

## LESSON 4

# Food Flow: Keeping Food Safe from Gate to Plate

### GOAL

To understand the commercial food flow process from receiving through reheating and how food safety can be either enhanced or compromised at each step.

### OBJECTIVES

- To recognize the steps in the commercial food service process and to identify at least one food safety concern at each step.
- To comprehend that SOPs (standard operating procedures) are the actions that ensure food is handled safely by all employees.
- To identify the different types of food allergens and how to prevent a food allergy attack in a food service customer.
- To understand that water used in food-service must be from an approved source and to learn how to avoid cross contamination.

### TEACHER BACKGROUND INFORMATION

#### Lesson 4 covers

1. The food flow process
2. SOPs (standard operating procedures) and how to apply the principle in food preparation
3. Food allergens and how to prevent allergic reactions
4. Water supply for food service
5. Ethical behavior for food workers

**Approximate time to teach lesson:** 20–40 min.

#### Definitions

**adulterated**—Food law identifies a number of situations that cause a food to be adulterated and unfit for human use. In the *RSFS* curriculum, this refers to food handled in a way that may allow contamination with pathogens.

**cross contact**—When an allergen is transferred to a food served to the customer.

**cross-connection**—A physical link through which contaminated water can enter a food system's drinking water supply. An example is a hose connected to a faucet and submerged underwater in a sink.

**FIFO**—First in, first out. This means stored items are rotated so that the oldest items are used first.

**food allergy**—The body's negative reaction to a food protein.

**food flow**—The path food takes from receiving and storage through preparation, cooking, holding, serving, cooling, and reheating.

**pathogen**—A disease-causing microorganism.

**SOP**—A Standard Operating Procedure is an outlined step-by-step process covering one aspect of facility and personnel cleanliness and/or safe food-handling practices.

**The Food Flow Process.** Food flow is the handling or preparation of food ingredients or products through the food establishment and service to a customer. Food must be handled safely at each step. Food flow steps are described below

- **Receiving** (*Idaho Food Code 3-202.11*). Receiving is the food service's first contact with food. Food must be obtained from approved sources. Food prepared in a private home may not be used in food service. After receiving, food must be checked off an invoice and stored appropriately and quickly. Temperatures of frozen and refrigerated items must be measured when they are delivered to be sure they have been kept cold enough during transport. To avoid mistakes, and to allow perishable foods to be put away as quickly as possible deliveries should be arranged when the food establishment is not busy.
- **Storage** (*Idaho Food Code 3-305.11*). The freezer, refrigerator or walk-in cooler, and pantry are storage areas where food is held until it is prepared. Follow the FIFO principle—first in, first out—rotating foods so that the newest ingredients are in the back of the storage area, while the older products are moved to the front. If food packages do not have dates, date packages when they are received.
- **Preparation.** Avoidance of cross contamination and the control of food temperature are both very important habits to develop during the preparation stage (cross contamination is discussed in detail in Lesson 6). When large quantities of a time/temperature control for safety food items (TCS) are prepared, the **batch method** is recommended for food safety. (TCS is defined in Lesson 2, Point 6.) Work with only a small amount of the ingredients at one time. For example, if 200 cream puffs are to be filled with custard, handle the ingredients for only 25 at a time. Fill and refrigerate those 25 before handling another 25. This way, perishable ingredients are not exposed to room temperature for a long time. TCS foods held in the Danger Zone (41°F to 135°F) for more than four hours are considered adulterated and must be discarded. Temperatures are discussed in greater detail in Lessons 7 and 8.
- **Cooking** (*Idaho Food Code 3-401.11*). Cooking requires temperature checks with a thermometer to ensure that food is adequately cooked. Specific temperatures and times are required when cooking TCS food to ensure that the pathogens are destroyed. Cooking is covered in Lesson 7.
- **Holding** (*Idaho Food Code 3-501.16*). Holding food is common with buffet-style service. Hot foods must be held above 135°F and cold foods below 41°F to keep TCS foods out of the Danger Zone. Foods must be held in approved serving units. The temperature of foods must be checked at least every four hours.
- **Serving.** Serving means either plating a customer's orders individually or offering self-service. Be aware that customers can contaminate a food bar without realizing it.
- **Cooling** (*Idaho Food Code 3-501.14 & .15*). Large amounts of food

don't cool quickly so divide the food into several smaller, shallow containers before storing them in the refrigerator or walk-in cooler. Cooling is covered in Lesson 8.

