis and Critical Control Points — is the most widely used framework.

IN THIS CHAPTER

- Active managerial control
- Prerequisite programs
- The 7 principles of HACCP
- When HACCP is required
- Variances and written plans
- Crisis management basics

Active Managerial Control

Active managerial control means the Person-in-Charge *proactively* identifies hazards and builds them into standard procedures — rather than waiting for the health inspector to find problems. It targets the **CDC's five risk factors** (Ch 2): purchasing from unsafe sources, failing to cook adequately, holding at improper temperature, using contaminated equipment, and poor personal hygiene.

Prerequisite Programs

Before HACCP can work, certain basic programs must be in place — these are the foundation:

- Personal hygiene policies (Ch 5)
- Supplier selection and specifications (Ch 6)
- Cleaning and sanitation program (Ch 10)
- Facility and equipment maintenance (Ch 11)
- Pest management (Ch 12)
- Employee food-safety training

The 7 Principles of HACCP

HACCP is a systematic method for identifying and controlling food-safety hazards. Memorize the seven principles *in order* — the exam often tests sequence.

THE 7 PRINCIPLES OF HACCP — IN ORDER

1. **Conduct a hazard analysis**
   Identify biological, chemical, and physical hazards at each step of the flow of food.
2. **Determine Critical Control Points (CCPs)**
   The last step where a hazard can be prevented or eliminated — usually cooking.
3. **Establish critical limits**
   Measurable minimum/maximum value at each CCP (e.g., chicken to 165°F for 15 s).
4. **Establish monitoring procedures**
   Who checks, how often, and with what tool (e.g., line cook, every batch, with a probe thermometer).
5. **Identify corrective actions**
   Decide in advance what to do if a critical limit isn't met (continue cooking, discard, etc.).
6. **Verify the system works**
   Review records, spot-check procedures, validate that the plan is effective.
7. **Establish record-keeping & documentation**
   Temperature logs, corrective action reports, inspection records, training records.

💡 **MEMORY AID**

Hazard analysis · **C**CPs · critical **L**imits · **M**onitor · **C**orrective action · **V**erify · **R**ecord keeping — "*Happy Cooks Like Making Customers Very Relaxed.*"

When a HACCP Plan or Variance is Required

Some processes are so high-risk that they can't be done without **prior written approval (a variance) from the local health department** and a formal HACCP plan:

- **Smoking food as a method of preservation** (not just for flavor — flavor-only smoking is allowed without a variance).
- **Curing food** (e.g., making dry-cured sausages, bacon).
- **Using food additives or adding components** such as vinegar to render food non-TCS (acidifying).
- **Custom-processing animals** for personal use (e.g., deer processing).
- **Packaging food using a reduced-oxygen method (ROP / MAP / sous-vide / vacuum)** — risk of *C. botulinum*.

- **Molluscan shellfish life-support display tank** where shellfish are sold.
- **Sprouting** seeds and beans for service.
- **Fresh juice** packaged for retail sale with an extended shelf life.
- **Offering live, raw, or undercooked food** to a highly susceptible population outside a standard consumer advisory.

KEY DISTINCTION

Smoking food *for flavor* (adding smokiness to cooked meat that will be served promptly): **no variance needed**. Smoking food *as preservation* (low-temperature smoke held for hours or days to extend shelf life): **variance and HACCP plan required**.

Crisis Management & Outbreaks

Even the best-run kitchen can face a crisis: a customer complaint, a suspected outbreak, a recall notice. Have a written crisis plan in place.

Responding to a Complaint

- Take the complaint seriously — remain calm and non-defensive.
- Get details: who, what was eaten, when eaten, when symptoms started, symptoms, and any medical care.
- Notify ownership and the local health department.
- Keep the suspect food in a secure location; do not throw it out.
- Identify other people who ate the same food.

Responding to a Recall

- Stop using the product immediately.
- Separate the product from other food and label it "DO NOT USE — DO NOT DISCARD."
- Refer to the supplier or manufacturer for disposal instructions. Some recalls require the product be returned; others require destruction.
- Document the recall response.

✓ **THINGS TO REMEMBER — CHAPTER 13**

- Active managerial control addresses the **CDC 5 risk factors**.
- HACCP principles in order: **Hazard analysis · CCPs · Critical limits · Monitor · Corrective action · Verify · Record keeping**.
- Variance required for: **ROP/MAP, curing, smoking for preservation, shellfish tanks, sprouting, acidifying/fermenting to make non-TCS, juicing for extended shelf life**.
- Smoking *for flavor* alone → no variance needed.
- In a recall: **stop, separate, label, document**. Don't throw away recalled product.

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CHAPTER FOURTEEN

Food Defense, Regulations & Inspections

Food defense protects food from *intentional* contamination — sabotage, tampering, or terrorism. Regulations define the rules. Inspections verify compliance. A manager must understand all three.

IN THIS CHAPTER

- Food defense and the A.L.E.R.T. system
- FDA Food Code
- Federal and local agencies
- Preparing for an inspection
- Inspection scores & corrective actions
- Manager certification

Food Defense & the A.L.E.R.T. System

Unlike food safety, which protects against unintentional hazards, **food defense** protects against *intentional* contamination — a disgruntled employee, an activist, a terrorist. The FDA developed the **A.L.E.R.T.** framework for food-service operations.

