



Food Safety

in Schools



Instructor's Manual



Instructor's Manual

PROJECT COORDINATOR

Liz Dixon, MS

ACTING EXECUTIVE DIRECTOR

Aleshia Hall-Campbell, PhD, MPH



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Institute of Child Nutrition

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Introduction

Serving It Safe has been used for conducting employee training since the first edition, *Serving It Safe: A Manager's Tool Kit*, was published in September 1996. A second edition was published in 2002 and reprinted in 2004 to reflect changes in the *Food Code*. The third edition was published in 2009 and the fourth in 2013. The fifth and most current edition was published in 2015 and renamed *Food Safety in Schools*. This document was reviewed by the U.S. Department of Agriculture, Food and Drug Administration, and the Institute of Child Nutrition.

This *Food Safety in Schools Instructor's Manual* has been developed to assist trainers in providing a face-to-face food safety training based on *Serving It Safe*. This training may be presented in one day, or over a period of time in shorter lessons. School nutrition directors and trainers may also select specific topics to use as orientation or refresher training for other school nutrition employees.

There is an overview, six lessons, and the wrap up. Each lesson includes the following components:

- Lesson-at-a-Glance, including estimated time required for each portion of the lesson
- Lesson Plan with learning activities
- Handouts used in the lesson

Instructor's Note: All handouts except for Pre- and Post-Assessments that are needed for each lesson are included in the *Food Safety in Schools Participant's Workbook*. The Pre- and Post-Assessments are available at www.theicn.org. You should print an additional copy of the Participant's Workbook for your own use during the training.

Preparing for the Food Safety in Schools Training

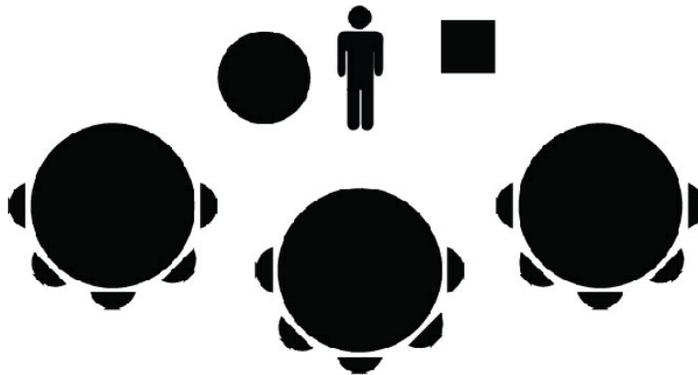
Before beginning to teach the *Food Safety in Schools* training, prepare the learning environment and review the Preparation Checklist at the beginning of each lesson for items that will be needed. Follow the Lesson-at-a-Glance for approximate timing.

The *Food Safety in Schools Participant's Workbook* should be provided for each participant. The document is available on the ICN website, www.theicn.org. Make a copy for each participant and one for yourself.

Throughout this training, flip chart paper and markers will be used extensively. Be sure to check that the markers do not leak through onto the surface beneath the paper.

Tips for Training Success

- Select a room with tables and chairs appropriate for adults. Tables must be large enough for activities that involve group work and completing forms. Arrange seating for no more than five participants at a table. This allows participants to work in teams on lesson activities while still allowing space for handouts. A suggested seating arrangement is shown below.



- Maintain a comfortable and non-threatening class environment.
- Begin and end each lesson on time.

Preparation Checklist

Instructions: The following tasks are necessary for presenting this lesson. Assign each task to a specific person and determine the date that each task must be completed. Keep track of the progress by recording information on the tracking form and checking off tasks as they are completed. [Items may vary according to needs of particular lessons.]

Task	Person Responsible	Completion Date	√
Carefully read each Lesson-At-A-Glance and lesson plan. Review learning activities. Reserve equipment and gather supplies as needed for use on the day of class (6 weeks prior).	Instructor		
Instructor Manual			
Roster of participants attending for instructor Participants' sign-in sheets			
List of equipment and supplies needed			
Microphone (preferably wireless) Computer to present slides and/or DVD Projector Screen Wireless presenter device and laser pointer Flip chart paper (self-adhesive strip sheets) Painter's tape (do not use masking tape) Markers (flip chart and participants) Pens, pencils, note paper, highlighters, self-adhesive notes, page markers, index cards (each table) Name tags and table tents 3" x 5" index cards, three colors Food Safety Tool Box (thermometer pictures) <ul style="list-style-type: none"> • Bimetallic stemmed thermometer • Bimetallic stemmed, oven-safe meat thermometer • Digital stemmed thermometer (thermistor) • Thermocouple • Infrared 			

Task	Person Responsible	Completion Date	√
<p>Temperature Sensitive Sticks, such as T-Sticks</p> <p>Bimetallic stemmed thermometer</p> <p>2-quart liquid measure</p> <p>Calibration tool or wrench</p> <p>Test Strips: chlorine, quaternary ammonium, and iodine</p> <p>Waterproof irreversible registering temperature indicator</p> <p>Self-adhering temperature-sensitive label</p> <p>T-Stick®, calibrated for 160 °F</p> <p>Two copies of the following USDA recipes:</p> <ul style="list-style-type: none"> • Chicken Alfredo With a Twist • Mediterranean Quinoa Salad • Porcupine Sliders • Tasty Tots • Smokin' Powerhouse Chili • Lentils of the Southwest • Chic Penne • Harvest Stew <p>Instructor's Note: Recipes are located in Appendix A of the <i>Food Safety in Schools Participant's Workbook</i>.</p> <ul style="list-style-type: none"> • Four signs with the following temperatures on them (one temperature per sign): 135 °F, 145 °F, 155 °F, 165 °F 			

Task	Person Responsible	Completion Date	√
<p>Index cards with one food item per card:</p> <ul style="list-style-type: none"> • Frozen chicken patties (pre-cooked) • Frozen chicken patties (not pre-cooked) • Taco filling • Leftover lasagna • Frozen broccoli • Frozen peas • Frozen eggs • Pork roast • Sausage patties • Chicken noodle casserole • Hamburger patties • Ham • Soup • Roast beef • Sloppy Joes • Leftover chili • Stuffed pasta shells • Whole turkey <p>The Pre- and Post-Assessments are available at www.theicn.org.</p>			
Participant's Workbook			
Agenda, roster of presenters/participants, and handouts, evaluations			

Overview

Food Safety in Schools

Training Welcome, Overview, and Pre-Assessment

25 minutes

Lesson 1: Food Safety Is Top Priority

55 minutes

Following the lesson, participants will be able to:

1. describe why food safety is a top priority in school nutrition programs;
2. define foodborne illness and foodborne illness outbreak;
3. give examples of biological, chemical, and physical hazards;
4. give examples of how to prevent biological, chemical, and physical hazards; and
5. state the temperatures in the temperature danger zone.

Lesson 2: Prevent Foodborne Illness—

Understanding Microorganisms

1 hour 40 minutes

Following the lesson, participants will be able to:

1. describe ways in which harmful bacteria can contaminate food,
2. list good personal hygiene practices that should be followed by school nutrition employees,
3. demonstrate proper handwashing procedures to minimize hand-to-food cross contamination,
4. list times when school nutrition employees should wash their hands,
5. describe proper glove use,
6. demonstrate use of a food thermometer,
7. demonstrate how to calibrate a thermometer using the ice-point method,
8. describe ways to minimize food-to-food cross contamination,
9. describe ways to minimize equipment-to-food cross contamination,
10. list responsibilities of school nutrition managers in preventing foodborne illness, and
11. describe the types of illness and symptoms of illness that food handlers must report to their supervisors.

Lesson 3: Basic Facts About Microorganisms**1 hour**

Following the lesson, participants will be able to:

1. list common causes of foodborne illnesses,
2. list common foodborne illnesses,
3. describe ways that school nutrition employees can prevent foodborne illness, and
4. identify guidelines for responding to a reported foodborne illness.

Lesson 4: A Clean and Sanitary School Nutrition Facility**1 hour, 5 minutes**

Following the lesson, participants will be able to:

1. list characteristics of a food-safe facility;
2. describe practices that can be used to control pests in a school nutrition facility;
3. demonstrate how to mix and test chemical sanitizing solutions;
4. demonstrate how to clean and sanitize;
5. describe how to set up and use a three-compartment sink;
6. demonstrate how to use mechanical dishwashers, including checking temperatures or sanitizing solution concentration; and
7. demonstrate how to clean and sanitize large equipment.

Lesson 5: A Process for Preventing Foodborne Illness**2 hours****(includes 5 minutes optional time)**

Following the lesson, participants will be able to:

1. describe how purchasing relates to food safety;
2. list food safety practices that should be followed when receiving food;
3. describe safe food handling practices for dry, refrigerated, and frozen storage;
4. list good food handling practices when preparing food;
5. describe safe methods for thawing frozen food;
6. list food safety guidelines for cooking food;
7. state internal cooking temperatures for foods often prepared in schools;
8. state appropriate holding temperatures for hot and cold food;
9. describe food safety guidelines for serving food;
10. list steps for the safe cooling of food; and
11. describe the reheating process for food.

Optional (depending on need of participants)

12. Describe the steps for ensuring food safety when transporting food.

Lesson 6: Food Safety Programs in Schools

45 minutes

Following the lesson, participants will be able to:

1. list components of a food safety program;
2. describe the Process Approach; and
3. identify menu items that fit into the three process categories: No Cook, Same Day Service, and Complex Food Preparation.

Wrap Up and Post-Assessment

25 minutes

Introduction-at-a-Glance

Time	Topic	Task	Materials
	Lesson Preparation	Set up classroom for training.	<ul style="list-style-type: none"> • See preparation checklist.
10 minutes	Welcome Introduction of presenters	<p>Welcome participants to the training.</p> <p>Introduce trainer(s), special guests, and audience.</p> <p>Opening Activity</p> <p>Provide an overview of the training.</p> <p>Provide logistical information about the training facility.</p>	
15 minutes	Pre-Assessment	Administer the Pre-Assessment	<ul style="list-style-type: none"> • The Pre- and Post-Assessments are available at www.theicn.org.

Competencies, Knowledge, and Skills

These are the competencies, knowledge, and skills that apply to this training. A full listing can be found on the ICN website.

DIRECTORS

Functional Area 4: Food Security, Sanitation, and Safety

Competency 4.1 - Establishes policies and procedures to ensure food is prepared and served in a sanitary and safe environment.

Knowledge Statements

- Knows basic principles and techniques of foodservice sanitation and food safety.
- Knows federal, state, and local sanitation and food safety requirements.
- Knows principles of foodborne illness prevention.
- Knows fundamentals of Hazard Analysis Critical Control Point (HACCP) -based standard operating procedures.

Skill Statements

- Develops a HACCP-based food safety and sanitation program that meets federal, state, and local regulations.
- Ensures that all food safety inspection deficiencies are addressed competently and in a timely manner.
- Develops a sanitation training program for school nutrition staff.
- Develops emergency procedures and practices for food recalls and foodborne illnesses.
- Establishes communication procedures within the school district regarding food safety issues.
- Conducts routine food safety and sanitation inspections at each school nutrition site and develops corrective action plans, as needed.

Competency 4.2 - Provides leadership in creating a safe work environment for school nutrition operations.

Knowledge Statements

- Knows principles for selecting, storing, using, and maintaining chemical supplies and other hazardous materials.