- **Reheating** (*Idaho Food Code 3-403*). Reheating must be done within two hours to the required temperature of 165°F for fifteen seconds (or in some cases until boiling) and checked with a thermometer. Reheating is covered in Lesson 7.

**Instant-read Thermometers.** “Instant-read” refers to thermometers that are used to check food temperature at a point in time before the food’s removal from the cooking process. They do not remain in the food during cooking. There are two commonly available types: dial and digital.

- **Dial (bimetal coil) Thermometers.** These instruments require about 15 to 50 seconds to correctly register a temperature. Temperature is measured along 2”–2½” of the lower part of the stem of the thermometer (where the bimetal coil is located), so the thermometer must be inserted deeply into a food item to get an accurate reading. A dial thermometer can be used to test the temperature of a hamburger, if the patty is thick enough, by inserting it into the side of the meat patty.
- **Digital Thermometers.** These instruments have a thermistor (a ceramic material that changes resistance with temperature change) located in the bottom ½-in tip of the stem to measure temperature. A digital thermometer needs to be inserted ½ in into the food item for an accurate reading, so it is a good choice for measuring temperature in thin food. Be sure to position the tip of the stem in the area in the food—usually the center—where you want to measure the temperature. A digital thermometer requires 15 to 40 seconds to register the temperature. Digital thermometers require battery power.

### **Standard Operating Procedures (SOPs)**

A Standard Operating Procedure is a method for carrying out a task. Food service establishments should have in place SOPs for personal hygiene, basic sanitation, and food storage and handling. Any time a new employee is hired, SOPs should be clearly demonstrated, and then followed up with a review. SOPs don't necessarily have to be written in a manual, but should be habits everyone routinely follows. They can be listed on a checklist for students or employees to check off as they are working. An example of an SOP is: “Use a clean, red-colored cutting board to prepare hamburger patties. Do not prepare any other food on this cutting board until it is washed and sanitized.”

Facility and personnel cleanliness are probably the easiest topics for which to develop an SOP checklist. An example would be a checklist covering all the steps an employee should do before starting a work shift, like put on a clean apron or uniform, tie long hair away from your face, remove jewelry and fingernail polish, and wash your hands.

Other checklists could cover correct hand-washing procedures (how and when), ware-washing steps (including how much soap and sanitizing chemical to put in the sinks; how full to fill these sinks; what the water temperature should be; and how often the wash, rinse, and sanitizing sinks should have their water changed), plus how to handle garbage disposal. Employees don't need to actually check the steps off each time they work, but having the checklist posted near where the work is done helps remind everyone how to do the job properly.

The SOP demonstrated in this lesson covers how to safely prepare a hamburger. In some food-service establishments this procedure may be a part of the Hazards Analysis and Critical Control Points (HACCP) plan (covered in Lesson 9) rather than an SOP. Its main points are

- Use a thermometer to test doneness rather than relying on the color of the center of the hamburger or the juices.
- Do not touch the hamburger with your hands, but use a turner to place the hamburger on the grill and a clean turner to place it in the bun to serve. Environmental health specialists note that some establishments use the same turner to pick up the raw hamburger as well as the cooked one. This risks cross contamination.
- Cook the hamburger to 155°F and maintain this temperature for 15 sec. Test it with a clean and sanitized dial (bimetal) thermometer, inserting the stem of the thermometer 2½ in into the meat. Or insert ½ in of a clean and sanitized digital instant-read thermometer probe into the center of the hamburger.
- Wash and sanitize thermometers between uses. See more information about thermometer usage in Lesson 7.

**Food Allergens.** The issue of food allergies has become more important in food service in recent years. Entry-level food service employees need to know that food allergies are serious and can be life threatening. Although hundreds of foods are known to cause allergic reactions, the “Big Eight” account for about 90% of them in the United States. The eight major allergens are milk and dairy products, eggs and egg products, fish, shellfish, wheat, soy and soy products, peanuts, and tree nuts such as almonds, pecans, and walnuts. By law, packaged foods containing these allergens must identify clearly on the label (Food Allergen Labeling and Consumer Protection Act of 2004).