A	**Assure** — make sure products you receive are from safe sources. Verify supplier approvals, check seals, inspect deliveries.
L	**Look** — monitor product security. Keep storage areas locked; observe who enters sensitive areas; watch for tampering.
E	**Employees** — know who is in your operation. Conduct background checks; control employee access; restrict visitors.
R	**Reports** — keep records of food defense, including supplier records, employee training, incident logs.
T	**Threats** — know how to respond to suspected tampering: isolate the product, call law enforcement, notify the FDA and health department.

Regulations & Agencies

The FDA Food Code

The FDA Food Code is a science-based **model** set of rules that guides state and local food regulations. It is updated regularly (the latest edition is the 2022 FDA Food Code with 2023 Supplement). It is not itself law — each state chooses whether and when to adopt it. Most states adopt some version of it, often with local modifications.

Federal Agencies

Agency	Responsibility
FDA Food and Drug Administration	Regulates most food (except meat, poultry, egg products); writes the Food Code; inspects imported food; oversees interstate food.
USDA Dept. of Agriculture	Inspects meat, poultry, and egg products. The USDA inspection stamp appears on approved products.
CDC Centers for Disease Control	Investigates outbreaks, publishes surveillance data, provides guidance on emerging pathogens.
EPA Environmental Protection Agency	Regulates pesticides, public water supplies, air quality.
OSHA Occupational Safety & Health Admin.	Employee safety — not food safety per se, but governs SDS, chemical handling, ergonomics.

State and Local Authority

Actual restaurant inspections are conducted by **state, county, or city health departments**. Local health regulations always apply — and they may be stricter than federal rules. The local health inspector has the authority to:

- Enter the operation during business hours without appointment
- Inspect any area related to food
- Take food samples, photos, and measurements
- Issue violations, fines, and closure orders
- Suspend or revoke permits

Preparing for an Inspection

- Know the Food Code adopted by your state and the rules of your local jurisdiction.
- Self-inspect regularly — daily walk-throughs using a checklist matching the inspector's form.
- Maintain all required records (temperature logs, cleaning schedule, employee health docs, shellfish tags).
- Train staff to respond professionally to inspectors.

During the Inspection

- Introduce yourself as the Person-in-Charge (PIC).
- Accompany the inspector throughout.
- Take notes on each item flagged; ask clarifying questions.
- Provide any documentation requested.
- Don't argue — document your disagreements in writing after the fact if needed.
- Correct any violation that can be corrected on the spot.

After the Inspection

- Review the report with your team.
- Establish a corrective action plan with deadlines.
- Verify corrections — don't just assume they've been made.
- Document everything — the paper trail is your defense in any dispute.

Types of Violations

🔴 Priority / Imminent Hazard

Directly linked to an outbreak risk — improper temperature, contamination, untrained sick worker. Must be corrected **immediately** or the operation may be closed on the spot.

🟡 Priority Foundation / Core

Support priority items (labels, training records, cleanable equipment). Typically allowed **10–90 days** to correct, per the inspector.

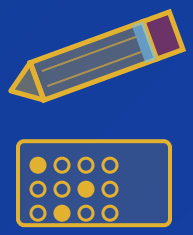
The Certified Food Protection Manager (CFPM)

Most jurisdictions require that at least one certified food protection manager — someone who has passed an accredited food-safety manager exam such as ServSafe — is employed at the operation. In some states, the manager must also be **on duty during all hours of operation**. Certifications are typically valid for **5 years**.

✓ THINGS TO REMEMBER — CHAPTER 14

- **A.L.E.R.T.** = Assure · Look · Employees · Reports · Threats.
- **FDA** = most food + the Food Code. **USDA** = meat/poultry/eggs. **CDC** = outbreaks. **EPA** = pesticides & water.
- Local health department conducts inspections; local rules may be *stricter* than federal.
- **Cooperate, document, correct** — don't argue on-site.
- Priority violations = correct **immediately**. Core = typically 10–90 days.
- Manager certification (ServSafe / equivalent): typically valid for **5 years**.

15



PRACTICE EXAM

80-Question Practice Exam

This practice exam matches the style, format, and difficulty of the real ServSafe Manager exam. Try to complete all 80 questions in **one hour**. Then check your answers against the answer key and read the rationale for any question you missed.

SCORING

- Real exam: **56 correct / 80 scored = 70%** (passing)
- On this 80-question practice, target **56+ correct (70%)**
- Review any chapter where you missed 3+ questions
- Answer key & rationale begins on the last page

Practice Exam

Circle the single **best** answer. Do not dwell on any single question — if you're stuck, move on and return to it.

1. Which of the following is a TCS food?

1. Uncut watermelon
2. Dry rice
3. Cooked potatoes
4. Bread rolls

2. The temperature danger zone for TCS foods is:

1. 32°F – 135°F
2. 41°F – 135°F
3. 45°F – 140°F
4. 50°F – 150°F

3. What is the minimum internal cooking temperature for ground beef?

1. 135°F for 15 s
2. 145°F for 15 s
3. 155°F for 17 s
4. 165°F for < 1 s

4. What is the minimum internal cooking temperature for a chicken breast?

1. 135°F
2. 145°F
3. 155°F
4. 165°F

5. How long can cooked TCS food be stored in a cooler at 41°F before being discarded?

1. 24 hours
2. 3 days
3. 7 days
4. 14 days

6. When cooling cooked chicken, the food must go from 135°F to 70°F within:

1. 1 hour
2. 2 hours
3. 4 hours
4. 6 hours

7. After reaching 70°F during cooling, the food must drop to 41°F within:

1. 1 more hour
2. 2 more hours
3. 4 more hours
4. 6 more hours

8. When reheating TCS food for hot-holding, it must reach at least:

1. 135°F for 15 s
2. 145°F for 15 s
3. 155°F for 15 s
4. 165°F for 15 s, within 2 hours