Skill Statements

- Develops procedures and trains school nutrition staff on proper use, cleaning, and sanitizing of foodservice equipment.
- Ensures that the Safety Data Sheets for chemical products are up-to-date and accessible to school nutrition staff.
- Develops safe, effective methods for prevention and control of insects, rodents, and other pest infestations.
- Develops safety requirements and standards for selection and use of chemicals, hazardous materials, and equipment.

Source: *Competencies, Knowledge, and Skills of District-Level School Nutrition Professionals in the 21st Century* available on the ICN website: www.theicn.org

MANAGERS**Functional Area 3: Sanitation, Safety, and Security****Competency 3.1 - Provides an environment conducive to protecting the health and well-being of the school's children through high levels of sanitation standards.****Entry-Level****Knowledge Statements**

- Knows state and local code requirements for foodservice establishments.
- Knows basic principles of foodservice sanitation for equipment, personnel, food, and facility.
- Knows appropriate control techniques for insect and rodent contamination.
- Knows causes of food borne illnesses and infections, their characteristics, and the most commonly infected foods.
- Knows procedures to follow that prevent bacterial food poisoning.
- Knows principles of personal hygiene.
- Knows sanitation principles associated with disposal and storage of garbage and refuse.
- Knows principles of Hazard Analysis and Critical Control Point (HACCP) system or other appropriate safe food handling techniques.
- Knows techniques for keeping food secure when in storage.
- Knows importance of school district maintaining a food safety policy.
- Knows methods for training the SNP staff on safe food handling techniques.
- Knows importance of verifying safety and security of food items received from vendors.
- Knows sources of food safety information for the SNP operation.

Skill Statements

- Implements a system to protect food at all times from contamination agents such as unclean equipment and utensils, pests and rodents, unnecessary handling, poor hygiene habits, and inadequate sanitary facilities.
- Implements a schedule for thoroughly cleaning and sanitizing all utensils, equipment, food preparation areas, counters, walls, and floors.
- Implements and maintains a practice of handling clean and sanitized equipment and utensils to protect them from contamination.
- Implements principles of sanitary food handling using HACCP or appropriate techniques.
- Observes rules of time and temperature relationships for food handling and preparation.
- Implements proper food handling techniques to prevent food borne illness.
- Ensures process for maintaining food at the proper temperature at all times during freezing, thawing, preparation, holding, and serving.
- Implements rules of safe practice for handling or discarding leftover foods.
- Maintains daily temperature records of the dry storage areas, refrigeration equipment, and dishwashing equipment, noting deficiencies and corrections.
- Enforces rules of health, cleanliness, personal habits, and proper clothing to ensure clean and healthy food handlers.
- Plans for a system to display and serve food safely that includes sneeze-guards and length of time food is on display.
- Implements a system for receiving and storage of food that uses good housekeeping procedures to reduce the potential for insect and rodent infestation.

- Implements a system of properly using, cleaning, and disinfecting approved garbage and trash receptacles and area regularly.
- Corrects foodservice deficiencies noted on sanitation inspection reports by Public Health department.
- Maintains a copy of state and local health regulations at the school site.
- Evaluates pest control products and services for effectiveness when they are approved for use in the school's foodservice department.
- Establishes checklist procedures for inspecting products upon delivery with regard to safety and sanitation.
- Calibrates food thermometers regularly to ensure accuracy.
- Provides food safety training for staff.

Source: *Competencies, Knowledge, and Skills of Effective School Nutrition Managers* available on the ICN website: www.theicn.org

PROFESSIONAL STANDARDS

FOOD SAFETY AND HACCP TRAINING – 2600

Employee will be able to effectively utilize all food safety program guidelines and health department regulations to ensure optimal food safety.

2610-Practice a HACCP-based program.

2620-Practice general food safety procedures.

2630-Practice Federal, State, and local food safety regulations and guidance.

2640-Promote a culture of food safety behaviors in the school community.

Key Area: 2

Welcome

SHOW SLIDE: Food Safety in Schools

SAY: Welcome and thank you for taking part in the *Food Safety in Schools* training. At the end of this training, we will have discussed food safety, why it is important, how we can have a food-safe facility, and how we can prevent foodborne illness in the future. You will find in the Participant's Workbook a list of Competencies, Knowledge, and Skill Statements pertaining to this training.

SHOW SLIDE: Welcome!

DO: Introduce other trainers and special guests.

SAY: Let's take a few minutes to get to know each other.

DO: Complete the Opening Activity.

Opening Activity

Materials needed:

- Place cards (one per participant)
- Pens (one per participant)

1. Distribute a place card to each participant.
2. Ask each participant to write their name on the front of the place card.
3. Ask each participant to write three truths about themselves and one untruth on the back of the place card. (Give them an example for yourself. For example, write: lived in eight states; have a schnauzer; ride horses; and live on a farm. Three statements are true, one is false—I don't ride horses.)
4. Ask participants to sit beside someone they don't know. Each person should present their four statements and the other person should guess which statement is false.
5. Give them five minutes to complete the activity and then let them introduce the other person to the group telling three things about the person.

SAY: Turn in your workbook to the Training Overview for more information on what we will discuss today.

DO: Review the overview of the training.

SHOW SLIDE: Overview

DO: Provide logistical information about the training facility, such as the location of restrooms, if the participants are unfamiliar with the building.

DO: Distribute the Pre-Assessment to the participants.

SAY: Before we get started with Lesson 1, let's take a few minutes to find out what you already know about food safety, foodborne illness, and preventing foodborne illness. Please complete the Pre-Assessment.

DO: Administer the Pre-Assessment.

SHOW SLIDE: Pre-Assessment

Lesson 1: Food Safety Is Top Priority

Lesson-at-a-Glance

Time	Topic	Task	Materials
5 minutes	Introduction and Overview	<ol style="list-style-type: none"> 1. Introduce instructor and class participants. 2. Introduce Lesson 1. 3. List lesson objectives. 	
10 minutes	Objective Describe why food safety is a top priority in school nutrition programs.	Activity: Reasons for Food Safety	<ul style="list-style-type: none"> • Flip chart • Painter's tape • Marker set
5 minutes	Objective Define foodborne illness and foodborne illness outbreak.		
5 minutes	Objective Give examples of biological, chemical, and physical hazards.		Handouts <ul style="list-style-type: none"> • Biological Hazards • Chemical Hazards • Physical Hazards
15 minutes	Objective Give examples of how to prevent biological, chemical, and physical hazards	Activity: Identify Hazards and Practices to Prevent Them	<ul style="list-style-type: none"> • Flip chart • Painter's tape (one roll for each table) • Markers (one for each table, plus one for trainer) • Identify Hazards and Practices to Prevent Them Handout

Time	Topic	Task	Materials
5 minutes	Objective State the temperatures in the temperature danger zone.	Activity: Temperature Danger Zone	<ul style="list-style-type: none">• <i>Temperature Danger Zone</i> Handouts• Paper thermometer with hatch marks at 5°F intervals.• Red marker
5 minutes	Wrap Up		

Lesson Plan

Introduction and Overview

(5 minutes)

SHOW SLIDE: Lesson 1: Food Safety is Top Priority

SAY: Food safety is an important responsibility of all school nutrition employees. The Child Nutrition and WIC Reauthorization Act of 2004 requires that all school food authorities develop and implement a food safety program based on Hazard Analysis Critical Control Points (or HACCP) principles. These programs must be developed and implemented in all schools. It is critical that all school nutrition employees have a thorough knowledge of food safety principles so that they can implement a strong food safety program on a daily basis.

DO: Refer participants to the lesson objectives in the Participant's Workbook.

SAY: After this lesson, you will be able to:

1. describe why food safety is a top priority in school nutrition programs;
2. define foodborne illness and foodborne illness outbreak;
3. give examples of biological, chemical, and physical hazards;
4. give examples of how to prevent biological, chemical, and physical hazards; and
5. state the temperatures in the temperature danger zone.

Objective: Describe why food safety is a top priority in school nutrition programs.

(10 minutes)

ASK: We know that food safety programs are now required by law in school nutrition programs. What are some other reasons why food safety is a top priority in school nutrition programs?

DO: Pause to allow for participant's responses.

DO: Complete Activity: Reasons for Food Safety.

Activity: Reasons for Food Safety

Materials needed:

- Flip chart paper (one sheet to record responses of group)
- Painter's tape (one roll)
- Markers (one set)

1. Ask participants to turn to the person next to them.
2. Give participants one minute to come up with two reasons why food safety is a top priority in their school nutrition program.
3. After one minute, bring the group back together.
4. Ask one person to be the scribe to list the group's reasons for food safety on a piece of flip chart paper placed at the front of the room. If multiple people come up with the same reason, place a hatch mark next to the item.
5. Discuss briefly.

Objective: Define foodborne illness and foodborne illness outbreak.

(5 minutes)

SHOW SLIDE: Define Foodborne Illness

SAY: (If “to prevent a foodborne illness or foodborne illness outbreak” was one of the responses to Activity: Reasons for Food Safety proceed with the following statements.) You identified preventing a foodborne illness or outbreak as one of the reasons that food safety is a top priority in your school nutrition program. That is a very important reason—and it is good that you identified it.

OR

(If “to prevent a foodborne illness or foodborne illness outbreak” was not one of the responses to Activity: Reasons for Food Safety proceed with the following statements.) Another important reason that food safety is a top priority in a school nutrition program that was not identified, is to prevent a foodborne illness or foodborne illness outbreak. No one wants to serve food that has any possibility of causing students to become ill.

SAY: Let's talk just a little about the definitions of foodborne illness and foodborne illness outbreak. A foodborne illness is a disease transmitted to people by food or water. There are many types of foodborne illnesses. Each has symptoms specific to that illness. A foodborne illness must be confirmed with laboratory analysis. In most cases, the source of the illness can be identified.

ASK: How many people must have the same symptoms for a foodborne illness outbreak to be suspected and reported?

SAY: (Transition from responses given to question.) It only takes two people! A foodborne illness outbreak is an incident when two or more people experience the same symptoms after eating a common food. If an outbreak is suspected, it must be reported to the local department of health.

A health inspector will investigate the kitchen where the food was prepared and will interview individuals who are reported to be ill. Through the investigation, it will be determined whether there was an actual foodborne illness outbreak. If there is enough evidence of an outbreak, investigators will try to determine the source of the foodborne illness.

Through laboratory analyses and genetic fingerprinting, the organism can be identified and it can be determined if the same organism made each person ill. Some of you may remember the outbreak related to spinach that occurred during the fall of 2006. Through genetic fingerprinting, it was established that the same bacteria was ingested by individuals in over 20 states verifying that the source for the illness was the same.

As school nutrition professionals, it is our responsibility to use food handling practices that will make food as safe as possible to eat.

Objective: Give examples of biological, chemical, and physical hazards. (10 minutes)

SHOW SLIDE: Food Safety Hazards

SAY: Let's turn our attention to what we can do to keep food safe. If a foodborne illness occurs because of eating or drinking a contaminated food or beverage, we need to examine what can contaminate these products.

There are four main categories of hazards or contaminants:

- Biological
- Chemical
- Physical
- Radiological (as defined by the 2010 Food Safety Modernization Act)

Today we will only focus on biological, chemical, and physical. An example of a biological hazard would be bacteria or mold. A chemical hazard could be pesticides. Physical hazards could be nails or staples in a food.

DO: Ask participants to turn to the following handouts in the Participant's Workbook:

- Biological Hazards Handout
- Chemical Hazards Handout
- Physical Hazards Handout

SAY: Here are handouts about each type of hazard that you can read through. These handouts provide some basic information about the hazards, including food handling practices that you can use to control these hazards.