Students should be aware of the symptoms of allergic reaction so that they can recognize when emergency medical help should be called. They should be able to respond to an allergic customer's request for information about allergens in menu items or know who in the food-service establishment is able to answer these questions accurately. Students should also know how to handle foods for customers with food allergies to avoid cross contact.

**Water Supply and Protection** (*Idaho Food Code 5-101.11 & 5-102.11*). Water used in food-service establishments must be from an approved

source. The public water system used by most establishments is an approved source. If an onsite private well is used, the well must be tested for bacteria quarterly and for nitrates/nitrites annually. Food-service establishments are required to keep the most recent test result of the well water on file.

Contaminated water can enter the safe water supply if cross connections occur. Cross connections are situations where water can flow backwards due to siphoning. The most common source of backflow in food service is a hose connected to a faucet that does not have a backflow prevention device. If the hose is below the water level in the sink and the water pressure in the system drops, water in the sink can be suctioned into the building's water-piping system numerous examples like this have occurred.

For example, in a Treasure Valley restaurant, a hose was placed in a wash vat. A change in water pressure caused chemical sanitizer to be sucked out of the vat and into the water distribution system.

Plumbing of the water system is critical to keeping water safe; thus, it must conform to the Idaho Plumbing Code. For example, sinks, mechanical dishwashing systems, ice machines, submerged inlets on dipper wells and steam tables, and water supply to boilers all must be properly plumbed to prevent backflow.

**Commercial Food Service Is Different from Methods Used at Home.** (This material is no longer covered in Lesson 4, but this issue may come up in class.) Food-preparation practices used at home are the responsibility of family members and may not be acceptable for commercial food service. Some of the practices recommended for consumer use at home by various government agencies differ from practices required for food service. This table gives some examples of the differences.

Topic	Food Service Rule	Home/Consumer Recommendation
Ground beef cooking endpoint	155°F for 15 sec	160°F
Time that Time/Temperature Control for Safety Food (TCS) is allowed to be in the Danger Zone	4 hours (then must be discarded)	2 hrs, but reduced to 1 hr when temperature rises above 90°F
Sanitizing of food contact surfaces	Required	Recommendations vary
Hand-washing facilities	Separate sink for hand washing	No recommendation regarding facilities for hand washing

## MATERIALS NEEDED



- White board or easel with paper pad and appropriate markers for the “Food Flow Safety Concerns” activity.
- For the “Let’s Fry a Hamburger!” activity, the following items are needed:
  - Electric frying pan
  - Food spatula
  - 2 hamburger patties
  - Instant-read dial (bimetal) thermometer
  - Instant-read digital thermometer
  - Alcohol wipes (for sanitizing thermometers)
  - Paper plates
  - Meat tongs
- Play dough (make ahead of time, can be doubled)
  - 2 cups flour
  - ½ cup salt
  - 1 tablespoon alum
  - 1½ cups water
  - 1 tablespoon cooking oil
  - A few drops of food coloring (red for red meat, yellow for poultry)

Bring water to boil. Add cooking oil and food coloring. Add dry ingredients. Mix and knead until smooth. Store in zipper-type food storage bag, preferably in refrigerator. Passing red-colored play dough through a press with round holes, such as used for making play dough “hair,” results in a product that looks a lot like hamburger and can be used to simulate taking temperatures of ground beef patties.

- Copies of “Interpreting Food Safety Icons Activity” for each student. A master and answer key are provided at the end of the lesson.

### (Slide 1) **Lesson 4**

## **Food Flow: Keeping Food Safe from Gate to Plate**

(Slide 2) Food safety is important throughout the food flow process. Food safety concerns are different at each stage of the food flow process. We must be careful every time we handle food. This lesson provides an overview; more detail will be provided in Lessons 5 to 8.

1. (Slides 3–18) **The Food Flow Process.** The slides provide a picture overview of the steps in the food flow process. Food safety is something we need to be concerned about at every step in the food-preparation process. Food flow considers every step, from receiving food through reheating food for service.
  - a. (Slide 19) **Receiving.** Check the condition of food when it is delivered for correct temperature (not warmer than it should be) and intact packaging. Food must be obtained from approved sources.