9. A food handler should wash hands for at least:

1. 5 seconds
2. 10 seconds
3. 20 seconds total (10–15 s scrubbing)
4. 1 minute

10. Hand sanitizer:

1. Replaces handwashing
2. Should be applied before handling raw meat
3. Is used *after* handwashing, not as a substitute
4. Should be used every 15 minutes

11. A food handler has diarrhea. The manager should:

1. Let them work the register
2. Restrict them from prep
3. Exclude them from the operation
4. Let them work if they wear gloves

12. Which is a symptom that requires *exclusion* of a food handler for ALL operations, regardless of clientele?

1. Sore throat with fever
2. Runny nose
3. Jaundice
4. Cough

13. Cross-contact is best described as:

1. Transferring pathogens between foods
2. Transferring an allergen from one food to another

3. Touching food with bare hands
4. Using the same cutting board for meat and vegetables

14. Which is one of the Big 9 food allergens in the U.S.?

1. Strawberries
2. Sesame
3. Tomatoes
4. Chocolate

15. Signs of anaphylaxis include:

1. Mild rash only
2. Swelling of throat, difficulty breathing, drop in blood pressure
3. Upset stomach only
4. A slow headache

16. Shellstock identification tags must be kept on file for at least:

1. 7 days
2. 30 days
3. 60 days
4. 90 days

17. A delivery of frozen fish has large ice crystals in the packaging. The manager should:

1. Accept and use immediately
2. Accept and refreeze
3. Reject — signs of thaw/refreeze
4. Accept if the invoice was paid

18. When receiving live shellfish, the air temperature in the truck should not exceed:

1. 41°F
2. 45°F
3. 50°F
4. 55°F

19. In a cooler holding multiple raw animal foods, where should raw chicken be stored?

1. Top shelf
2. Bottom shelf
3. Middle shelf
4. Anywhere, as long as it's wrapped

20. Food items in dry storage must be kept:

1. 4 inches off the floor
2. At least 6 inches off the floor
3. Directly on the floor
4. Only in a cooler

21. Which is NOT an approved method for thawing TCS food?

1. In a cooler at 41°F
2. On the counter at room temperature
3. In a microwave, then cooked immediately
4. Under cold running water ≤70°F

22. A raw beef roast is being cooked to 145°F. The minimum hold time at that temperature is:

1. < 1 second
2. 15 seconds
3. 4 minutes
4. 17 seconds

23. After cooking raw chicken in a microwave, the food must:

1. Be served immediately
2. Rest, covered, for at least 2 minutes
3. Be transferred to a cold plate
4. Be reheated on the stove

24. The menu says "Hamburgers may be served rare upon request." Which is required?

1. Nothing extra — this is optional
2. A consumer advisory (disclosure + reminder)
3. A doctor's note from the customer
4. Only a verbal warning

25. A buffet uses "time as a public health control" (TPHC). Cold food may be held without temperature control for a maximum of:

1. 1 hour
2. 2 hours
3. 4 hours
4. 6 hours

26. Hot TCS food on a steam table should be held at:

1. 125°F or higher

2. 130°F or higher
3. 135°F or higher
4. 140°F or higher

27. FAT TOM stands for:

1. Food, Acid, Time, Temperature, Oxygen, Moisture
2. Food, Air, Trust, Time, Order, Money
3. Fat, Acid, Temperature, Tomorrow, Oil, Milk
4. Food, Allergy, Texture, Touch, Order, Meat

28. Which pathogen is MOST commonly linked to ready-to-eat foods handled by sick workers?

1. Norovirus
2. Botulism
3. *E. coli* O157:H7
4. Salmonella spp.

29. Jaundice in a food handler usually indicates:

1. Hepatitis A
2. Norovirus
3. Salmonella
4. *E. coli*

30. Which is a physical hazard?

1. Glass shard
2. Aflatoxin
3. Norovirus
4. Cleaning chemical residue

31. Ciguatera toxin is found in:

1. Shellfish
2. Certain predatory reef fish (e.g., barracuda, amberjack)
3. Tuna held at warm temperatures
4. Raw chicken

32. Scombroid poisoning occurs because of:

1. Algae toxins
2. Histamine produced by bacterial spoilage at warm temperatures
3. Parasitic infection
4. Mercury

33. When must a Safety Data Sheet (SDS) be available?

1. Monthly
2. For every chemical used in the operation
3. Only on request
4. Only for the health inspector

34. The backup of sewage into a food-prep area is a(n):

1. Inconvenience
2. Imminent health hazard — close and call the health department
3. Core violation only
4. OSHA-only matter

35. Chlorine sanitizer should have a concentration of:

1. 10–25 ppm
2. 50–99 ppm
3. 100–200 ppm
4. 200–400 ppm

36. The minimum contact time for a properly mixed chlorine sanitizer is:

1. 3 seconds
2. 7 seconds
3. 30 seconds
4. 60 seconds

37. In a 3-compartment sink, what is the minimum water temperature for the wash compartment?

1. 80°F
2. 100°F
3. 110°F
4. 171°F

38. In heat sanitizing at a 3-compartment sink, items must be immersed in water for at least:

1. 30 seconds at 171°F
2. 15 seconds at 171°F
3. 30 seconds at 110°F
4. 2 minutes at 130°F

