

Substitute Study Guide

Santa Clarita Valley
School Food Services Agency



Why is Food Safety Important?

According to the Center for Disease Control, it is estimated that each year in the United States alone there are 76 million cases of foodborne illness resulting in 325,000 hospitalizations and 5,000 deaths. This is why all food service workers must learn how to prevent illness by following the methods used in this book to serve safe food.

What Makes People Sick from Food?

People can get sick when they eat food contaminated with one of the three major hazards. These hazards include:



Physical—objects in food that cause injury, like glass, jewelry, bandages, staples, hair, and fingernails.

Biological—germs that cannot be seen, like parasites, bacteria and viruses

Chemical—poisonous substances, like cleaning agents and pesticides.

Bacteria and viruses are too tiny to see with your eyes. If you do not wash your hands the proper way or keep food at the correct temperature, your customers may get sick. This is called **food-borne illness**, which is commonly called food poisoning. Some foods are more likely than others to support the rapid growth of bacteria that cause foodborne illness; these are called **potentially hazardous foods (time/temperature control for safety foods)**. **Potentially hazardous foods (time/temperature control for safety foods)** are foods that require time/temperature control for safety to limit the rapid growth of bacteria. These include meat, fish, poultry, eggs, dairy products, sliced melons, cut lettuce and tomatoes, bean sprouts, and garlic-in-oil mixtures. The term also includes many other cooked foods such as rice, refried beans, soups, gravies, sauces and potatoes. These foods must be held at the proper temperature to avoid rapid multiplication of bacteria.

Four Causes of Food-borne Illness

1. **Bacteria** are the most common causes of food-borne illness. **Bacteria** grow fastest when they are kept in the "**Danger Zone**". Bacteria are alive and need different conditions to survive and multiply, but in general they need the following conditions to grow: **food, moisture, temperature** and **time**. Some **bacteria** produce toxins which are poisonous and may make people sick. One kind of **bacteria** that you may have heard about is **Salmonella**; it is found in dairy foods, poultry and eggs and it can cause very serious foodborne illness.
2. **Viruses** can also cause food-borne illness. **Hepatitis A** is spread by a **virus**. Someone can have the **virus** and not know it. When a food worker with the **virus** does not wash their hands well after using the toilet, the **virus** can get on the food workers hands and then into the food. This is one reason why the food code requires that all food workers must wash their hands and wear single-use, non-latex gloves.
3. **Parasites** are tiny worms or bugs that live in fish and meat. If they are frozen at a specific temperature long enough or cooked long enough, **parasites** will be destroyed.
4. **Chemicals**, such as rat bait or cleaners can cause some **foodborne illnesses**. Keep all chemicals in labeled containers and store chemicals away from food and food preparation areas.

Unlike parasites, **bacteria** and **viruses** are not always killed by freezing. They will survive and start growing again under the right conditions. **It is important to understand when a food is contaminated with bacteria or viruses, the food will usually smell fine, look safe and taste good but can still make someone very sick.**

Major Food Allergens

Each year, millions of people in the United States have allergic reactions to food. Most food allergies cause minor symptoms. However, some food allergies can cause severe, even life-threatening reactions. Around 90% of serious food allergies are caused by contact with the proteins in these **eight** foods: **milk, eggs, fish, Crustacean shellfish, tree nuts, wheat, peanuts, or soybeans.**

Food manufacturers must clearly identify any major food allergens on food labels. In an eating establishment, as a food service worker you should remember the following things when dealing with a student with a disclosed food allergy:

1. **Refer** student food allergy concerns to the person-in-charge, your manager.
2. The student is **required** to have a note from their doctor on file about the food allergy.
3. **Remember** to check for **cross-contact** during food preparation. Cross-contact is when the protein of a possible food allergy causing food comes in contact with another food. Cross-contact can happen when using the same cooking utensils, cutting boards, food containers, or gloves, for both items of food.
4. **When in doubt**, don't make the student take the food they say they are allergic to, and notify your manager of the student's name so they can follow up with the family.