**STORAGE**  
FOOD FLOW PROCESS

- Freezer, dry storage, walk-in cooler, refrigerator
- Put away
- Time/Temperature Control for Safety foods (TCS)
- FIFO (First In, First Out) rotates food

**ACTIVITY**

**SOURCING, RECEIVING, AND STORING FOOD**  
VIDEO CLIP

**PREPARATION**  
FOOD FLOW PROCESS

- Avoid cross-contamination
- For Time/Temperature Control for Safety foods (TCS):
  - Minimize time in the Danger Zone (41°F–135°F)
  - Discard TCS after 4 hours in the Danger Zone
  - Use the batch method

**COOKING**  
FOOD FLOW PROCESS

- Different foods require different temperatures
- Use a thermometer
- Don't rely on appearance

**HOLDING**  
FOOD FLOW PROCESS

- Keep hot food at 135°F or above
- Keep cold food at 41°F or below
- Use thermometer to check temperature at least every 4 hours

**SERVING**  
FOOD FLOW PROCESS

- Plating individual orders
- Self-service on buffets
- Customers can contaminate food without realizing it

**COOLING & STORAGE**  
FOOD FLOW PROCESS

- Large amounts cool slowly
- Divide large amounts into smaller, shallow pans

**REHEATING**  
FOOD FLOW PROCESS

- Heat to 165°F or bring to a boil in less than 2 hours
- Check temperature

- b. (Slide 20) **Storage.** After food is received, the perishable items should be stored immediately in the freezer, walk-in cooler, or refrigerator. The FIFO principle—first in, first out—will help organize storage areas. Newly delivered food should be stored behind food already in storage. Some restaurants ask employees to mark on the package the date food is delivered.

(Slide 21) **“Sourcing, Receiving, and Storing Food”**

Show the video clip (1 min 50 sec) by clicking on the picture on Slide 7. Environmental Health Specialist Chad Waters, with Idaho’s Central District Health Department, discusses sourcing, receiving, and storing food.

- c. (Slide 22) **Preparation.** During preparation, it is important to keep raw foods separate from ready-to-eat foods to avoid cross contamination. When preparing large amounts of foods requiring TCS for safety, the batch method is recommended. In the batch method, only a small amount of ingredients is prepared at one time.
- By making several smaller batches of a food product rather than one large one, perishable foods are not exposed to the Danger Zone (41°F to 135°F) for a long time.
  - TCS for safety foods in the Danger Zone longer than 4 hrs are considered adulterated and must be discarded.
- d. (Slide 23) **Cooking.** Meat, poultry, eggs, and seafood must be heated to different temperatures.
- Temperature checks with a thermometer are necessary to determine proper cooking of food.
- e. (Slide 24) **Holding.** Buffet-style food is an example of food that is held for service. When food is served on a buffet line, hot foods must be kept hot (135°F or above) and cold foods must be iced to keep them cold (41°F or below).
- Use a thermometer to check the temperature of each food item in several locations on each item.
  - Temperature must be checked every four hours.
- f. (Slide 25) **Serving.** Serving means either plating customer’s orders individually or offering self-service on a buffet.
- Customers can contaminate a food bar without realizing it, so precautions are necessary, such as sneeze guards and requiring a clean plate for each trip through the buffet line.
- g. (Slide 26) **Cooling and Storage.** Since large amounts of food don’t cool quickly, they need to be divided into several smaller, shallow containers before being stored in a refrigerator or walk-in cooler. This allows food to cool quickly enough so that pathogens don’t have a chance to grow.
- h. (Slide 27) **Reheating.** Reheating must be done quickly. Within two hours, foods must be reheated to either 165°F or to boiling.

- Check the temperature often in several places to be sure the entire amount of food has reached the necessary temperature.

**ACTIVITY**

**FOOD FLOW SAFETY CONCERNS**  
Identify a food safety concern at each of the nine food flow steps.

**STANDARD OPERATING PROCEDURES (SOPs)**

**Definition:** SOPs are step-by-step procedures for doing a specific job in the food establishment.

**Examples:**

- Personal hygiene such as handwashing
- Cleaning and sanitizing
- Cross-contamination control
- Controlling time and temperature

**(Slide 28) Food Flow Safety Concerns**

Ask students to identify concerns from receiving through reheating. List these on a white board or easel paper.

**Answer:** At each step, the temperature of the food, cleanliness of personnel and equipment, and cross contamination are of concern.