39. The final rinse of a high-temperature dishmachine must reach:

1. 110°F
2. 140°F

3. 160°F
4. 180°F at the manifold (165°F stationary rack)

40. After ware-washing, dishes must be:

1. Towel-dried
2. Air-dried on a drainboard
3. Stacked wet
4. Wiped with a cloth

41. Food-contact surfaces used continuously with TCS food must be cleaned and sanitized at least every:

1. 2 hours
2. 4 hours
3. 6 hours
4. 8 hours

42. Stationary tabletop equipment should be mounted on legs at least:

1. 2 inches
2. 4 inches
3. 6 inches
4. 8 inches

43. Floor-mounted equipment should be on legs at least:

1. 4 inches
2. 6 inches
3. 8 inches
4. 12 inches

44. A bimetallic stemmed thermometer is calibrated to read:

1. 32°F in ice water
2. 0°F in a freezer
3. 40°F in cold tap water
4. 70°F at room temp

45. Which is the ONLY sure way to prevent backflow of contaminated water?

1. Vacuum breaker
2. Air gap
3. Check valve
4. Pressure-reducing valve

46. In food-prep areas, lighting must be at least:

1. 10 foot-candles
2. 20 foot-candles
3. 30 foot-candles
4. 50 foot-candles

47. Light bulbs in food-prep areas must be:

1. Shatter-resistant or shielded
2. Any standard bulb

3. LED only
4. Incandescent only

48. In an Integrated Pest Management (IPM) program, the first strategy is to:

1. Apply pesticides regularly
2. Deny pests entry, food, water, and shelter
3. Hire an exterminator for weekly visits
4. Use glue traps only

49. Pesticides in a food-service operation should be applied by:

1. Any trained employee
2. The manager on Sundays
3. A licensed Pest Control Operator (PCO)
4. The dishwasher

50. Which of the following signs is MOST consistent with a rodent infestation?

1. Webs in the corner
2. Capsule-shaped droppings and gnaw marks
3. Moldy bread
4. Dust on a shelf

51. A Critical Control Point (CCP) is:

1. Any step in the flow of food
2. The last step at which a hazard can be prevented, eliminated, or reduced
3. The first step food enters the operation
4. A step only managers perform

52. The first principle of HACCP is:

1. Identify CCPs
2. Conduct a hazard analysis
3. Establish critical limits
4. Keep records

53. Which process REQUIRES a variance and HACCP plan?

1. Reheating leftover soup
2. Reduced-oxygen packaging (ROP) of TCS food for extended shelf life
3. Roasting a turkey for Thanksgiving
4. Baking bread

54. Smoking food for flavor only (not preservation):

1. Requires a variance
2. Does NOT require a variance
3. Is never allowed
4. Requires USDA approval

55. The letters in A.L.E.R.T. (food defense) stand for:

1. Assess, Log, Evaluate, Record, Train
2. Assure, Look, Employees, Reports, Threats
3. Acid, Light, Energy, Rinse, Temp
4. Always, Learn, Eat, Recycle, Thrive

56. Which federal agency inspects meat, poultry, and egg products?

1. FDA
2. USDA
3. CDC
4. EPA

57. Which agency publishes the Food Code?

1. CDC
2. EPA
3. FDA
4. USDA

58. A priority violation discovered during inspection must generally be:

1. Corrected within 30 days
2. Corrected immediately
3. Corrected only if convenient
4. Reported to the FDA

59. A food handler was diagnosed with Hepatitis A. The manager must:

1. Exclude the employee and report to the regulatory authority
2. Restrict the employee
3. Allow the employee to return immediately
4. Ignore, as it's not a foodborne illness

60. A norovirus diagnosis in a food handler must be reported to the regulatory authority within:

1. 24 hours
2. 48 hours

3. 7 days
4. 30 days

61. Which is a high-risk population for foodborne illness?

1. Healthy adults
2. Teenage athletes
3. Infants, pregnant people, the elderly, and immunocompromised individuals
4. Anyone under 40

62. How long can gloves be worn during continuous use before they must be changed?

1. 1 hour
2. 2 hours
3. 4 hours (or when contaminated, torn, or switching tasks)
4. 8 hours

63. A food handler with an infected cut on their finger should:

1. Be restricted from food prep — the cut is infected
2. Continue working with a glove
3. Keep working if they wash their hands more often
4. Take a pain reliever

64. Which jewelry is acceptable on a food handler's hands?

1. A single plain-band ring
2. A watch with a band
3. A medical-alert bracelet
4. A diamond engagement ring

65. A customer calls saying they believe they got sick after eating at your restaurant. You should:

1. Deny any responsibility
2. Get details (what they ate, when, symptoms) and notify the health department
3. Offer a coupon
4. Hang up

66. A recalled food item should be:

1. Thrown away immediately
2. Served as a special before it expires
3. Separated, labeled "DO NOT USE", and held until disposition
4. Returned to the customer who complained