Objective: Give examples of how to prevent biological, chemical, and physical hazards. (15 minutes)

SAY: We have identified potential hazards that could occur in our school nutrition programs. It is important to recognize what these hazards may be, but it is equally important to identify ways that we can control these hazards in our programs. Let's explore these hazards and practices that we can use to control hazards.

DO: Complete Activity: Identify Hazards and Practices to Prevent Them.

Activity: Identify Hazards and Practices to Prevent Them

Materials needed:

- Flip chart paper (three sheets to record responses of group)
 - Painter's tape (one roll)
 - Markers (one for each group)
 - Identify Hazards and Practices to Prevent Them Handout
1. Divide participants into three small groups by going around the room and asking participants to say biological, chemical or physical.
 2. Ask each group to write an example of each hazard on paper in the designated section on the handout.
 3. Ask each group to write practices that could be used to control the type of hazard assigned.
 4. Record group responses on the flip chart pages during discussion.

Potential Responses

Biological Hazards

Examples of Biological Hazards

- Bacteria
 - *Campylobacter jejuni*
 - *Clostridium botulinum*
 - *Clostridium perfringens*
 - Shiga toxin-producing *Escherichia coli* (STEC)
 - *Salmonella* spp.
 - *Shigella* spp.
 - *Staphylococcus aureus*
- Viruses
- Parasites
- Fungi
- Foods that contain toxins: mushrooms/fish

How to Prevent Biological Hazards

- Purchase food only from approved sources.
- Accept food only if it is at appropriate temperatures.
- Accept food only if the packaging is intact.
- Store food at appropriate temperatures.
- Store raw and cooked foods separately.
- Store food at least 6 inches off the floor.
- Follow good personal hygiene practices (handwashing, clean uniforms, and glove use).
- Call in sick if you are suffering from an illness.
- Prepare food according to Standard Operating Procedures.
- Cook food to appropriate temperatures.
- Hold food at appropriate temperatures.
- Serve food at appropriate temperatures.
- Cool food following the *Food Code* guidelines.
- Reheat food to proper temperatures.
- Clean and sanitize properly.
- Control for pests.

Chemical Hazards

Examples of Chemical Hazards

- Sanitizers
- Pesticides
- Whitening agents
- Detergents
- Polishes
- Glass cleaners
- Caustics
- Cleaning and drying agents

How to Prevent Chemical Hazards

- Accept food only if the packaging is intact.
- Store chemicals away from food.
- Store chemicals in locked storage cabinet or closet.

- Store chemicals in original containers.
- Label the names of chemicals on approved containers.
- Follow instructions on use of chemicals.
- Clean and sanitize properly.
- Mix sanitizing agents to the appropriate concentration according to the manufacturer's instructions.
- Train employees on how to use chemicals.
- Wash hands after using chemicals.
- Wash fresh produce thoroughly in cold, running water.
- Use a licensed pest control operator.

Physical Hazards

Examples of Physical Hazards

- Glass
- Staples
- Metal shavings
- Toothpicks
- Nail polish
- Artificial nails
- Hair
- Jewelry
- Bones
- Stones
- Equipment parts

How to Prevent Physical Hazards

- Follow Personal Hygiene Standard Operating Procedures, particularly:
 - Do not use nail polish.
 - Do not use artificial nails.
 - Do not wear jewelry.
 - Do not wear wedding rings with stones.
 - Wear hair restraints such as hairnets.
- Use an ice scoop, rather than a glass, for serving ice.

- Use shatterproof light bulbs, or use shields.
- Clean can opener blades after each use.
- Remove staples, nails, and other packaging components from boxes in the receiving area.
- Do not carry a pen or pencil behind your ear.
- Use a licensed pest control operator for routine pest control.

Objective: State the temperatures in the temperature danger zone.

(5 minutes)

SHOW SLIDE: Temperature Danger Zone

SAY: One of the most important ways that we control biological hazards is by controlling time and temperature. The **Temperature Danger Zone** is the temperature range in which bacteria grow rapidly. The temperature danger zone is 41 °F-135 °F.

ASK: What is the temperature danger zone in your state or local jurisdiction?*

***Instructor's Note:** Discuss the fact that different jurisdictions have different requirements for the temperature danger zone. The *Food Code* uses the 41 °F-135 °F guideline. If asked, the USDA's Food Safety Inspection Service uses the 40 °F-140 °F temperature danger zone for consumer guidelines.

SAY: Our goal in school nutrition is to keep food out of the temperature danger zone as much as possible, and when it is not possible, to limit the time that foods are in that temperature range.

DO: Complete Activity: Temperature Danger Zone.

Activity: Temperature Danger Zone

Materials needed:

- Large thermometer with hatch marks at 5 °F intervals
- Red marker
- Handout: Temperature Danger Zone

Post a large paper thermometer* on the board or wall that includes hatch marks at 5 °F intervals. Mark the 41 °F point and the 135 °F point. Color the thermometer red between those two points.

ASK: What do we do to keep foods at or below 41 °F?

ASK: What do we do to keep foods at or above 135 °F?

Instructor's Note: Keep the thermometer posted for use in subsequent lessons. Other important temperatures will be added to the thermometer in subsequent lessons.

Potential Responses

41 °F or below

- Receive refrigerated foods at or below 41 °F.
- Maintain refrigerator temperatures at or below 41 °F.
- Maintain milk coolers at or below 41 °F.
- Prepare salads, deli sandwiches, and other foods in batches.
- Serve cold food at or below 41 °F.
- Store cold foods appropriately.
 - Refrigerators
 - Milk coolers
 - Refrigerated serving lines
 - Ice around food
 - Ice packs

135 °F or above

- Cook food to appropriate internal temperatures.
- Cook food in batches near serving time.
- Hold food in holding cabinets or insulated containers at or above 135 °F.
- Serve food from heated serving lines.

DO: Ask participants to turn to the Temperature Danger Zone handout in the Participant's Workbook.

SAY: This is a short handout about the temperature danger zone. Read it to help you remember what we have talked about today. Remember, the temperature danger zone is an important concept that you will use every day when you work with food.

Lesson Wrap Up

(5 minutes)

SAY: In this lesson, you have learned some of the basic food safety information that we will build on throughout the *Food Safety in Schools* training. We discussed the three types of hazards—biological, chemical, and physical—and how those hazards can be prevented in a school nutrition program. We also discussed the temperature danger zone and the need to limit the time that food is in the temperature danger zone.

Now we are ready to build on this basic information. As we progress through this training, we will continue to refer to these basic concepts.

ASK: Do you have any questions about anything you have learned in this lesson?

DO: Listen to individual responses. Answer questions to the best of your ability. If there are questions you can't answer, tell participants you will find the answer and let them know later. If you need assistance in finding answers, please call the Institute of Child Nutrition at 800-321-3054.

Lesson 2: Prevent Foodborne Illness —Understanding Microorganisms

Lesson-at-a-Glance

Time	Topic	Task	Materials
5 minutes	Introduction and Overview	<ol style="list-style-type: none"> 1. Introduce instructor and class participants. 2. Introduce Lesson 2. 3. List lesson objectives. 	
10 minutes	<p>Objective Describe ways in which harmful bacteria can contaminate food.</p>	<p>Activity: Contamination in the School Nutrition Program</p>	<ul style="list-style-type: none"> • Safe Food Process Handout • Flip chart paper • Painter's tape (one roll) • Marker (one for trainer)
10 minutes	<p>Objective List good personal hygiene practices that should be followed by school nutrition employees.</p>	<p>Review personal hygiene practices.</p> <p>Activity: Standard Operating Procedures for Personal Hygiene</p>	<p>Handouts:</p> <ul style="list-style-type: none"> • Personal Hygiene • Personal Hygiene (Sample SOP)

Time	Topic	Task	Materials
15 minutes	<p>Objective Demonstrate proper handwashing procedures to minimize hand-to-food cross contamination.</p> <p>Objective List times when school nutrition employees should wash their hands.</p>	<p>Activity: <i>Wash Your Hands: Educating the School Community</i> Video</p>	<ul style="list-style-type: none"> • DVD player and monitor OR Computer with Internet connection and monitor. <p>Handouts:</p> <ul style="list-style-type: none"> • Handwashing • <i>Wash Your Hands: Educating the School Community</i> Video Viewing Guide • Washing Hands (Sample SOP)
5 minutes	<p>Objective Demonstrate proper glove use.</p>		<ul style="list-style-type: none"> • Mini poster: <i>Use Disposable Gloves Properly</i>

Time	Topic	Task	Materials
15 minutes	<p>Objective Demonstrate use of a food thermometer.</p>	<p>Activity: Types of Food Thermometers and <i>Using Thermometers</i> Video Clip</p>	<ul style="list-style-type: none"> • DVD player and monitor OR Computer with Internet connection and monitor. • <i>Using Thermometers</i> (segment 4) video clip. <p>Handouts:</p> <ul style="list-style-type: none"> • <i>Using Thermometers</i> Video Viewing Guide • Types of Food Thermometers • Using Food Thermometers <p>Food Safety Tool Box (thermometer pictures)</p> <ul style="list-style-type: none"> • Bimetallic stemmed thermometer • Bimetallic stemmed, oven-safe meat thermometer • Digital stemmed thermometer (thermistor) • Thermocouple • Infrared • Temperature Sensitive Sticks, such as T-Sticks

Time	Topic	Task	Materials
15 minutes	<p>Objective Demonstrate how to calibrate a thermometer using the ice-point method.</p>	<p>Activity: <i>Calibrating Thermometers</i> Video Clip and Demonstrate Thermometer Calibration</p>	<ul style="list-style-type: none"> • DVD player and monitor OR Computer with Internet connection and monitor. • <i>Calibrating Thermometers</i> (segment 3) video clip <p>Handouts:</p> <ul style="list-style-type: none"> • Calibrating Thermometers • Ice-Water Method for Thermometer Calibration • Thermometer Calibration Log <ul style="list-style-type: none"> • Bimetallic stemmed thermometer • 2-quart liquid measure • Crushed ice • Cold water • Calibration tool or wrench
10 minutes	<p>Objective Describe ways to minimize food-to-food cross contamination.</p> <p>Objective Describe ways to minimize equipment-to-food cross contamination.</p>		

Time	Topic	Task	Materials
15 minutes	<p>Objective List the responsibilities of school nutrition managers in preventing foodborne illness.</p> <p>Objective Describe the types of illness and symptoms of illness that food handlers must report to their supervisor.</p>	<p>Activity: Identify Food Safety Responsibilities of Managers and Employees</p>	<ul style="list-style-type: none"> • Flip chart paper • Painter's tape (one roll) • Markers (one for each table)
5 minutes	Wrap Up		

Lesson Plan

Introduction and Overview

(5 minutes)

SHOW SLIDE: Lesson 2: Prevent Foodborne Illness-Understanding Microorganisms

SAY: As you learned in Lesson 1, there are three types of hazards or contaminants that can cause food to be harmful. There are biological, chemicals, and physical hazards that can make food harmful to eat. Research has identified three key areas in school nutrition programs that need to be improved in order to minimize these hazards and prevent foodborne illness.

1. Employee personal hygiene
2. Prevention of contamination
3. Time and temperature control

Lesson 2 will focus on ways that we can prevent foodborne illness by focusing on these three important areas.