2. **(Slide 29) Standard Operating Procedures (SOPs) and How to Apply Them in Food Preparation.** SOPs are step-by-step procedures for doing a specific job in the food establishment. These usually cover facility cleanliness or a safe food-handling practice. When one is a new hire—or is doing the job for the first time—another employee will usually explain or demonstrate how to do the job properly. SOPs aren’t always written down; they may be listed on a checklist for employees or students to review. Most important is that they are habits everyone follows.

- An example of an SOP covering employee hygiene might be “Wash hands and change gloves every time you change jobs.”
- A facility cleanliness SOP is “Start cleanup with a clean sink and cleanup area.”
- A SOP for cross contamination control is “Use a clean red cutting board to prepare hamburger patties. Do not prepare any other meat on this cutting board until it is washed and sanitized.”

**ACTIVITY**

**LET'S FRY A HAMBURGER!**

1. How would you fry a hamburger in a food service establishment?
2. How do you determine when hamburgers are done?

**(Slide 30) Let's Fry a Hamburger!**

Ask students to discuss how they would determine when hamburgers are done. They may discuss cutting the burgers to check its color or looking to be sure its juices run clear. Neither is acceptable for commercial food-service preparation.

Before frying a hamburger in food-service, workers must know how to use a food thermometer. A food-service establishment should have sufficient thermometers to ensure a safe food preparation process.

**(Slide 31)** There are two types of instant-read food thermometers: dial-type and digital-type. It is important to know that the temperature sensing areas of these two thermometers are different. Dial thermometers measure the temperature along the 2–2½ in of the stem (from the tip). Digital thermometers measure temperature in the lower ½ in of the probe.

**ACTIVITY**

**LET'S FRY A HAMBURGER!**  
**TWO TYPES OF INSTANT-READ FOOD THERMOMETERS**

1. An **Instant-Read Dial Thermometer** reads the temperature along 2–2½" of the probe—this means 2–2½" of the probe must be inside the food.
2. An **Instant-Read Digital Thermometer** has its temperature sensor in the tip. The probe must be inserted at least ½ inch into the food.

**ACTIVITY**

**LET'S FRY A HAMBURGER!**  
Practice use of food thermometers with Play-Doh.

**(Slide 32)** Demonstrate for students how to use instant-read food thermometers by shaping play dough into hamburger patties. Demonstrate use of both instant-read digital and dial thermometers on a single play dough patty. Position the sensing area of each thermometer in the center of the hamburger patty. Allow students to practice.

**ACTIVITY**

**LET'S FRY A HAMBURGER!**  
COLOR DOES NOT MEAN GROUND BEEF IS SAFE

The food safety rule is to cook the burger to an internal temperature of 155°F for 15 seconds

**ACTIVITY**

**LET'S FRY A HAMBURGER!**  
SOP FOR FRYING HAMBURGER

1. Use spatula or meat tongs to handle raw meat
2. Cook to 155° F for 15 seconds; use a thermometer
3. Wash and sanitize thermometer between uses
4. Use a different spatula or tongs to handle cooked meat

**FOOD ALLERGENS**

- ▶ 12 million Americans are affected by food allergies
- ▶ The number affected by food allergies is increasing
- ▶ To protect customers, employees should be able to recognize signs and know what to do

**ALLERGY SYMPTOMS**

- ▶ Itching in and around the mouth, face, or scalp
- ▶ Tightening in the throat
- ▶ Wheezing or shortness of breath
- ▶ Swelling of the face, eyes, hands, or feet
- ▶ Hives
- ▶ Abdominal cramps, vomiting, or diarrhea
- ▶ Loss of consciousness
- ▶ Death

Play dough can also be used to construct a piece of poultry with a bone by shaping play dough around a dinner teaspoon (bone) to look like a chicken leg or thigh. This can be used to demonstrate how to check the temperature of meat with a bone. The thermometer should not touch the bone.

(Slide 33) A hamburger that looks ready to serve may still contain bacteria that could cause serious illness. Idaho regulations require ground beef be cooked to 155°F for 15 sec. To ensure that a hamburger is safely cooked but not overdone, use a thermometer or other food-service system (for example, large fast food restaurants use validated time-cook systems for burgers).