67. Which is MOST likely to cause a chemical hazard?

1. Incorrectly stored cleaner near dry food
2. Raw chicken on the top shelf
3. Wet wiping cloth
4. Broken glass

68. Grade A milk must be received at:

1. 41°F or lower
2. 45°F or lower
3. 50°F or lower
4. 135°F or higher

69. In which order, top-to-bottom, should the following be stored in one cooler?

1. RTE · poultry · ground meat · whole meat · seafood
2. RTE · seafood · whole meat · ground meat · poultry
3. Poultry · RTE · seafood · ground meat · whole meat
4. Whole meat · ground meat · seafood · poultry · RTE

70. The day an in-house RTE TCS food is prepared counts as:

1. Day 0
2. Day 1
3. Optional — depends on jurisdiction
4. Neither — only freezing time counts

71. Chemical sanitizers must be checked with:

1. pH meter
2. Test kit / test strip specific to the chemical
3. Visual inspection alone
4. Thermometer

72. Which allergen was officially added as the 9th major allergen by the FASTER Act in 2021?

1. Corn
2. Mustard
3. Sesame
4. Celery

73. An ill employee who has been symptom-free of vomiting or diarrhea for how long may return to work?

1. 4 hours
2. 12 hours

3. 24 hours (check local rules — some require 48)
4. 7 days

74. Where should a handwashing sink be located?

1. At the back of the kitchen, once per floor
2. Conveniently located in prep and warewash areas, and in restrooms
3. In the manager's office
4. Near the dumpster

75. Handwashing sink water must reach at least:

1. 80°F
2. 100°F
3. 110°F
4. 120°F

76. Clean, sanitized utensils should be stored:

1. Handle up, off the floor, in a clean protected area
2. Handle down, resting on the food side
3. In the dishwasher
4. On the prep counter

77. An ice scoop should be stored:

1. Buried in the ice
2. Outside the ice bin, on a clean surface
3. In the customer's glass
4. In a bucket of water

78. Garbage containers in food-prep areas should be:

1. Wood
2. Leakproof, waterproof, pest-proof, and easy to clean
3. Uncovered for convenience
4. Next to the prep sink

79. Certified Food Protection Manager certifications are typically valid for:

1. 1 year
2. 2 years
3. 5 years
4. Lifetime

80. The local health inspector arrives unannounced during lunch service. The best response is to:

1. Ask them to come back later
2. Refuse entry
3. Introduce yourself, accompany them, take notes, cooperate
4. Call the FDA to complain

Answer Key & Rationale

Check each answer. Where you missed a question, review the cited chapter before exam day.

1. C — Cooked potatoes. Cooked plants become TCS. Uncut melons, dry rice, and bread rolls are not TCS. *(Ch 2)*

2. B — 41°F to 135°F. The FDA-defined temperature danger zone. *(Ch 3)*

3. C — 155°F for 17 s. Ground meat is 155°F. *(Ch 8)*

4. D — 165°F. All poultry cooks to 165°F, whole or ground. *(Ch 8)*

5. C — 7 days. Day of prep counts as day 1; discard after 7 days at 41°F. *(Ch 7)*

6. B — 2 hours. Stage 1 of the 2-stage cooling rule. *(Ch 9)*

7. C — 4 more hours. Stage 2 adds 4 more hours for a total of 6. *(Ch 9)*

8. D — 165°F for 15 s within 2 hours. Hard limit for reheat-for-hot-hold. *(Ch 9)*

9. C — 20 seconds total. 10–15 s of active scrubbing; ~20 s total procedure. *(Ch 5)*

10. C — After handwashing only. Never a substitute. *(Ch 5)*

11. C — Exclude. Vomiting/diarrhea requires exclusion. *(Ch 5)*

12. C — Jaundice. Indicates hepatitis A — exclude always. *(Ch 5)*

13. B — Allergen transfer. Cross-contact = allergen; cross-contamination = pathogen. *(Ch 4)*

14. B — Sesame. Added by the FASTER Act (2021). *(Ch 4)*

15. B — Throat swelling, difficulty breathing, drop in BP. Medical emergency. *(Ch 4)*

16. D — 90 days. Tags kept 90 days from the date the last shellfish sold. *(Ch 6)*

17. C — Reject. Large ice crystals indicate thaw/refreeze. *(Ch 6)*

18. B — 45°F. Shellfish and shell eggs arrive at ≤45°F air temp. *(Ch 6)*

19. B — Bottom shelf. Poultry has the highest cook temp (165°F) so it sits at the bottom. *(Ch 7)*

20. B — 6 inches off the floor. Standard dry/cooler storage rule. *(Ch 7)*

21. B — Room-temp thawing. Never approved. The other three are the valid methods (along with thawing during cooking). *(Ch 8)*