DO: Refer participants to the lesson objectives in the Participant's Workbook.

SAY: After this lesson, you will be able to:

1. describe ways in which harmful bacteria can contaminate food,
2. list good personal hygiene practices that should be followed by school nutrition employees,
3. demonstrate proper handwashing procedures to minimize hand-to-food cross contamination,
4. list times when school nutrition employees should wash their hands,
5. describe proper glove use,
6. demonstrate use of a food thermometer,
7. demonstrate how to calibrate a thermometer using the ice-point method,
8. describe ways to minimize food-to-food cross contamination,
9. describe ways to minimize equipment-to-food cross contamination,
10. list the responsibilities of school nutrition managers in preventing foodborne illness, and

11. describe the types of illness and symptoms of illness that food handlers must report to their supervisors.

Objective: Describe ways in which harmful bacteria can contaminate food. (10 minutes)

SHOW SLIDE: Preventing Foodborne Illness During the Foodservice Process

SAY: Harmful microorganisms can contaminate food during any of the steps of the foodservice process. When we recognize how food can be contaminated, we can then take actions to control the possibilities for contamination.

DO: Complete Activity: Contamination in the School Nutrition Program.

Activity: Contamination in the School Nutrition Program

Materials needed:

- Safe Food Process Handout
 - One sheet of flip chart paper with “Personal Hygiene” printed at the top and a second sheet with “Cross Contamination” printed at the top
 - Painter’s tape (one roll)
 - Marker (for trainer)
1. Ask participants to turn to the Safe Food Process Handout in the Participant’s Workbook. Assign one of the eight steps of the foodservice process to participants (one step may be given to an individual, a pair of participants, or a group of three or four participants, depending on total number being trained).
 2. Ask participants to identify one way that food can become contaminated by poor personal hygiene and one way that food can become contaminated by cross contamination during their assigned step of the foodservice process.
 3. Go through the steps in order. On the flip chart sheets, list how personal hygiene and cross contamination could occur at each step.
 4. After you have gone through all the steps, discuss the similarities among the steps for personal hygiene and cross contamination.
 5. Ask participants how school nutrition employees could minimize contamination based on their observations.

SHOW SLIDE: Cross Contamination

SAY: We have identified many ways in which food may become contaminated. We saw that many of them were related to personal hygiene, time and temperature control, and cross contamination. Now we will discuss ways that we can minimize cross contamination in each of those areas.

Objective: List good personal hygiene practices that should be followed by school nutrition employees.

(10 minutes)

SHOW SLIDE: Personal Hygiene

SAY: Personal hygiene has been identified in many research projects as one of the food safety practices that is most needed and often is not followed. Two studies by the Food and Drug Administration (FDA) identified personal hygiene as one of three areas where school nutrition employees often are not in compliance with proper practices. Because there are compliance problems in school nutrition, this is an area that we need to discuss.

All school nutrition programs that have sample Standard Operating Procedures (SOPs) will have at least one SOP that covers personal hygiene. Let's look at a sample SOP.

DO: Complete Activity: Standard Operating Procedures for Personal Hygiene.

Activity: Standard Operating Procedures for Personal Hygiene

Materials needed:

- Handouts:
 - Personal Hygiene (Sample SOP)
 - Personal Hygiene
- 1. Turn in your Participant's Workbook to the Personal Hygiene (Sample SOP).
- 2. Go through the SOP and discuss various areas where there are usually requirements.
 - Employee health
 - Employee dress, including uniforms, shoes, and aprons

- Hair restraints
 - Fingernails
 - Jewelry
 - Wounds and bandages
 - Eating, drinking, and chewing gum
 - Appropriate tasting methods
3. Discuss how each of these areas relates to contamination of food, including physical and biological hazards.
 4. Refer participants to the Personal Hygiene handout in the Participant's Workbook.

Objective: Demonstrate proper handwashing procedures to minimize hand-to-food cross contamination.

Objective: List times when school nutrition employees should wash their hands.

(15 minutes)

SAY: Handwashing is one aspect of personal hygiene, and one of the most important practices for school nutrition employees. We have talked about the fact that hands can contaminate food—so we know why we need to wash hands. Today we want to talk about how to properly wash hands and when hands should be washed.

DO: Complete Activity: *Wash Your Hands: Educating the School Community* Video.

SHOW SLIDE: [Video: Wash Your Hands](#)

Activity: *Wash Your Hands: Educating the School Community* Video

Materials needed:

- DVD player and monitor OR computer with Internet connection and monitor
- *Wash Your Hands: Educating the School Community* video
- Handouts:
 - Handwashing
 - *Wash Your Hands: Educating the School Community* Video Viewing Guide
 - Washing Hands (Sample SOP)

1. Refer participants to the video viewing guide *Wash Your Hands: Educating the School Community* located in the Participant's Workbook. Ask participants to observe when and how school nutrition employees washed their hands and record answers in the spaces provided.
2. Show the *Wash Your Hands: Educating the School Community* video.
3. Ask participants how school nutrition employees washed their hands and the techniques that they observed. List the techniques on a piece of flip chart paper.
4. Ask participants to turn to the Handwashing handout and the Washing Hands (Sample SOP) in the Participant's Workbook.
5. Go through the handout and SOP. Compare the key messages on the handout with those generated by the group (written on the flip chart paper). Discuss any discrepancies that might occur.

Instructor's Note: Answers for trainers for the video viewing guide are provided in Appendix C of the *Food Safety in Schools Participant's Workbook*. Following is a list of times that hands should be washed in a school nutrition program.

SHOW SLIDE: Proper Handwashing

Responses to When to Wash Hands

- Whenever hands are soiled
- Before beginning food preparation
- Before putting on disposable gloves
- Before serving customers
- After arriving at work
- After breaks
- After using the restroom (and again at the kitchen handwashing sink)
- After eating, drinking, or chewing gum
- After using the telephone
- After using a handkerchief or tissue
- After handling inventory
- After handling raw food
- After touching or scratching areas of the body, such as ears, mouth, nose, or hair
- After coughing or sneezing
- After clearing or cleaning tables

- After clearing, scraping, or washing dirty plates or utensils
- After handling garbage
- After handling money on the cafeteria line
- After touching dirty aprons, clothing, or surfaces
- After using chemicals

Objective: Describe proper glove use.

(15 minutes)

SHOW SLIDE: Gloves

SAY: Many food codes require that school nutrition employees wear disposable or single-use gloves when handling ready-to-eat foods, or those foods that will not receive any additional preparation such as cooking. Disposable gloves provide a second line of defense against cross contamination, but only when they are used properly. There are several guidelines for using gloves that should be followed by school nutrition employees.

- Use disposable gloves that fit well.
- Wash hands before and after use of disposable gloves.
- Wear gloves when preparing and serving ready-to-eat foods such as fresh fruits and vegetables, sandwiches, and salads.
- Change gloves frequently and between tasks.
- Never handle money and food while wearing the same gloves.
- Change gloves after sneezing, wiping nose, touching hair, or other contact with germs.
- Never reuse or wash gloves.
- Dispose of soiled or torn gloves after use.
- If gloves are used to handle raw animal food (meat, poultry, fish, eggs) the gloves can only be used for that task. They must be changed, and hands must be washed before working with different raw meats or ready-to-eat food.

DO: Ask participants to turn to the handout *Use Disposable Gloves Properly* in the Participant's Workbook.

ASK: Why would it be important for disposable gloves to fit well?

FEEDBACK: If large gloves are used, there is a possibility that the fingertips of the gloves could be cut off, creating a potential physical hazard.

ASK: Why is it important to wash hands before putting on gloves?

FEEDBACK: You would expect participants to mention preventing cross contamination.

ASK: Why is “change gloves between tasks” a guideline?

FEEDBACK: You would expect participants to mention preventing cross contamination.

Objective: Demonstrate use of a food thermometer.

(15 minutes)

SHOW SLIDE: Thermometer Types

SAY: In Lesson 1, we talked about the temperature danger zone.

ASK: What is the temperature danger zone? (Make sure that employees know the appropriate temperatures of the temperature danger zone for the *Food Code* in effect in their school district. You may want to post the thermometer used in Lesson 1 to reinforce the temperature danger zone.)

SAY: In this lesson, we have identified time and temperature control as being important. It is sometimes difficult to maintain appropriate temperatures in school nutrition programs. Time and temperature control may be difficult for many reasons:

- Appropriate thermometers may not be available in a kitchen.
- Thermometers may not be calibrated.
- Employees may not take temperatures.
- Employees may not document the time and temperatures when they are taken.
- Batch cooking may not be done.
- Holding times are too long.
- Equipment is not functioning properly.

Today, we are going to discuss these areas so that we can make sure that temperatures are taken and recorded. Let's talk about having the right thermometers in a school nutrition program.

SAY: Thermometers have specific uses and should be used appropriately. Be sure to select the appropriate thermometer for each task.

DO: Complete Activity: Types of Thermometers and *Using Thermometer* Video Clip

SHOW SLIDE: [Video: Using Thermometers](#)

Activity: Types of Thermometers and *Using Thermometer* Video Clip

Materials needed:

- DVD player and monitor OR Computer with Internet connection and monitor
- *Using Thermometers* (segment 4) video clip
- Handouts:
 - *Using Thermometers* Video Viewing Guide
 - Types of Food Thermometers
 - Using Food Thermometers
- Food Safety Tool Box (could use actual thermometers or pictures)
 - Bimetallic stemmed thermometer
 - Bimetallic stemmed, oven-safe meat thermometer
 - Digital stemmed thermometer (thermistor)
 - Thermocouple
 - Infrared
 - Temperature Sensitive Sticks, such as T-Sticks

1. Instruct participants to fill out the *Using Thermometers* Video Viewing Guide as they watch the *Using Thermometers* video segment.
2. After the video, go over the answers.
3. Show each type of thermometer on the PowerPoint slide or from the Food Safety Tool Box after you go over the answers. Refer participants to the Types of Food Thermometers handout to get more information on the specific information about each thermometer.

4. After you show each thermometer, ask the group to determine which thermometer they would use for each of the following activities:
 - a. Taking the temperature of a frozen delivery? Infrared thermometer.
 - b. Taking the temperature of milk? Bimetallic Stemmed, Digital, thermocouple
 - c. Checking temperature of dishwasher? Temperature Sensitive Strips/single use temperature indicator
 - d. Taking temperature of roasted chicken? Bimetallic Stemmed, Digital, thermocouple
 - e. Taking temperature of lasagna? Bimetallic Stemmed, Digital, thermocouple
5. Refer participants to the Using Food Thermometers handout and discuss key points on using food thermometers.

RESPONSES TO *USING THERMOMETERS* VIDEO VIEWING GUIDE

1. List the thermometers you see in this video:
 - Bimetallic Stemmed
 - Bimetallic Stemmed, oven-safe meat
 - Digital Stemmed (Thermistor)
 - Thermocouple
 - Infrared
 - Temperature Sensitive Strips/single use temperature indicator
2. When recording temperatures, what is important to include?
 - time of recording
 - temperature of food
 - initials
 - all of the above
3. Thermometers should be:
 - a. kept in a uniform pocket
 - b. soaked in a sanitize solution
 - c. **cleaned, sanitized, and stored**
 - d. kept in kitchen drawers

4. Protein items require different temperatures. Explain how you would take the temperature of a roasted chicken.

Insert the thermometer into the center of the roast, avoiding bones, gristle, and fat.