Ask a student volunteer to cook the ground beef patties. In this demonstration, two types of food thermometers are used to determine hamburger doneness (155°F for 15 sec). Sanitize the stems of both the dial (bimetal) and digital thermometers with an alcohol wipe before use.

- When using the bimetal dial thermometer, insert it into the side of the hamburger so that the 2½-in sensing area covers the patty. Allow the temperature reading to stabilize (10–40 sec). Because this type of thermometer measures temperature in the bottom 2”–2½” of the stem rather than at the tip of the thermometer, if you insert just the tip of a bimetal thermometer into a food, the reading will be inaccurate.
- When using the digital thermometer, insert the tip ½ in into the center of the hamburger and allow the measurement to stabilize (10–30 sec).

(Slide 34) **Discussion of SOPs and Hamburger Cooking Activity** Color is not a reliable indicator that a safe temperature has been reached when cooking ground beef. One in four hamburgers turns brown before reaching a safe temperature and some remain pink after reaching a safe temperature, depending on the source of beef and handling the conditions. Having an SOP for preparing safely cooked hamburgers is thus essential for food-service establishments.

3. (Slide 35) **Food Allergens.** The number of people in the United States with food allergies is increasing. Approximately 12 million people are affected by food allergies. To protect customers, employees should be able to recognize the signs of an allergic reaction so that emergency responders are called when necessary.

a. (Slide 36) **Allergy Symptoms.** Depending on the person, an allergic reaction can happen right after the food is eaten or several hours later. This reaction could include some or all of these symptoms:

- Itching in and around the mouth, face or scalp
- Tightening in the throat
- Wheezing or shortness of breath
- Hives

- Swelling of the face, eyes, hands, or feet
- Abdominal cramps, vomiting, or diarrhea
- Loss of consciousness
- Death

If a customer is having an allergic reaction to food, call emergency responders to assist the person.



b. (Slide 37) **Common Food Allergens.** The “Big 8” food allergens are

1. Milk and dairy products
2. Eggs and egg products
3. Fish
4. Shellfish
5. Wheat
6. Soy and Soy products
7. Peanuts
8. Tree nuts such as pecans, walnuts, and almonds



c. (Slide 38) **Preventing Allergic Reactions.** Both service and kitchen staff need to know what to do to avoid serving food that can cause an allergic reaction.

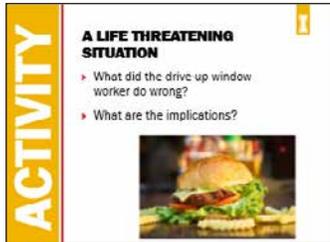
**Service Staff.** Food servers should know and be able to tell customers about menu items that contain potential allergens. One person per shift should be available to answer customers’ questions about menu items. When a customer says they have a food allergy, it must be taken seriously. Service staff should be able to

- **Describe dishes.** Tell customers how the item is prepared. Sauces, marinades, and garnishes often contain allergens. For example, peanut butter is sometimes used as a thickener in sauces or marinades; soy sauce is often used to flavor sauces.
- **Identify ingredients.** Know the identity of any “secret” ingredients. Restaurant owners may not want to share the recipe of a specialty dish with the public, but the staff must be able to tell the secret ingredient to a customer who asks about allergens.
- **Suggest alternate, safer items.** Suggest ordering simple menu items, particularly whole foods (like a salad or a baked potato) or requesting no added sauce or dressing. Casseroles, soups, and some desserts often contain many ingredients and these can be difficult to identify fully.



(Slide 39) **Kitchen Staff.** Staff who prepare food and plate it must make sure that allergens are not transferred from food containing an allergen to the food served to the customer. This is called cross contact. Cross contact can occur when

- Different types of food are cooked in the same fryer oil.
- Food is put on surfaces that have touched allergens. Cross contact is avoided by



- Washing, rinsing, and sanitizing cookware, utensils, and equipment before prepping food.
- Washing hands and changing gloves before prepping food.
- Assigning specific equipment for prepping food for customers with allergies.

(Slide 40) **A Life-Threatening Situation!** Read the following story to students.