22. C — 4 minutes. Whole roasts at 145°F need a 4-minute hold. *(Ch 8)*

23. B — Rest, covered, for 2 minutes. Microwave animal food rule. *(Ch 8)*

24. B — Consumer advisory. Required for undercooked animal foods on the menu. *(Ch 8)*

25. C — 4 hours. Starting at 41°F cold TPHC = 4 hours. *(Ch 9)*

26. C — 135°F or higher. Hot-holding minimum. *(Ch 9)*

27. A — Food, Acidity, Temperature, Time, Oxygen, Moisture. *(Ch 3)*

28. A — Norovirus. The leading cause of foodborne illness, commonly from RTE food handled by sick workers. *(Ch 3)*

29. A — Hepatitis A. Jaundice is the telltale sign. *(Ch 3 & 5)*

30. A — Glass shard. Physical contaminant. B is chemical, C is biological, D is chemical. *(Ch 3)*

31. B — Predatory reef fish. Barracuda, amberjack, grouper in tropical waters. *(Ch 3)*

32. B — Histamine from bacterial spoilage. Happens in scombroid (tuna/mahi/mackerel) family when temp-abused. *(Ch 3)*

33. B — For every chemical used. SDS must be available; often also required for inspection. *(Ch 3 & 10)*

34. B — Imminent health hazard. Close operation immediately and notify the health department. *(Ch 11)*

35. B — 50–99 ppm. *(Ch 10)*

36. B — 7 seconds. Chlorine is the fastest-acting. *(Ch 10)*

37. C — 110°F. Minimum for the wash compartment. *(Ch 10)*

38. A — 30 s at 171°F. Heat sanitizing in a 3-comp sink. *(Ch 10)*

39. D — 180°F at the manifold. (165°F for stationary-rack machines.) *(Ch 10)*

40. B — Air-dry on a drainboard. Never towel-dry. *(Ch 10)*

41. B — Every 4 hours. Clean & sanitize schedule for continuous TCS use. *(Ch 10)*

42. B — 4 inches. Tabletop. *(Ch 11)*

43. B — 6 inches. Floor-mounted. *(Ch 11)*

44. A — 32°F in ice water. Ice-point calibration. *(Ch 11)*

45. B — Air gap. Only 100% reliable backflow preventer. *(Ch 11)*

46. D — 50 foot-candles. Prep-area minimum. *(Ch 11)*

47. A — Shatter-resistant or shielded. Prevents glass contamination. *(Ch 11)*

48. B — Deny pests entry, food, water, shelter. IPM prevention-first. *(Ch 12)*

49. C — A licensed PCO. Or an employee under PCO supervision. *(Ch 12)*

50. B — Capsule droppings & gnaw marks. Rats/mice. *(Ch 12)*

51. B — Last step to prevent/eliminate a hazard. Key HACCP definition. *(Ch 13)*

52. B — Conduct a hazard analysis. Step 1 of 7. *(Ch 13)*

53. B — ROP of TCS food for extended shelf life. Requires a variance. *(Ch 13)*

54. B — Does NOT require a variance. Flavor smoking is fine; preservation smoking needs one. *(Ch 13)*

55. B — Assure, Look, Employees, Reports, Threats. *(Ch 14)*

56. B — USDA. Meat, poultry, eggs. *(Ch 14)*

57. C — FDA. Publishes the model Food Code. *(Ch 14)*

58. B — Immediately. Priority violations = immediate correction. *(Ch 14)*

59. A — Exclude + report. Hepatitis A → exclusion + regulatory report. *(Ch 5)*

60. B — 48 hours. Norovirus report window. (Hepatitis A is 30 days.) *(Ch 5)*

61. C — Infants, pregnant people, elderly, immunocompromised. Plus preschool & nursing home residents. *(Ch 2)*

62. C — 4 hours. Also change when torn, contaminated, or switching tasks. *(Ch 5)*

63. A — Restrict. Infected cuts = restriction from food prep. *(Ch 5)*

64. A — Plain-band ring. Only allowed hand jewelry; watches/bracelets not allowed. *(Ch 5)*

65. B — Get details and notify the health department. Take complaints seriously. *(Ch 13)*

66. C — Separate, label "DO NOT USE", hold for disposition. Don't destroy until instructed. *(Ch 13)*

67. A — Cleaner stored near dry food. Classic chemical contamination risk. *(Ch 3 & 7)*

68. B — 45°F or lower. Milk is received at 45°F or lower and must be cooled to 41°F within 4 hours. (Shell eggs and live shellfish: air temp 45°F.) *(Ch 6)*

69. B — RTE · seafood · whole meat · ground meat · poultry. Ordered by rising minimum cook temperature. *(Ch 7)*

70. B — Day 1. The day of prep counts toward the 7-day maximum. *(Ch 7)*

71. B — Test strip specific to the chemical. Chlorine strip for chlorine, quat strip for quats. *(Ch 10)*

72. C — Sesame. FASTER Act, January 1, 2023 effective date. *(Ch 4)*

73. C — 24 hours. (Some jurisdictions require 48.) *(Ch 5)*

74. B — Conveniently located in prep, warewash, and restrooms. *(Ch 5 & 11)*

75. B — 100°F. Minimum temperature at the handwash sink. *(Ch 5)*

76. A — Handle up, off the floor, in a protected area. Prevents contamination of food-contact surfaces. *(Ch 9)*

77. B — Outside the ice bin on a clean surface. Never stored in the ice. *(Ch 9)*

78. B — Leakproof, waterproof, pest-proof, easy to clean. *(Ch 11)*

79. C — 5 years. Typical validity for a ServSafe Manager certificate. *(Ch 14)*

80. C — Introduce yourself, accompany, cooperate. Never obstruct a lawful inspection. *(Ch 14)*

A

APPENDIX

Quick Reference & Glossary

> Tear-out reference pages for the week before your exam. Every number, temperature, and critical definition in one place — and a glossary of 40+ terms you may see on the test.