***If a student has an allergic reaction, notify the school office, your manager, and call 911 immediately.**

Keeping Contamination Out

Personal Hygiene and Cleanliness

Good personal hygiene practices are an essential part of providing safe food to your customers. **Hand washing is the most important practice.** Washing your hands thoroughly and frequently will prevent harmful bacteria and viruses from entering the foods you prepare.

Employees must wash their hands and forearms for **at least 20 seconds** in an approved and dedicated hand washing sink by:

1. Moisten hands with warm water
2. Apply hand soap
3. Vigorously rub hands together scrubbing between your fingers, under your fingernails, your forearms, and the back of your hands. You must continue scrubbing for at least **10-15 seconds**. It is the hand soap combined with the scrubbing action that removes the dirt, bacteria, and viruses from your hands.
4. Completely rinse your hands under warm running water for the remaining **5-10 seconds**.
5. Dry hands with a disposable paper towel.
6. Turn off the faucet with the same paper towel used to dry your hands. It is a good idea to use the paper towel to open the door when leaving the bathroom.



Teach yourself to be aware of where your hands are at all times. You must wash your hands every time your hands or gloves become dirty or contaminated. Here are some examples of when to wash:

- when you first arrive at work
- when you return to work after breaks
- before you touch food, clean utensils or work surfaces
- after you touch your face, mouth or hair
- after covering a sneeze or a cough with your hands
- after you touch raw eggs, meat, fish, or poultry

- after you touch dirty dishes, garbage, or any other unclean surface
- after you use the toilet and before you start working with food again
- after you smoke, drink, eat, talk on the phone, or handle money
- after wiping your hands on your clothes or apron

Touching **ready-to-eat foods** with your bare hands is not allowed. **Ready-to-eat** foods are foods that will not receive further washing or cooking prior to consumption (Examples: salads, sandwich ingredients, fruit, bread, tortillas, cold salads, garnishes, chips and ice, pizza, etc). A **barrier** such as non-latex gloves, deli papers, tongs, spatulas or utensils is required when working with these foods. Non-latex gloves must be worn if you wear nail polish, fake nails, have sores, burns or cuts on your hands. It is important to guard these foods against contamination because they will not be cooked to remove bacteria.

Be aware that neither gloves nor **hand sanitizers** are a substitute for proper hand washing. Before you put gloves on, you must still wash your hands in all the same situations you would if you were not using gloves, and you must switch to clean gloves whenever they become dirty or contaminated.

Do Not Work If You Are Sick

If you feel sick you should let your boss know and not go to work. Not only can you infect the people you work with, but you may also pose a danger of infecting others through the foods you prepare. This is especially true if you are sick with vomiting, fever, diarrhea, jaundice, sore throat with a fever. For illnesses such as one of the **BIG FIVE: Hepatitis A virus, Salmonella typhi, Shigella spp., Escherichia coli 0157:H7 (E. coli 0157:H7), or Norovirus**, you are required to stay home until a doctor tells you it is okay to go back to work again.

Do not work with food and tell your boss if you have an **infected** cut, burn or sore on your hand. If the sore or cut is not infected, cover it with an impermeable bandage and wear a non-latex glove over the bandage.

Personal Appearance and Behavior

You want to look clean and be clean when you are at work:

- Your clothes and apron must be clean.
- Fingernails must be cut and trimmed.
- All jewelry, with the exception of a simple wedding band, must be removed prior to handling food.
- Keep your hair clean and wear an effective hair restraint, such as a hair net.
- Smoking, eating or drinking in food preparation, service or storage areas is prohibited
- You may not have a drink cup or bottle in the food preparation area.