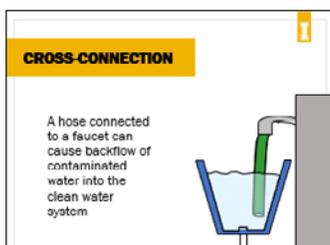
Sixteen-year-old Julia has a severe milk allergy. Contact with milk protein can cause her throat to swell to the point that she cannot breathe. Julia and her mom were driving from soccer practice to her piano lesson. Julia was very hungry. They stopped at the drive-up window of a fast food restaurant on the way. They rarely go to drive-up windows, because they find that with Julia’s allergy, it is best to go inside and talk to the manager. But this day they were running late and ordered a hamburger and Coke to go. Julia checked the burger as always and discovered that it was a cheeseburger. They returned the burger to the drive-up window worker, explaining about Julia’s milk allergy. The worker disappeared for a few minutes, then returned, handing them a burger. Julia checked under the bun again and saw no cheese. They continued on their way, with Julia munching the burger. Within minutes, her mouth was tingling and she said, “Mom, I think there’s a problem with the burger.” Julia’s mom pulled over and they examined it more closely. Looking at the bottom of the half-eaten burger, they could see that the worker had scraped off the cheese, then turned the burger over in the bun to disguise it. Fortunately, Julia had her EpiPen and could give herself the life-saving shot of epinephrine. Julia’s mom drove them to the ER instead of the piano lesson.

Ask students what the drive-up window worker did wrong. What are the implications?



4. (Slide 41) **Water Supply for Food Service.** Water used in food-service establishments must be from an approved source such as the following:

- The public water system (used by most establishments).
- An onsite private well, which is tested as required, and the tests meet water-quality standards. State guidelines require that well water be tested for bacteria quarterly and nitrates/nitrites annually. Food-service establishments are required to keep the most recent test result of well water on file.



(Slide 42) The water in food-service establishments must be protected from possible contamination. A cross-connection is a situation where water can flow backwards due to siphoning. The most common source of backflow in food service is a hose connected to a faucet that does not have a backflow prevention device. If the hose is below the water level in the sink and the water pressure in the system drops, water in the sink can be

suctioned into the water piping system for the building. There are numerous examples where this has occurred.

Plumbing of the water system is critical in keeping water safe and it must conform to the Idaho Plumbing Code. For example, sinks, mechanical dishwashing systems, ice machines, submerged inlets on dipper wells and steam tables, and water supply to boilers all must be properly plumbed to prevent backflow.

- (Slide 43) **Ethics in Food Service.** From time to time, we hear stories about food workers contaminating food intentionally by placing a foreign object into the food or spitting in the food. This is a serious problem and is ethically wrong. Someone could become seriously—even fatally—ill. Criminal prosecution may result.

(Slide 44) **Intentional Contamination**

Ask students: Do you know of any examples of this happening? How would you handle it if you saw another worker intentionally contaminating food?

(Slide 45) **Interpreting Food Safety Icons**

The International Association for Food Protection (IAFP) has developed eleven food safety icons to communicate important food safety information via pictures. These icons represent food safety actions and behaviors that will be discussed in Lessons 5 to 9. Have students match the food safety icon with the written message it represents using the “Interpreting Food Safety Icons” handout; this would make a good homework assignment. They will see these icons on many *RSFS* slides.

(Slide 46) **UNDERSTANDING CHECK**

(Slide 47) **Question:** Name the steps in the food flow process.

**Answer:** Receiving, storage, preparation, cooking, holding, serving, cooling, storage, reheating.

(Slide 48) **Question:** Define FIFO.

**Answer:** First in, First out.

**Question:** Why is FIFO important?

**Answer:** To ensure that food items are used in the order purchased.

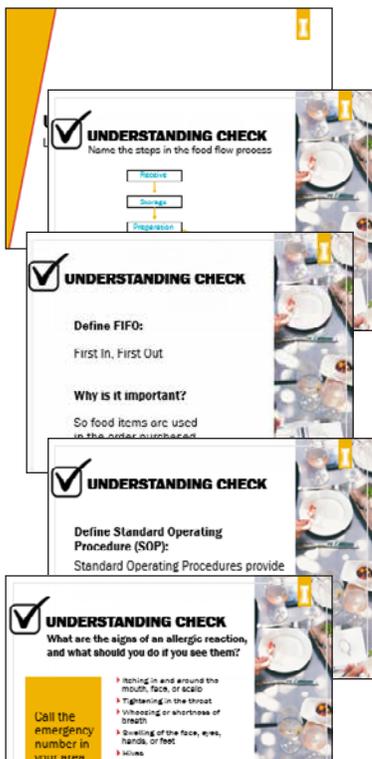
(Slide 49) **Question:** Define Standard Operating Procedure (SOP).