5. Name some activities for which you should take temperatures of foods:
- Upon delivery of food items.
 - When cooking food.
 - When hot/cold holding food.
 - When re-heating food.
 - When cooling food.

Objective: Demonstrate how to calibrate a thermometer using the ice-point method.

(15 minutes)

SAY: Controlling time and temperature is an important part of a school food safety plan. There are standard times and temperatures that must be used for storing foods, cooking foods, holding foods, cooling foods, and reheating foods. There is a requirement that temperatures be taken at each of these steps.

ASK: What happens if the temperatures taken are not accurate?

SAY: Let's find out with an example. For hamburger patties, the *Food Code* specifies that they must be cooked to an internal temperature of 155 °F. That recommendation is based on the temperature at which *E. coli* O157:H7 is destroyed. Let's say that a cook takes the temperature of several hamburger patties and records that she cooked them to 155 °F. When the thermometer is checked, it is discovered that it measures 8 °F higher than the actual temperature. This means that the hamburger patties were only cooked to 147 °F, a temperature that is too low to kill the harmful bacteria.

This example points out the need for school nutrition employees to use only accurate thermometers for taking food temperatures.

To make sure that the thermometers are accurate, they need to be calibrated.

DO: Complete Activity 5: *Calibrating Thermometers* Video Clip and Demonstrate Thermometer Calibration.

SHOW SLIDE: Video: Calibrating Thermometers

Activity: *Calibrating Thermometers* Video Clip and Demonstrate Thermometer Calibration (if time permits)

Materials needed:

- DVD player and monitor **OR** computer with Internet connection and monitor
- *Calibrating Thermometers* video clip (segment 4 of the *Your Guide to Thermometers* video)
- Handouts:
 - *Calibrating Thermometers*
 - *Ice Water Method for Thermometer Calibration*
- Bimetallic stemmed thermometer
- 2-quart liquid measure
- Crushed ice
- Cold water
- Calibration tool or wrench

1. Show video clip on *Calibrating Thermometers* from *Your Guide to Thermometers*.
2. Discuss the key points of the video with participants.
3. Ask participants to turn to the *Calibrating Thermometers* handout. Discuss the importance of and how to calibrate thermometers.
4. If time allows, demonstrate how to calibrate the thermometer.

SHOW SLIDE: Calibrating Thermometers

SAY: Now that you have seen a demonstration of calibrating a thermometer, you can practice.

ASK: How often should you calibrate your thermometers?

- SAY:** Thermometers should be calibrated frequently—ideally on a daily basis. Each time they are dropped, they must be calibrated again. Using the same thermometer to take temperatures of very cold and very hot foods may require that the thermometer be calibrated more frequently.
- DO:** Ask participants to turn to the Ice-Water Method for Thermometer Calibration handout. Review the directions for using the Ice-Water Method to calibrate thermometers.
- SAY:** Each time that you calibrate a thermometer, you will need to record or document that you have calibrated it. You may have a thermometer calibration record that you use in your operation, or you may use the documentation form that was developed by the ICN.
- DO:** Refer to the Thermometer Calibration Log handout. Discuss the importance of and how to use the log.

Objective: Describe ways to minimize food-to-food cross contamination.

Objective: Describe ways to minimize equipment-to-food cross contamination.

(10 minutes)

SHOW SLIDE: Prevent Cross Contamination

SAY: Now let's turn our attention to cross contamination, one of the major ways in which food is contaminated. Cross contamination is the transfer of bacteria or viruses from one surface to another surface. Cross contamination can occur when contaminated hands or gloves touch food, when contaminated food comes in contact with another food, and when contaminated equipment or work surfaces come in contact with food.

We have already talked about the importance of handwashing at the appropriate times using proper methods. We have also talked about how to use gloves properly to prevent cross contamination, as well as other personal hygiene practices that minimize contamination.

SAY: While we know that hand-to-food is one of the main ways that cross contamination occurs, cross contamination can also occur because of

- food-to-food contamination,
- equipment-to-food contamination.

Let's talk about how we can minimize food-to-food contamination. Then I would like for you to give me an example of something you do in your operation to minimize food-to-food contamination.

There are several ways to minimize food-to-food contamination. Storing foods properly can reduce cross contamination; for example, storing cooked foods in the refrigerator on a higher shelf than raw foods. Other methods and examples include:

Possible Examples

1. Store cooked foods and foods that will not be cooked in the refrigerator on a higher shelf than raw foods.
 - a. Place cooked spaghetti on a higher shelf than raw ground beef.
 - b. Place deli meats and cheeses on the top shelf.
2. Do not mix leftover food with fresh food.
 - a. Do not mix leftover tuna salad with a fresh batch of tuna salad.
 - b. Do not put newly opened canned fruit with canned fruit already on the salad bar.
 - c. Do not add old chili to new chili.
3. Wash fresh fruits and vegetables in cold, running water before peeling.
 - a. Wash cantaloupe before removing rind.
 - b. Wash potatoes before peeling.
 - c. Wash carrots before paring.
4. Wash all fresh produce that will be served whole, peeled, or cooked, such as apples or grapes, in cold, running water.

5. Do not prepare raw meats and raw fruits or vegetables on the same surface. These two types of food should not come in contact with each other.
 - a. Use separate preparation areas for meat and produce.
 - b. Use separate cutting boards (may be color coded).
 - c. Have different employees prepare meat and produce.
 - d. Use separate utensils.

SHOW SLIDE: Proper Equipment Handling

SAY: Let's talk about how we can minimize equipment-to-food contamination. Then I would like for you to give me an example of something you do in your operation to minimize equipment-to-food contamination.

There are several ways to prevent equipment-to-food cross contamination. One way is the use separate preparation areas or cutting boards for raw and ready-to-eat food items. Other methods and examples include:

Possible Example

- Cutting boards/food contact surfaces
 - Use separate cutting boards for different foods.
 - Use color-coded cutting boards.
 - Use designated food preparation areas (meat prep, salad prep, etc.).
 - Clean and sanitize cutting boards and work surfaces after each use.
- Equipment
 - Clean and sanitize equipment after each use.
- Can openers
 - Clean and sanitize can opener and blades after each use.
- Storage containers, pans, utensils
 - Never reuse single-use containers, such as old mayonnaise jars or single-use plastic containers.
 - Clean and sanitize before use.
 - Replace serving utensils frequently, at least when a new pan is being served.
- Glasses, trays, flatware, dishes, and serving utensils
 - Clean and sanitize before use.
 - Handle clean items only with clean hands. (For example, don't load the dish machine and then unload it without washing hands between tasks.)

- Handle items only on surfaces that will never touch the food or where a person's mouth will touch. (For example, touch only the bottom of plates, bottom of glasses, and handles of flatware and utensils.)
- Film, foil, parchment paper
 - Discard after one use. Never reuse.
 - Use on clean and sanitized surfaces.

SHOW SLIDE: Prevent Cross Contact

SAY: A similar problem to cross contamination is that of cross contact. Cross contact occurs when an allergen is accidentally transferred from a food containing an allergen to a food or surface that does not contain the allergen. When cleaning and sanitizing, hot soapy water and scrubbing removes allergens from a surface; sanitizing alone will not remove allergens.

ASK: Can you think of an example of cross contact?

Possible Example

An example would be placing chocolate chip cookies on the same sheet pan that was used to bake peanut butter cookies.

SAY: A food allergy is defined as an immune-mediated adverse reaction to a food protein. People who have food allergies can have a variety of reactions if exposed to a food allergen from mild symptoms like hives or itchy rash to severe conditions like wheezing or shortness of breath, swelling of various parts of the body, face, eyes, hands or feet, nausea, abdominal pain, possibly vomiting and/or diarrhea, and anaphylaxis – a potentially life-threatening reaction.

To help prevent an allergic reaction, school nutrition employees should know which food items contain potential allergens, how to identify allergens on food labels, and know how to prevent a food allergen from coming in contact with allergen-free foods.

ASK: Can you describe some ways to prevent cross contact?

SAY: There are several ways to help prevent cross contact.

- Wash, rinse, and sanitize cookware, utensils, equipment, and food contact surfaces before and after handling a food containing allergens.

- Prepare food with potential allergens in a separate area. If possible, designate an allergy-free zone in the kitchen. When working with multiple food allergies, set up procedures to prevent cross contact within an allergy-free zone.
- Wash your hands and change gloves before and after working with foods containing allergens.
- Use a clean apron when preparing allergen-free foods.
- Prepare food items that do not contain allergens first. Label and store the allergen-free items separately.
- Use clean potholders and oven mitts designated for allergen-free foods.
- Set aside food for students with food allergies from self-service food areas, such as salad bars, before the food is set out.
- Use dedicated serving utensils and gloves for allergen-free foods.

Objective: List the responsibilities of school nutrition managers in preventing foodborne illness.

Objective: Describe the types of illness and symptoms of illness that food handlers must report to their supervisors. (15 minutes)

SHOW SLIDE: Food Safety Roles

SAY: As we have discussed, food safety is very important. Everyone employed in school nutrition programs has an important role in ensuring the safety of food served to children.

Managers and employees have some similar responsibilities, but they also have some unique responsibilities.

DO: Complete Activity: Identify Food Safety Responsibilities of Managers and Employees.

Activity: Identify Food Safety Responsibilities of Managers and Employees

Materials needed:

- Flip chart paper
 - Painter's tape
 - Marker (one for trainer)
1. Assign half of the tables to brainstorm the food safety responsibilities of school nutrition managers and half of the tables to brainstorm the food safety responsibilities of school nutrition employees.
 2. Ask each group to write their responses on a sheet of flip chart paper and post it on the board or wall.
 3. Ask each group to do a gallery walk to review what other groups have mentioned. Tell them they can add responsibilities if they see one that is left off the list.
 4. Briefly discuss the responsibilities.

Possible Examples

Responsibilities of Managers

- Knowing and implementing local and state public health regulations regarding food safety and sanitation.
- Solving problems identified on the current health inspection.
- Maintaining up-to-date knowledge about food safety and sanitation.
- Training and supervising employees about food safety.
- Holding employees responsible for following food safety requirements and guidelines.
- Implementing a food safety program in their schools.
- Knowing when to exclude or restrict school nutrition employees when they report an illness or symptoms of an illness.

Responsibilities of Employees

- Learning about food safety
- Following local or state food safety requirements
- Following guidelines such as:
 - monitoring as specified in the school's food safety plan,
 - taking corrective actions if standards are not met,

- keeping accurate records, and
 - letting the school nutrition manager know about problems or areas that can be improved.
- List illnesses and symptoms of illnesses that food handlers must report to supervisor:
 - Diarrhea or vomiting;
 - Sore throat with a fever;
 - An infected cut or wound on hands or arms;
 - Jaundice (eyes or skin turns yellow); and
 - Diagnosis with a foodborne illness.

SAY: Ultimately, the school nutrition manager is responsible for implementing a strong food safety program to be in compliance with the Child Nutrition and WIC Reauthorization Act of 2004. But the school nutrition manager cannot implement the program alone—each school nutrition employee must fulfill his or her responsibilities. It really is a team effort!

Lesson Wrap Up

(5 minutes)

ASK: What is one food safety practice that you learned today that you think could be improved in your school nutrition program?

SAY: We have learned many good food safety practices that can be used every day in a school nutrition program. While we all wash our hands, research has shown that typical school nutrition employees do not wash their hands often enough and often do not use the proper techniques for handwashing. Be more aware of your handwashing behaviors and those of your fellow employees. Also, temperatures of food and equipment should be taken often—with calibrated thermometers—and recorded. Use these basic food safety practices to improve the safety of the food you serve in your school.