IN THIS APPENDIX

- Master temperature chart
- Sanitizer comparison chart
- Pathogen summary
- Key time limits
- Glossary of 40+ terms

Master Temperature Chart

Cooking — Minimum Internal Temperatures	
165°F < 1 s	Poultry (whole & ground) · Stuffing · Stuffed food · Dishes with previously cooked TCS · ALL microwave-cooked animal food · ALL reheat-for-hot-hold
155°F 17 s	Ground meat (beef/pork) · Ground seafood · Injected/tenderized meat · Eggs held for service · Ratites
145°F 15 s	Whole beef/pork/veal/lamb · Seafood · Eggs cooked to order (immediate service)
145°F 4 min	Roasts — beef/pork/veal/lamb
135°F	Plant foods for hot-holding · Commercially packaged RTE food reheated for hot-hold

Holding, Receiving & Storage	
Hot TCS holding	**135°F** or higher
Cold TCS holding	**41°F** or lower
Receive cold TCS (most)	41°F or lower
Receive shell eggs, live shellfish	Air temp 45°F or lower
Receive milk	45°F or lower (cool to 41°F in 4 hrs)
Receive hot TCS	135°F or higher
Receive frozen food	Frozen solid, no large ice crystals
Dry-storage room	50–70°F · 50–60% humidity
Handwashing sink water	Minimum 100°F
3-comp sink wash water	Minimum 110°F
3-comp sink heat sanitize	171°F for ≥ 30 s
High-temp dishmachine rinse	180°F at manifold (165°F stationary)
Chemical dishmachine rinse	120°F minimum (per mfr)
Cooling — Stage 1	135°F → 70°F in 2 hrs
Cooling — Stage 2	70°F → 41°F in 4 more hrs (6 hrs total)
Reheating for hot-hold	165°F for 15 s, within 2 hrs

Sanitizer Comparison Chart

Property	Chlorine	Iodine	Quats
Concentration	50–99 ppm	12.5–25 ppm	Per manufacturer (often ~200 ppm)
Water temp	≥ 75°F (or 100°F if using higher concentrations)	≥ 68°F	≥ 75°F
pH	≤ 10	≤ 5.0	Per manufacturer
Contact time	7 seconds	30 seconds	30 seconds
Water hardness	Any	Any	Reduced effectiveness in hard water
Notes	Corrosive; inactivated by organic soil	Stains plastic/ porcelain	Can leave film

Pathogen Quick Summary

Pathogen	Source	Symptoms	Prevention
Norovirus *(report within 48 hrs)*	RTE food, ice, contaminated water; infected worker	Vomiting, diarrhea, nausea	Exclude sick workers; handwashing; no bare-hand contact with RTE food
Hepatitis A *(report within 30 days)*	RTE food, shellfish from polluted water	Jaundice, fatigue, dark urine	Exclude jaundiced workers; handwashing; source shellfish from approved beds
Salmonella Typhi *(report)*	Humans (carriers); RTE food	High fever, body aches	Exclude infected workers; hand hygiene
Nontyphoidal Salmonella *(report)*	Poultry, eggs, produce	Diarrhea, fever, cramps	Cook poultry to 165°F; pasteurized eggs for high-risk
Shigella spp. *(report)*	RTE food, contaminated water; feces	Bloody diarrhea, cramps	Exclude sick workers; handwashing; control flies
STEC (E. coli) *(report)*	Ground beef, unpasteurized dairy & juice, produce	Bloody diarrhea, possible HUS	Cook ground meat to 155°F+; pasteurization; good agricultural practices
Listeria monocytogenes	Deli meats, soft cheese, smoked seafood, raw produce	Flu-like; severe for pregnant people	Date-mark RTE TCS; avoid high-risk items in hospitals/ nursing homes
C. botulinum	Anaerobic environments — ROP, canned goods, oil infusions	Neurologic: blurred vision, paralysis; can be fatal	Follow ROP variance; reject swollen cans; refrigerate oils
C. perfringens	Meat & poultry in large batches held warm	Cramps, diarrhea within 8–22 hrs	Rapid cooling, correct holding temps
B. cereus	Cooked rice, pasta, starchy foods held warm	Vomiting or diarrhea	Cool rapidly; do not hold cooked starches warm for long
Staph aureus	Skin, nose — carried by humans	Vomiting within hours (toxin)	Handwashing; cover cuts; don't touch RTE food

Key Time Limits to Memorize

Rule	Time
Cooling Stage 1 (135°F → 70°F)	**2 hours**
Cooling Stage 2 (70°F → 41°F)	**4 hours**
Total cooling time	**6 hours**
Reheat to 165°F must happen within	**2 hours**
TPHC cold/hot food (start at safe temp)	**4 hours** then discard
TPHC cold food held ≤ 70°F (no temp control)	**6 hours** then discard
Change gloves during continuous use	Every **4 hours**
Max storage of in-house RTE TCS at 41°F	**7 days** (day 1 = prep day)
Hand-wash total procedure / scrub	**~20 s** / 10–15 s scrub
Shellstock ID tag retention	**90 days** from last sale
Exclusion return after V/D	**24 hrs** symptom-free (48 in some states)
Norovirus report to regulatory authority	**48 hours**
Hepatitis A report	**30 days**
Typical ServSafe Manager certification validity	**5 years**

Glossary

Active Managerial Control. A food-safety management approach in which the Person-in-Charge proactively identifies and addresses hazards.

Air Gap. An unobstructed vertical space between a water-supply outlet and the flood-level rim of a fixture — the only fully reliable backflow prevention.