**Answer:** SOP provides a step-by-step process for doing a specific job, so all employees will do it correctly.

(Slide 50) **Question:** What are the signs of an allergic reaction and what should you do if you see them?

**Answer:**

- Itching in and around the mouth, face, or scalp
- Tightening in the throat



- Wheezing or shortness of breath
- Hives
- Swelling of the face, eyes, hands, or feet
- Abdominal cramps, vomiting, or diarrhea
- Loss of consciousness
- Death
- Call the emergency number in your area

**✓ UNDERSTANDING CHECK**

**What is the rule concerning water used in food service?**

Water must come from an approved source



(Slide 51) **Question:** What is the rule concerning water used in food service?

**Answer:** Water must come from an approved source.

(Slides 52–55) **Don't Be a Gambler (2:50)**

This song was written for home safety. The food service regulations require ground beef be cooked to 155°F for 15 sec rather than the ground beef cooking recommendation for consumers of 160°F (no time requirement).

**ACTIVITY**

**◀ DON'T BE A GAMBLER**

On a warm summer's evening  
Just a while before dinner  
I opened up the fridge to get some  
Fully thawed ground beef  
Then I washed some  
skillet  
And I put 'em on the skillet  
Washed my hands for 20  
seconds  
Any less is just too brief



**DONT BE A GAMBLER (“The Gambler” by Kenny Rogers)**

On a warm summer's evening  
Just a while before dinner  
I opened up the fridge to get some  
Fully thawed ground beef  
Then I shaped some patties  
And I put 'em on the skillet  
Washed my hands for 20 seconds  
Any less is just too brief

**ACTIVITY**

**DON'T BE A GAMBLER**

I fired up the burner  
And I fried up the burgers  
Cooked 'em till the pink was  
gone  
And the juices ran quite clear  
I made sure the centers  
Had made it to 160  
Then I served 'em to my family  
Without feelin' any fear

It's true that food safety  
is serious business  
Keeping foodborne pathogens  
From striking day or night  
And it may seem hard  
To keep taking those  
precautions  
But if you're preparing food,  
folks  
You gotta learn to do it right



I fired up the burner  
And I fried up the burgers  
Cooked 'em till the pink was gone  
And the juices ran quite clear  
I made sure the centers  
Had made it to 160  
Then I served 'em to my family  
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It's true that food safety  
Is serious business  
Keeping foodborne pathogens  
From striking day or night  
And it may seem hard  
To keep taking those precautions  
But if you're preparing food, folks  
You gotta learn to do it right

**ACTIVITY**

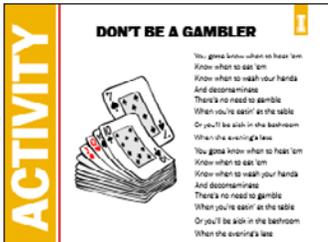
**DON'T BE A GAMBLER**

You gotta know when to heat 'em  
Know when to eat 'em  
Know when to wash your hands  
And decontaminate  
There's no need to gamble  
When you're eatin' at the table  
Or you'll be sick in the bathroom  
When she a-waitin' for

Every gambler knows  
That the secret to survivin' is  
Knowin' what to throw away  
And knowin' when to keep



You gotta know when to heat 'em  
Know when to eat 'em  
Know when to wash your hands  
And decontaminate  
There's no need to gamble



When you're eatin' at the table  
Or you'll be sick in the bathroom  
When the evening's late

Every expert knows  
That the secret to survive is  
Knowin' what to throw away  
And knowin' what to keep  
Cause if you're a gambler  
You might just be a loser  
And the best that you can hope for  
Is to die in your sleep

You gotta know when to heat 'em  
Know when to eat 'em  
Know when to wash your hands  
And decontaminate  
There's no need to gamble  
When you're eatin' at the table  
Or you'll be sick in the bathroom  
When the evening's late

You gotta know when to heat 'em  
Know when to eat 'em  
Know when to wash your hands  
And decontaminate  
There's no need to gamble  
When you're eatin' at the table  
Or you'll be sick in the bathroom  
When the evening's late

## REFERENCES

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