ASK: Do you have any questions about anything you have learned in this lesson?

DO: Listen to individual responses. Answer questions to the best of your ability. If there are questions you can't answer, tell participants you will find the answers and let them know later. If you need assistance in finding answers, please call the Institute of Child Nutrition at 800-321-3054.

Lesson 3: Basic Facts About Microorganisms

Lesson-at-a-Glance

Time	Topic	Task	Materials
5 minutes	Introduction and Overview	<ol style="list-style-type: none"> 1. Introduce instructor and class participants. 2. Introduce Lesson 3. 3. List lesson objectives. 	
5 minutes	Objective List common causes of foodborne illnesses.		
20 minutes	Objective List common foodborne illnesses.		
15 minutes	Objective Describe ways that school nutrition employees can prevent foodborne illness.	Activity: Practices to Prevent Foodborne Illness	Handout: <ul style="list-style-type: none"> • Common Foodborne Illnesses-Symptoms and Prevention • Exclude or Restrict Ill Employees • Flip chart paper • Markers (one for each table, plus one for trainer)
10 minutes	Objective Identify guidelines for responding to a reported foodborne illness.	Activity: Responding to a Foodborne Illness	Handout: <ul style="list-style-type: none"> • Responding to a Foodborne Illness • Pens (one for each participant)
5 minutes	Wrap Up		

Lesson Plan

Introduction and Overview

(5 minutes)

SHOW SLIDE: Lesson 3: Basic Facts About Microorganisms

SAY: Microorganisms are everywhere in our environment. Some microorganisms (bacteria or yeast) are useful. They are what makes the blue veins in blue cheese and the holes in Swiss cheese. Bacteria are responsible for making fermented sausage, pickles, yogurt, buttermilk, and sauerkraut. Unfortunately, there are microorganisms that are harmful and will cause foodborne illness. As school nutrition professionals, we have to learn about these microorganisms and ways we can prevent the harmful ones from making the food we serve unsafe.

DO: Refer participants to the lesson objectives in the Participant's Workbook.

SAY: After this lesson, you will be able to:

1. list common causes of foodborne illnesses,
2. list common foodborne illnesses,
3. describe ways that school nutrition employees can prevent foodborne illness, and
4. identify guidelines for responding to a reported foodborne illness.

Objective: List common causes of foodborne illnesses.

(5 minutes)

ASK: What is the most common cause of foodborne illnesses?

DO: Pause to allow time for participants to respond.

SHOW SLIDE: Biological Hazards

SAY: Those of you who said viruses are correct. You probably have heard the term norovirus or Norwalk-type virus. That is the leading cause of foodborne illness.

Pathogens are harmful microorganisms that cause illness. There are two groups of pathogens—bacteria and viruses.

There are also microorganisms that are classified as spoilage microorganisms. Many different microorganisms can cause food to spoil and may cause illness. Mold and yeasts are among these microorganisms.

Objective: List common foodborne illnesses.

(20 minutes)

SAY: There are many types of foodborne illnesses. Some are more common than others. Today we will talk about the “Big 6” foodborne pathogens along with other microorganism that can cause foodborne illness. The FDA has singled out these six because they are highly contagious, can cause severe illness, and easily transmitted through food. We will also discuss their symptoms, the time of onset of symptoms, foods that are likely to be involved, and ways that we can prevent the foodborne illness in a school nutrition program.

While child nutrition professionals are not responsible for identifying the cause of a foodborne illness, we can prevent or eliminate a potential foodborne illness outbreak by gaining knowledge about how it is caused.

DO: Tell participants to turn to the Common Foodborne Illnesses - Symptoms and Prevention Table.

SAY: Let's begin by discussing two foodborne illnesses that are caused by viruses: gastroenteritis from Norovirus and Hepatitis A.

Norovirus is a virus found in the human intestinal tract and urinary tract, and causes an illness called gastroenteritis. The symptoms of gastroenteritis include nausea, vomiting, diarrhea, abdominal pain, headache, and mild fever. These viruses are transmitted through contaminated water and ready-to-eat foods contaminated by dirty hands. Symptoms begin from one to two days after the contaminated food or water is consumed, and they last for one to three days.

The foods often involved with Norovirus include shellfish and produce from contaminated water and ready-to-eat foods (such as raw, fresh fruits and vegetable, deli meats, and salads) that are often contaminated by dirty hands.

Hepatitis A, like Norovirus, is a virus found in the human intestinal tract and urinary tract. It is also found in contaminated water. Symptoms begin with a fever and also include fatigue, headache, nausea, loss of appetite, vomiting, stomach pain, and later jaundice (yellow skin and eyes). Symptoms may be seen ten days to almost two months after the contaminated food or water is consumed.

Prevention practices are nearly the same for both types of viruses, and include the following:

- Practice good personal hygiene.
- Follow good handwashing procedures.
- Follow procedures for avoiding cross contamination.
- Wash all fresh produce that will be served whole, peeled, or cooked in cold, running water.
- Use potable water from approved sources.
- Cook all foods to the required safe internal temperature and test with a food thermometer.

ASK: Are there any questions about gastroenteritis from Norovirus and Hepatitis A?

SAY: Now let's discuss the four foodborne illnesses that are caused by bacteria: *Escherichia coli* (STEC), *Salmonella* Typhi, *Shigella*, and nontyphoidal *Salmonella* (NTS).

The most common symptoms are nausea, vomiting, diarrhea, fever, abdominal pain, headache, and dehydration. These bacteria are found in the intestinal tract of animals and humans and are transmitted through food or polluted water.

The foods that are most often involved include raw or undercooked meats, such as beef and chicken, shellfish from contaminated water, and produce from contaminated water. It can also be found in ready-to-eat foods that have been contaminated by dirty hands.

Shiga toxin-producing *Escherichia coli* (STEC) is a bacteria found in the intestinal tract of animals, particularly cattle and humans. It is found in raw or undercooked ground beef, raw milk or dairy products, unpasteurized products, and uncooked fruits and vegetables. Symptoms usually begin 3 to 4 days after consumption and include cramping, diarrhea, and vomiting. Symptoms can last for 2 to 9 days.

Prevention practices include good personal hygiene, avoiding bare hand contact with ready-to-eat foods, and proper time and temperature control.

Salmonella Typhi is a bacteria found in raw meats and poultry, milk and dairy products, shellfish from contaminated water, and sliced, fresh fruits and vegetables. Symptoms usually begin 1 to 3 weeks after consumption, but could take as much as 2 months after exposure. Symptoms include diarrhea, stomach cramps, headache, high fever, fatigue, loss of appetite, and rash of flat rose-colored spots and may last 2 to 4 weeks.

Prevention practices include good personal hygiene and proper time and temperature control.

Nontyphoidal Salmonella (NTS) is a bacteria found in raw meats and poultry, unpasteurized milk and dairy products, eggs, and produce such as tomatoes, peppers, and cantaloupe that have been exposed to contaminated water. Symptoms begin within 6 to 72 hours of consumption, and include nausea, vomiting, diarrhea, stomach cramps, headache, and fever. The illness usually lasts 4 to 7 days.

Prevention practices include good personal hygiene, proper time and temperature control, and preventing cross contamination between raw meat and ready-to-eat food.

Shigella is a bacteria found in the intestinal tract of humans and polluted water; is spread by flies and food handlers. It is associated with salads such as shrimp salad, chicken salad, or potato salad, produce from contaminated water, and ready-to-eat foods. Symptoms begin 1-3 hours after consumption and can last up to two weeks. Symptoms include stomach cramps, watery diarrhea, fever, nausea, and sometimes vomiting.

Prevention practices include good personal hygiene, using water from approved sources, control flies, and proper time and temperature control.

ASK: Are there any questions about these four foodborne illnesses from bacteria?

SAY: Another category of microorganisms that we need to be concerned about are **fungi**, which includes mold and yeast.

Mold can create spoilage in many products such as bread and cheese. Mold can grow in almost any condition: moist, dry, acidic, non-acidic, salty, sweet, cold, and warm. The toxins produced by molds can be dangerous to humans. These toxins have been linked to cancer in animals and to rare, isolated incidents of foodborne illness. Some molds can cause serious infection and allergies. Aflatoxin, which is produced by two specific molds, can cause liver disease.

If you have food that has mold on it, it should be discarded (unless it is part of the natural food, such as brie, camembert, gorgonzola, or blue cheese). Never just cut away the mold because toxins can permeate the food even though they are not visible to the eye.

Yeast loves sugar, and is associated with jellies, honey, syrup, and fruit juices. Yeast causes food to spoil, leaving evidence of bubbles and an alcoholic smell or taste. If you detect any of these signs, food should be discarded. An example of a situation where yeast might develop is when peaches on a salad bar are mixed with a new can of peaches.

ASK: Are there any questions about fungi?

SAY: Finally, **parasites** can cause foodborne illness. There are three main illnesses: Cyclosporiasis, Giardiasis, and Trichinosis.

Cyclosporiasis is caused by a tiny parasite that may be in contaminated water, or it may be in or on anything that has touched the stool of a person or animal with Cyclosporiasis. Recent outbreaks have involved berries from outside the United States, mixed lettuce products, and fresh herbs.

Giardiasis is caused by a microscopic parasite that may be in contaminated water or in or on anything that has touched the stool of a person or animal with Giardiasis. Adults and children in child care centers are at risk.

Trichinosis is a type of parasitic worm that can be associated with undercooked pork or pork sausages and may occur by contamination with meat grinders.

To prevent parasites, the following practices should be followed.

- Practice good personal hygiene.
- Follow proper handwashing procedures.
- Use water from approved sources.
- Wash all fresh produce.
- Use only pasteurized dairy products and juices.
- Cook foods to proper internal temperatures, and test with a thermometer.
- Follow practices that minimize cross contamination.

ASK: Are there any questions about parasites?

Objective: Describe ways that school nutrition employees can prevent foodborne illness.

(15 minutes)

SAY: Throughout this lesson, we have talked about many practices that can prevent foodborne illness. Let's generate a master list of practices that we have discussed.

DO: Complete Activity: Practices to Prevent Foodborne Illness.

Activity: Practices to Prevent Foodborne Illness

Materials needed:

- Flip chart paper (two tablets or 12 sheets)
 - Markers (one for each group)
 - Handout: Common Foodborne Illnesses—Symptoms and Prevention
1. Split participants into 5 groups and assign them a bacteria:
 - a. *Listeria monocytogenes*
 - b. *Clostridium perfringens*
 - c. *Clostridium botulinum*
 - d. *Campylobacter jejuni*
 - e. *Staphylococcus aureus*
 2. Ask participants to spend 5 minutes reviewing the prevention suggestions on the handout.

3. Ask table groups to identify practices that they implement all the time to prevent their assigned bacteria.
4. Ask table group participants to identify practices that could be improved in their schools.
5. Ask volunteers for 5 practices that could be improved.

SHOW SLIDE: Report Symptoms

SAY: While we are talking about practices to prevent foodborne illnesses, we need to talk about when employees should report symptoms to their supervisor. The *Food Code* states that employees should report any of the following symptoms:

- Vomiting,
- Diarrhea,
- Jaundice,
- Sore throat with fever, and
- Lesions containing pus, such as a boil or infected wound that is open and draining.