Temperature Control

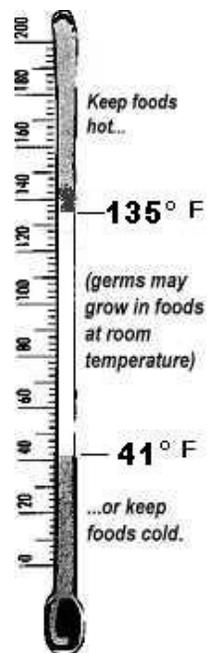
The Danger Zone

Many of the foods you serve are **ready-to-eat** making it important to prevent the growth of bacteria that may already be in the food. Temperature can be used to control the rapid growth of harmful **bacteria**.

The range of temperatures between 41° F and 135° F is called the **Danger Zone**. **Bacteria** grow very quickly in this temperature range. Whenever possible, you must avoid having foods in the **danger zone**. If you are cooling or heating foods, you must do it in such a way that food passes through the **danger zone** quickly.

Cold Holding

Bacteria do not grow well at cold temperatures. This is why we store **potentially hazardous food (time/temperature control for safety food)** in the refrigerator, salad bar, refrigerated display case, in ice or another approved method. Cold foods must be held at **41° F** or below. Use a calibrated metal stem thermometer to check the food's temperature. If you use ice to keep the food cold on a salad bar or food display, be sure the ice comes up to



the level of the food in the pan or dish. Be sure to replace the ice as it melts. If the food temperature is maintained below 41° F, then it must be **discarded after seven (7) days**.

Hot Holding

Hot cooked foods must be held at **135° F**. Most kitchens use a steam table, oven or other approved equipment to keep the food hot. Be sure to stir the food periodically in a steam table to ensure the food is maintained hot throughout.

Remember – don't mix fresh food with food that has been sitting on the serving line. Empty a pan and put a new full pan out to serve.



Thawing Foods

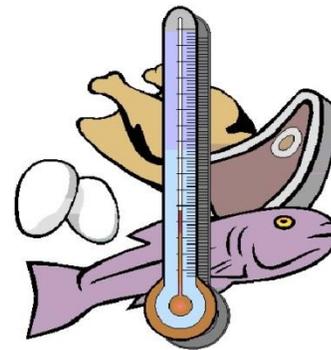
Improper thawing allows bacteria to rapidly grow in the outer layers while the core is still frozen. Do not thaw food at room temperature or in warm water. The three acceptable steps for thawing foods are:

1. When possible, transfer the food from the freezer and place it in the **refrigerator**. This method is the safest since the food will be kept at 41°F and out of the **Danger Zone**. It will take several hours or days depending on the amount (be sure to put different raw meats in separate containers to prevent the juices from transferring or dripping onto other foods).
 2. Thaw the food under **cold running water**; never in warm or hot.
 3. Thawing food in a **microwave** is appropriate only if the food is cooked immediately.
- Don't be tempted to cook a large roast or whole turkey when it is still partially frozen. The core will not reach a safe cooking temperature by the time the outer layer is done. The use of a thermometer is the best way to verify that meat is cooked sufficiently.

Cooking Temperatures

Cooking foods to the proper temperature is the best way to destroy any harmful bacteria that may be present in food. The table below shows safe **minimum** cooking temperatures.

FOOD	TEMPERATURE
Shell eggs	145°F
Pork & fish	145°F
Beef steak, veal & lamb	145°F
Ground meat	155°F
Poultry & stuffed meat	165°F
Reheat leftovers	165°F



Any food cooked in a microwave oven must be cooked to **165° F**, stirred at least once during cooking, and then left to stand covered for a minimum of two minutes prior to serving. The only way to know that the food has been cooked to the proper temperatures is to use a calibrated stem thermometer.

Reheating Food

Food that has been cooked and then cooled may need to be heated again. When you reheat food, do it quickly (within one hour) to **165° F**, regardless of its original cooking temperature. For example, if you cook meatloaf on Monday to 155° F and you cool it down properly; now you want to serve leftovers on Tuesday's buffet line, you must reheat the meatloaf to 165° F.

The right way to do this is using stove burners, microwave ovens, or convection ovens. Stir the food to be sure that all parts of it are hot. Then use your calibrated metal stem thermometer to check the temperature.