A.L.E.R.T. FDA food-defense framework: Assure, Look, Employees, Reports, Threats.

Allergen. A protein in a food that triggers an abnormal immune response; the Big 9 account for the majority of U.S. allergic reactions.

Backflow. Reverse flow of water or other liquids from a contaminated source into the potable water supply.

Big 6. Pathogens for which an infected or ill food handler must be excluded and a diagnosis reported: Norovirus, Hepatitis A, *Salmonella* Typhi, nontyphoidal *Salmonella*, *Shigella*, and STEC (Shiga toxin–producing *E. coli*).

Big 9. The nine major allergens in the U.S.: milk, eggs, fish, crustacean shellfish, wheat, soy, peanuts, tree nuts, and (added 2021) sesame.

Biological Hazard. Living organisms or their toxins that can cause illness — bacteria, viruses, parasites, fungi, natural toxins.

CCP (Critical Control Point). A step at which a hazard can be prevented, eliminated, or reduced to a safe level; the last such step before the customer.

Chemical Hazard. A substance that can cause illness, such as a cleaner, sanitizer, pesticide, metal, or food additive.

Coving. A curved sealed edge where the floor meets the wall; eliminates right-angle dirt traps.

Cross-Contact. Transfer of an allergen from one food to another. Related to but distinct from cross-contamination (pathogens).

Cross-Contamination. Transfer of pathogens from one surface or food to another.

Consumer Advisory. A menu notice — disclosure + reminder — required when raw or undercooked animal foods are served.

Critical Limit. A measurable value (temperature, time, concentration) that must be achieved at a CCP to control a hazard.

Danger Zone. 41°F–135°F (5°C–57°C) — the temperature range in which most pathogens thrive.

Date Marking. Labeling ready-to-eat TCS food with the date by which it must be used or discarded.

Exclusion. Removing an employee from the operation entirely because of illness or diagnosis.

FAT TOM. The six conditions that support bacterial growth: Food, Acidity, Temperature, Time, Oxygen, Moisture.

FIFO. First-In, First-Out — a stock rotation method.

Food Code. The FDA's model regulations for retail and food-service food safety; adopted (with modifications) by state and local jurisdictions.

Foodborne Illness Outbreak. Two or more people report the same illness after eating the same food, and laboratory or epidemiological data confirm the food as the source.

Foodborne Infection. Illness caused by ingesting food containing live pathogens that then multiply in the body.

Foodborne Intoxication. Illness caused by ingesting toxins produced by pathogens in the food (often before the food is consumed).

HACCP. Hazard Analysis and Critical Control Points — a systematic food-safety management framework.

Highly Susceptible Population. People more likely to become seriously ill from foodborne illness — infants, young children, pregnant people, elderly, immunocompromised.

IPM (Integrated Pest Management). A program combining prevention, monitoring, and control to manage pests with minimal pesticide use.

PCO (Pest Control Operator). A licensed professional who applies pesticides and manages pest problems.

PIC (Person-in-Charge). The individual present who is responsible for ensuring food-safety practices are followed.

ppm. Parts per million — a measure of sanitizer concentration.

Potable Water. Water that is safe for drinking, cooking, and handwashing.

Prerequisite Programs. Basic operating procedures (hygiene, cleaning, maintenance) that must be in place for a HACCP plan to work.

Priority Violation. A violation directly linked to foodborne illness risk; must be corrected immediately.

ROP (Reduced-Oxygen Packaging). MAP, vacuum sealing, sous-vide — any packaging method that lowers

oxygen levels. Requires a variance and HACCP plan for TCS food with extended shelf life.

Restriction. Limiting an employee's duties because of illness, without fully excluding them.

Sanitizer. A chemical or heat process that reduces pathogens on a cleaned surface to safe levels.

SDS (Safety Data Sheet). A document required by OSHA providing safety information for a chemical.

Shellstock ID Tag. A tag attached to live molluscan shellfish identifying harvester, location, and date; must be kept 90 days.

Sneeze Guard / Food Shield. A barrier between customers and food at a self-service bar.

TCS Food (Time/Temperature Control for Safety). Food that requires time and temperature control to prevent pathogen growth or toxin formation — examples include meat, poultry, dairy, eggs, cooked plants, cut melons, cut leafy greens, cut tomatoes, sprouts, shell eggs, and garlic-in-oil mixtures.

TPHC (Time as a Public Health Control). A written procedure allowing time — instead of temperature — to be used to control pathogen growth, for a maximum period.

USDA Inspection Stamp. A round or shield-shaped mark required on meat, poultry, and egg products.

Variance. Written approval from the regulatory authority to perform a process outside the standard Food Code rules (e.g., smoking for preservation, ROP).

Verification. Step 6 of HACCP — ongoing confirmation that the system is working as designed.

You're Ready.

You've studied the full flow of food, memorized the temperatures, mastered the sanitizer chart, and rehearsed with 80 practice questions.

On exam day, trust what you've learned. Read each question fully, eliminate obviously wrong answers, and choose the *best* — not just the first plausible — response. Flag hard ones and return to them. You need 70% to pass — 56 of 80 scored — which you can absolutely do.

Night Before Checklist

- Review the Master Temperature Chart one more time
- Re-read the Sanitizer Chart
- Re-read the Big 6 pathogens
- Confirm your exam appointment time and location / ID
- Sleep — a tired brain misses easy questions

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