If a school nutrition employee has been diagnosed in the past three months by a health practitioner with any of the following illnesses, it needs to be reported immediately to the supervisor. If an employee has been exposed to any of these illnesses, it also needs to be reported immediately.

- Norovirus
- Hepatitis A virus
- *Shigella* spp.
- Shiga toxin-producing *Escherichia coli* (STEC)
- *Salmonella* typhi
- Nontyphoidal *Salmonella* (NTS)

SAY: Review the Exclude or Restrict Ill Employees handout in your Participant's Workbook.

Exclude or Restrict		
Symptoms	Exclude or Restrict from school	Return to work
Vomiting Diarrhea	Exclude	Symptom free 24 hrs
Sore throat with fever	Restrict/Exclude with High Risk Population	Need written medical release
Infected Sore	Restrict	When infected sore is properly covered with a bandage and single-use glove
Diagnosed with: Hepatitis A virus (jaundice)	Exclude if within 14 days of any symptom, or within 7 days of jaundice	Consult with local health department
Diagnosed with: <i>Salmonella</i> Typhi <i>Shigella</i> Nontyphoidal <i>Salmonella</i> (NTS) Shiga toxin-producing <i>Escherichia coli</i> (STEC) Norovirus	Exclude	Consult with local health department

ASK: What is one practice that you can do to prevent a foodborne illness?

Objective: Identify guidelines for responding to a reported foodborne illness.

(10 minutes)

SHOW SLIDE: Preventing Foodborne Illness

SAY: We have been discussing ways that we can prevent a foodborne illness. We hope that by following these best practices we will never have a foodborne illness in our schools. However, even when implementing the best practices, there may still be occasions when there will be symptoms of a foodborne illness that will be

reported to the school nutrition manager. In the worst case, there may actually be a foodborne illness outbreak. When a complaint is received, a school nutrition manager must respond correctly.

SHOW SLIDE: Foodborne Illness Outbreak

DO: Complete Activity: Responding to a Foodborne Illness.

Activity: Responding to a Foodborne Illness

Materials needed:

- Pens (one for each participant)
- Handout: Responding to a Foodborne Illness

1. Ask participants to turn to the Responding to a Foodborne Illness handout.
2. Ask participants to fill in the blanks as the general guidelines for responding to a foodborne illness are discussed.
3. Present the general guidelines for a school nutrition manager to follow when a foodborne illness is suspected:
 1. **Be calm and cooperate with the health department.** There may be many plausible explanations for the symptoms that the student/students are experiencing. They may have nothing to do with food served in the cafeteria. Remaining calm will help you respond rationally and systematically to the situation. Don't panic. Calmly approach the situation based on what you have been taught to do.
 2. **Talk with your supervisor immediately to communicate the situation and seek additional guidance.** Immediately let your district school nutrition director know about the situation. The director will provide guidance on how to proceed.
 3. **Stop serving the suspected food.** If you have any idea about which food might have been implicated, stop serving it or using it as an ingredient.

- 4. Keep samples of suspect foods.** If you have any idea about foods that might have been implicated, save samples in the original container, containers that have been cleaned and sanitized, or new plastic bags. Securely wrap the samples and label with the contents and date. Mark “DO NOT USE AND DO NOT DISCARD.” Store the samples in the refrigerator until you are told that they can be discarded. If possible, save the container, box, case, wrapping, and metal clips used on the original packaging. Save the food label and invoice in case the supplier needs to be contacted.
- 5. Cooperate with the health department to gather information. If warranted, the local health department will conduct an investigation.** Follow directions from the individual who is leading the investigation. This may include providing food samples, providing records, or answering questions about food handling practices in your operation.
- 6. Report the information you were asked to assemble.** Provide all information requested, even if the information is not all positive.
- 7. Do not give medical advice—that should be left to the health professionals.** If a foodborne outbreak is suspected, cooperate with the health department and let them provide any information needed. Be careful not to diagnose, interpret symptoms, or suggest treatments.
- 8. Direct all media inquiries to the designated school district representative.** Work with your district school nutrition director to direct all inquiries to the appropriate spokesperson within the school district. Instruct employees not to discuss any information on social media.

Lesson Wrap Up

(5 minutes)

- SAY:** You now have a good understanding of the various foodborne illnesses that can occur. We also have identified many practices that school nutrition employees can use to minimize the possibility of a foodborne illness. Most of these practices you use on a daily basis, but perhaps there are some that you need to think about doing more frequently. Hopefully, this lesson will illustrate how important those practices are for food safety.
- ASK:** Do you have any questions about anything you have learned in this lesson?
- DO:** Listen to individual responses. Answer questions to the best of your ability. If there are questions you can't answer, tell participants you will find the answers and let them know later. If you need assistance in finding answers, please call the Institute of Child Nutrition at 800-321-3054.

Lesson 4: A Clean and Sanitary School Nutrition Facility

Lesson-at-a-Glance

Time	Topic	Task	Materials
5 minutes	Introduction and Overview	<ol style="list-style-type: none"> 1. Introduce instructor and class participants. 2. Introduce Lesson 4. 3. List lesson objectives. 	
10 minutes	Objective (optional) List characteristics of a food-safe facility.	Activity: Inspect Kitchen Using Food Safety Checklist	Handout: <ul style="list-style-type: none"> • Food Safety Checklist • Pens or Pencils
15 minutes	Objective Describe practices that can be used to control pests in a school nutrition facility.	Activity: Case Study— Pest Problems at Red Oak High School	Handout: <ul style="list-style-type: none"> • Case Study—Pest Problems at Red Oak High School • Pencils
10 minutes	Objective Demonstrate how to mix and test chemical sanitizing solutions. Objective Demonstrate how to clean and sanitize.	Activity: Manual Cleaning and Sanitizing	Handouts: <ul style="list-style-type: none"> • Cleaning and Sanitizing • Manual Cleaning • Standard Operating Procedure: <i>Cleaning and Sanitizing Food Contact Surfaces</i> • Chemical sanitizers (type used in your operation or demonstrate each type: chlorine, quaternary ammonium, or iodine) • Test Strips: chlorine, quaternary ammonium, and iodine

Time	Topic	Task	Materials
5 minutes	Objective Describe how to set up and use a three-compartment sink.		Handout: <ul style="list-style-type: none"> • Manual Dishwashing
10 minutes	Objective Demonstrate how to use mechanical dishwashers, including checking temperatures or sanitizing solution concentration.	Activity: Checking Sanitizing Effectiveness on a Mechanical Dish Machine (optional)	Handouts: <ul style="list-style-type: none"> • Mechanical Dishwashing • Dish Machine Temperature Log • Waterproof maximum-registering thermometer • Self-adhering temperature-sensitive label • T-Stick®, calibrated for 160 °F • Student meal tray • Fork
5 minutes	Objective Demonstrate how to clean and sanitize large equipment.		
5 minutes	Wrap Up		

Lesson Plan

Introduction and Overview

(5 minutes)

SHOW SLIDE: Lesson 4: A Clean and Sanitary School Nutrition Facility

SAY: It is important to make sure that foods are not contaminated at any point during the foodservice process. We have focused on three key areas:

1. employee personal hygiene,
2. prevention of contamination, and
3. time and temperature control.

Lesson 4 focuses on ways that we can maintain a clean and sanitary school nutrition program so that we can prevent contamination of food.

DO: Refer participants to the lesson objectives in the Participant's Workbook.

SAY: After this lesson, you will be able to:

1. list characteristics of a food-safe facility;
2. describe practices that can be used to control pests in a school nutrition facility;
3. demonstrate how to mix and test chemical sanitizing solutions;
4. demonstrate how to clean and sanitize;
5. describe how to set up and use a three-compartment sink;
6. demonstrate how to use mechanical dishwashers, including checking temperatures or sanitizing solution concentration; and
7. demonstrate how to clean and sanitize large equipment.

Objective: List characteristics of a food-safe facility.

(10 minutes)

SAY: Let's begin this lesson by talking about what it means to have a food-safe school nutrition facility—one that is clean and in good repair. The facility and the equipment must be designed for easy cleaning and maintenance. School nutrition employees must be responsible for routinely cleaning and maintaining both the facility and the equipment.

SAY: School nutrition employees need to be able to identify the most common crisis, identified by the regulatory authority, as “an imminent public health hazard.” These hazards require immediate correction or facility closure. They include electrical, power outage, sewage back-up, fire, and flooding.

In order to identify all of the aspects of a food-safe school nutrition program, let's inspect your school nutrition program.

SHOW SLIDE: Food Safety Checklist

DO: Complete Activity: Inspect Kitchen Using Food Safety Checklist.

Activity: Inspect Kitchen Using Food Safety Checklist (optional)

Materials needed:

- Handout: Food Safety Checklist
- Pencils or pens

1. Ask participants to turn to the Food Safety Checklist. You can have participants work individually or in pairs.
2. Ask participants to use the checklist to evaluate the kitchen in which they work. If the training is not done on-site, eliminate this step.
3. Go through each of the 11 sections of the Food Safety Checklist and ask employees to identify areas where they think improvements could be made. Ask for suggestions about what changes could be used to improve food safety for the items identified.

SAY: We have routine inspections of our school kitchens by the state (or local) health departments. While it is important to have an external inspector visit our kitchens to identify areas we can improve, it is more important that we conduct self-inspections on a routine basis so that we can identify our own problems and make corrections in a timely manner. After all, there may be six months between formal inspections. A lot can go wrong in between those times. When the health inspector visits, we should not be surprised by any practice that is identified on the inspection report.

To promote cleanliness in a school nutrition program, it is important to maintain cleaning schedules and to have Standard Operating Procedures for completing various cleaning tasks. By scheduling cleaning tasks and assigning responsibilities to a specific person, cleaning is more likely to be done. Some cleaning and sanitizing needs to be done daily, such as food contact surfaces, equipment, handles, etc., while other cleaning needs to be done weekly or monthly. When planning, it is important to make sure that the following areas are cleaned:

- Floors
- Walls
- Ceilings
- Ventilation systems
- Restrooms

Objective: Describe practices that can be used to control pests in a school nutrition facility.

(15 minutes)

SHOW SLIDE: Pest Control

SAY: Pest control is important to maintaining a clean and sanitary kitchen, and one in which food does not become contaminated. Cleaning, sanitizing, and food maintenance are keys to preventing pest infestation.

ASK: What are some common pests in school nutrition facilities?

DO: Pause to allow time for participants to respond.

Instructor's Note: Click the PowerPoint 4 times to introduce the 3 pests and the answers.

SAY: Yes, cockroaches, flies, and rodents are common pests. At certain times of the year, you may also see ants.

Cockroaches live and breed in holes, damp places, behind boxes, in seams of bags, and in folds of paper. They like dark, warm, and moist places and breed in hard-to-clean areas. Cockroaches can carry disease-causing microorganisms. Generally, cockroaches search for food at night. If you see cockroaches during the day, it may indicate a major infestation. Other signs of an infestation include

- a strong, oily odor;
- feces that look like large grains of pepper; and
- brown, dark brown, dark red, or black capsule-shaped egg cases.

Flies feed on waste and can carry a wide range of foodborne illnesses. They can enter a building through holes the size of a pinhead and can contaminate food with their mouth, footpads, hair, or feces. Flies are attracted to places protected from the wind and to edges of things such as garbage can rims. They lay their eggs in warm decaying material protected from sunlight and are fond of human waste areas.