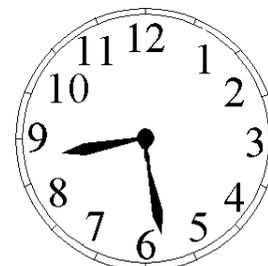
IMPORTANT: Do not place cold foods onto a steam table or warming cart; as the food will not be reheated quickly enough allowing it to be exposed to the “**Danger Zone**” for a long time. Food should only be reheated once.

Do not mix reheated foods with fresh foods.

The Importance of Time

Most (but not all) harmful bacteria need time to grow to dangerous levels. This is why holding food at safe temperatures is important. This is also why cooling and reheating should take place as quickly as possible.

In general, **four hours** is the longest possible time you want to hold **potentially hazardous foods (time/temperature control for safety foods)** in the temperature **danger zone**. Remember that this limit of four hours is —additive. For example, if it takes three hours for the cooked potatoes in your potato salad recipe to cool down to 41° F, you do not want the potato salad to sit out above 41 degrees for more than one additional hour.



Do not hold any **potentially hazardous food (time/temperature control for safety food)** in the **danger zone** for more than 4 hours. Approval and proper documentation is required by the department to use this control. If you discover that a food has been held at an unsafe temperature, but you’re not sure how long, discard it, and let your manager know! The rule is —When in doubt, throw it out!

Food Left At The Table

Once students have eaten and they leave food like chips, crackers, or bread on a plate or at the table, you must throw it away. You **CANNOT** serve it again.

Cross Contamination and Food Storage

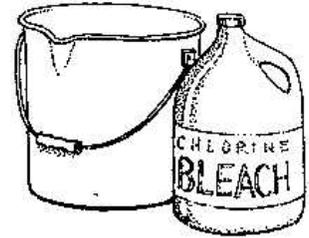
As a food handler you must prevent **cross-contamination**. **Cross-contamination** happens when bacteria and viruses are spread or transferred from one place to another, such as when raw or unclean foods get into foods that are **ready-to-eat** foods. Here are some important ways that you can prevent cross-contamination:

- In the refrigerator: Don't let raw meat, fish, poultry or eggs drip onto foods that will not be cooked before serving; store raw meat, fish, and poultry in separate containers on the lowest shelves of the refrigerator. Raw meats should be stored according to their cooking temperature.
- Wash your hands immediately after handling raw meat, fish, poultry, or eggs.
- Never store foods that will not be cooked before serving in the same container as raw meat, fish, poultry or eggs.
- Use a hard cutting surface or a board that is smooth and non-absorbent, with no splits or holes where bacteria can collect.
- Wash, rinse and sanitize the cutting or work surface and all the utensils and knives after cutting raw meat, fish or poultry.
- Properly wash your hands after handling raw foods.

Never store raw meat, poultry or eggs over **ready-to-eat foods** in a refrigerator or freezer. Reserve the lowest shelves for storing raw meat and eggs. All foods must be stored at least **six inches** off the floor.

Sanitizing

You should always use clean **wiping cloths** to sanitize counter tops, tables, cutting boards and equipment. **Bacteria** can grow very quickly in damp cloths. That is why all **wiping cloths** should be stored in the sanitizing solution that is mixed to proper concentration between uses. Use the appropriate test strips to verify the concentration of the sanitizer. Chlorine sanitizing solution should be between 50 and 100 parts per million (ppm) or 1 Tablespoon of bleach to 1 gallon of water. Be sure the sanitizing solution is always at the proper concentration by changing the sanitizing solution as needed, usually every 2-3 hours depending on usage. Do not let it become dirty; food debris uses up the sanitizer quickly. Do not mix in other chemicals or soap because it changes the effectiveness of the sanitizer.



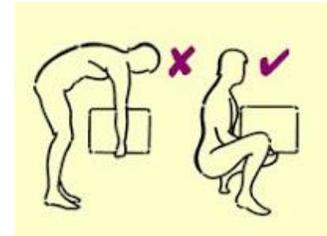
Clean and **sanitize** to prevent **cross-contamination**. Wash, rinse and sanitize each surface that comes in contact with food such as slicers, grinders and cutting boards. Breakdown and sanitize all equipment and machines after each use for proper washing and sanitizing.

General Kitchen Safety

Safe Lifting – Back injuries on the job can be avoided by taking proper precautions.

When lifting, keep your back and neck in alignment, and bend at the knees, not at the waist, and use your legs and abdominal muscles to do the work.

- *Check the weight* of an object before you lift to see if you can lift alone or need help.
- *Stand close* to the object with feet apart about shoulder width.
- *Squat down* by bending your knees
- *Grip with your hands* and pull the object close to your body
- *Straighten your back*, pulling shoulders back, sticking chest out and tightening your stomach muscles.
- *Lift with legs* using thigh muscles. Keep back straight and use smooth movement.
- *Stand and walk straight*. To turn, move feet, keeping back straight.
- *Set load down by squatting*, reversing movements.



Knife Safety – Knives are an essential tool when cooking, but one of the most dangerous things around the kitchen. Remember to:

Use a knife that is the correct size for the job.

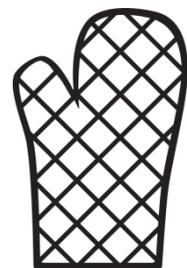
Keep knives sharp and handles secure.

Never drop knives into sinks of soapy water where they can't be seen. They can cause serious cuts. Knives should always be washed separately.

Use a knife for its intended purpose – never for opening cans, boxes, or prying frozen items apart.

Step out of the way when a knife is dropped. Never try to catch one.

Carry a knife by the handle to the side of the body with the blade pointed down.



Avoiding Kitchen Burns – Kitchen burns can happen very easily, especially while taking a hot pan from the oven, for example. Prevent kitchen burns by making these safety precautions a habit:

- Always use oven mitts when taking things out of the oven or removing things from the stove. Protective mitten types are good for taking things out of the oven because they protect the back of your hands, too.
- Use thick, dry potholders or oven mitts when handling hot pans.
- Pull out the oven rack first when removing hot cookware from the oven.
- Open pot lids away from you, like a shield, to avoid steam burns.

Math Practice

Math skills are important for food service workers when working with recipes, production records, and making change. Here are some sample math problems you will want to practice to improve your skills.

Addition

$$\begin{array}{r} 36 \\ +16 \\ \hline \end{array}$$

$$\begin{array}{r} 125 \\ +317 \\ \hline \end{array}$$

$$\begin{array}{r} 601 \\ +109 \\ \hline \end{array}$$

$$\begin{array}{r} 4544 \\ +9503 \\ \hline \end{array}$$

$$\frac{1}{4} + \frac{3}{4} =$$

Subtraction

$$\begin{array}{r} 80 \\ -15 \\ \hline \end{array}$$

$$\begin{array}{r} 197 \\ -28 \\ \hline \end{array}$$

$$\begin{array}{r} 625 \\ -609 \\ \hline \end{array}$$

$$\begin{array}{r} 7985 \\ -525 \\ \hline \end{array}$$

$$\begin{array}{r} 6006 \\ -1248 \\ \hline \end{array}$$

Multiplication

$$\begin{array}{r} 12 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 60 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 868 \\ \times 12 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 754 \\ \times 15 \\ \hline \end{array}$$

Division

$$36 \div 4 =$$

$$30 \div 5 =$$

$$56 \div 7 =$$

$$150 \div 10 =$$

Making Change

<u>An item Costs</u>	<u>Customer gives you</u>	<u>Amount of change</u>
\$0.50	\$1.00	_____
\$1.00	\$5.00	_____
\$1.75	\$2.00	_____
\$3.00	\$10.00	_____
\$5.75	\$20.00	_____
\$0.70	\$1.00	_____
\$4.50	\$20.00	_____