Rodents also carry many disease-causing organisms and parasites. When rodents leave feces, urine, and other filth on food or surfaces, these organisms can be easily transmitted to people. Rodents are prolific breeders. They tend to hide during the day, but leave telltale signs such as

- droppings;
- gnawing;
- tracks on dusty surfaces;
- nesting materials; and
- holes in baseboards, wall board, and in other wood.

It is important to have a proactive pest control program to ensure that pests do not contaminate food. Some ways we can control pests include:

- using a licensed pest control operator to implement an ongoing pest control program;
- filling any openings or cracks in walls and floors;
- filling any openings around equipment fittings or pipes;
- using screens on all windows and doors, keeping them in good shape, and making sure that they fit tightly;
- using self-closing doors that open outward;
- inspecting all food for signs of infestation before storing;
- storing food at least 6 inches off the floor and away from walls;
- removing cardboard boxes from food in dry storage (such as cardboard boxes used for shipping canned goods);
- discarding empty cardboard boxes;
- maintaining proper storage temperatures;

- cleaning grease traps to prevent drain blockage;
- installing an air door at facility entrances to prevent bugs from flying in;
- painting floor (or border around room) of storage room white to make it easier to see evidence of pests; and
- remove garbage quickly and dispose of correctly.

DO: Complete Activity: Case Study—Pest Problems at Red Oak High School.

Activity: Case Study—Pest Problems at Red Oak High School

Materials needed:

- Handout: Case Study—Pest Problems at Red Oak High School
- Pencils

1. Ask participants to turn to the Case Study—Pest Problems at Red Oak High School handout.
2. Divide participants into pairs.
3. Allow about 5 minutes for participants to complete the case study.
4. Discuss how each of the ten areas observed can be changed to minimize pests.

Responses to Case Study

1. **Observation:** Fan at the back door does not work.
Change: *Have it repaired. In the meantime, keep door closed.*
2. **Observation:** Unscreened back door does not fit securely when closed.
Change: *Have maintenance check the door and make it more secure. Flies and other pests can enter in very small spaces.*
3. **Observation:** One bag of rice in the storeroom is broken at the bottom and has spilled.
Change: *Clean up rice and discard the bag since a rat or mouse may have chewed it. Store all food and supplies 6-8 inches off the floor on pallets.*
4. **Observation:** Cases of cans are stored in cardboard cartons.
Change: *Remove the cans from the cases and record the arrival date on the cans. If necessary, keep a portion of the case for reference numbers.*
5. **Observation:** Pipes from steam-jacketed kettle have space around them.
Change: *Have maintenance fill openings around pipes to prevent entry by pests.*
6. **Observation:** Garbage cans are not covered at any time of the day.
Change: *Follow state and local public health department guidelines; keep garbage cans covered as much as possible.*

7. **Observation:** Loading dock is clean in the middle but the sides are dirty.
Change: *Have the loading dock completely cleaned, and then begin a routine cleaning program of that area.*
8. **Observation:** Bins of flour and sugar were left half-full over the summer.
Change: *Bins should have been emptied, cleaned, and sanitized for the summer. Food left in the bins should be discarded and the bins cleaned and sanitized.*
9. **Observation:** The grease trap had not been cleaned and the three-compartment sink drain had overflowed. The overflow had dried during the summer, and an unpleasant odor was obvious.
Change: *All grease traps should be cleaned on a regular basis to prevent grease build up.*
10. **Observation:** Safety Data Sheets (SDS) were not available for the cleaning chemicals used in the kitchen.
Change: *Contact the employee who purchases the chemicals and obtain a copy of the SDS for each chemical used. All employees should be properly taught about the procedure for using chemicals and where the SDS are located.*

Objective: Demonstrate how to mix and test chemical sanitizing solutions.

Objective: Demonstrate how to clean and sanitize.

(10 minutes)

SHOW SLIDE: Cleaning and Sanitizing

SAY: We have talked about the importance of cleaning and sanitizing to reduce the opportunity for bacteria and viruses to contaminate food. Now we need to talk about how to prepare chemical sanitizing solutions and how to manually clean and sanitize.

DO: Complete Activity: Manual Cleaning and Sanitizing.

Activity: Cleaning and Sanitizing

Materials needed:

- Cleaning bucket (show slide example)
 - Sanitizing bucket (show slide example)
 - Test strips (show examples of strips for chlorine, quaternary ammonium, and iodine)
 - Handouts:
 - Cleaning and Sanitizing
 - Cleaning and Sanitizing Food Contact Surfaces (Sample SOP)
1. Talk about getting ready to clean and sanitize.
 - a. Prepare green cleaning bucket with warm, soapy water.
 - b. Prepare red sanitizing bucket with sanitizing solution.
 - i. Indicate that sanitizing solution should be mixed to the appropriate concentration.

SHOW SLIDE: Chemical Concentrations

- ii. Tell participants that there are three approved sanitizers for foodservice: chlorine, quaternary ammonium, and iodine.
- iii. The concentration of sanitizers is measured in parts per million (ppm). Requirements are:
 1. Chlorine—50-100 ppm at 75 °F
 2. Quaternary Ammonium—200 ppm at 75 °F
 3. Iodine—12.5-25 ppm at 75 °F
- iv. Show test strips and demonstrate how they are used.

SHOW SLIDE: Manual Cleaning and Sanitizing

2. Discuss the three steps in the cleaning and sanitizing process.
 - a. Clean surfaces with warm, soapy water to remove all debris and grease film.
 - b. Rinse the surface with warm, clean water.
 - c. Sanitize the surface with sanitizing solution.
 - i. Point out that sanitizing solutions lose effectiveness when they are contaminated with food particles or with detergent.

- ii. Sanitizing solutions need to be changed when they are visibly dirty or when concentrations drop below required levels.
 - iii. Always use the recommended sanitizing test strip to test the solutions effectiveness.
3. Remind participants that food contact surfaces need to be washed, rinsed, and sanitized
 - a. after each use,
 - b. when changing tasks such as working with a different type of food,
 - c. when there is a possibility of contamination, and
 - d. at 4-hour intervals if items are in constant use.
4. Have participants prepare and test sanitizer solutions (optional).
5. Ask participants to turn to the Cleaning and Sanitizing handout and the Cleaning and Sanitizing Food Contact Surfaces (Sample SOP). Discuss key points with participants.

Objective: Describe how to set up and use a three-compartment sink. (10 minutes)

SHOW SLIDE: Three-Compartment Sink

SAY: We sometimes use manual dishwashing to clean and sanitize cooking utensils, pans, and moveable equipment or equipment parts. For manual dishwashing, we use a three-compartment sink.

Some school nutrition programs use a mechanical dish machine for most cleaning and sanitizing, but you will see a three-compartment sink in almost every kitchen.

ASK: Can you think of an important reason why we need to have a three-compartment sink, even if we use a dish machine?

DO: Wait for responses from participants.

SAY: One of the reasons we need a three-compartment sink is for use when the dish machine is not operating properly. For example, if you check the sanitizing concentration or temperature in the dish machine and it does not meet the standard for sanitizing, you must immediately stop using it. Then, you must either use

disposables or manually wash all flatware, trays, serving utensils, etc. Now, turn in your Participant's Workbook to the Manual Dishwashing handout, and let's talk about how to set up a three-compartment sink properly.

Compartment 1:

The first compartment is used for washing—so it should be set up with warm, soapy water. The water should be about 110 °F. The quantity of detergent should be based on the manufacturer's instructions. Prior to placing items in the first compartment, they should be scraped and, if possible, rinsed. If needed, pre-soak flatware and heavily soiled items. Once items are placed in the first compartment, they should be rubbed vigorously with a brush or cloth to loosen and remove any visible food particles.

Compartment 2:

The function of the second compartment is rinsing. Clean, hot water (110 °F) should be placed in the second compartment and used to rinse away traces of food, debris, and detergent. Submerging an item under water or using a hose to rinse are acceptable for rinsing. When filling a sink, the water should be changed if it gets cold or shows signs of food, debris, or detergent.

Compartment 3:

The third compartment is for sanitizing. Sanitizing can be done with a chemical sanitizing solution or with hot water. The most common sanitizer used in schools is chemicals, but there are schools that use just hot water. If you use a chemical sanitizing solution, the concentration, or ppm, will be the same as you learned for sanitizing other surfaces. If you use hot water, the water should be maintained at or above 171 °F. Items should be submersed in the hot water at least 30 seconds for adequate sanitizing.

SAY: The water or chemicals in each compartment need to be changed when the temperature drops or if it becomes visibly dirty. Remember, we learned earlier that food debris will inactivate the sanitizer. Use the appropriate water temperature recommended by the manufacturer.

Let's review the steps for using a three-compartment sink to manually sanitize smallware:

1. Scrape and rinse items. Presoak items as needed.
2. Wash in hot (110 °F), soapy water.
3. Rinse in clean, hot water (110 °F).
4. Sanitize in very hot water (171°F or above) or chemical sanitizing solution at appropriate concentration.
5. Air dry all items on a drain board.
6. Store items to avoid moisture retention or recontamination.

ASK: Why is it important to air dry all items?

DO: Wait for responses from participants.

FEEDBACK: Talk about the possibility of recontamination of clean and sanitized items. Cloth towels should never be used for drying.

DO: Refer participants to the Manual Dishwashing handout and discuss the key points.

Objective: Demonstrate how to use mechanical dishwashers, including checking temperatures or sanitizing solution concentration. (10 minutes)

SHOW SLIDE: Mechanical Dishwashing

SAY: Mechanical dish machines may be used in schools for washing and sanitizing smallware, such as trays, glasses, flatware, and serving utensils. They are also often used for washing and sanitizing cooking equipment such as sheet pans, counter pans, and equipment parts.

Just as we have talked about with other cleaning and sanitizing methods, the three steps are used in a dish machine as well. There are two types of dish machines: high temperature and chemical.

For high temperature dish machines, there is a wash cycle in which the water reaches 150 °F, a rinse cycle, and then a final rinse cycle that reaches 180 °F. The temperature of the final rinse water varies depending on type of dish machine and

state and local public health requirements. You should check the face plate on the dish machine and follow the wash and rinse temperatures recommended on the face plate.

Chemical dish machines use a chemical sanitizing solution in the final rinse cycle. It should be at the same concentration that we discussed earlier in this lesson.

ASK: Do you recall the concentration?

DO: Wait for responses from participants.

FEEDBACK: Correct answer: Chlorine—50-100 ppm at 75 °F.

SAY: It is important to check temperatures of the wash cycle and the temperatures or sanitizing solution concentration of the rinse cycle, at least once every meal period. These temperatures should be documented each time they are taken.

Sometimes the gauges on the dish machines are not accurate. Therefore you need to do a secondary check of temperatures. There are three methods that you can use to check temperatures: irreversible registering temperature indicators, self-adhering temperature-sensitive label, or T-Stick®. I will show you each type and demonstrate how they are used.

SHOW SLIDE: Check Sanitizer Effectiveness

DO: Complete Activity: Checking Sanitizing Effectiveness on a Mechanical Dishwasher. (optional)

Activity: Checking Sanitizing Effectiveness on a Mechanical Dishwasher (optional)

Materials needed:

- Irreversible registering temperature indicators
- Self-adhering temperature-sensitive label
- T-Stick®, calibrated for 160 °F
- Student meal tray
- Fork

- Handouts:
 - Dish Machine Temperature Log
 - Mechanical Dishwashing
1. **Show** participants an irreversible registering temperature indicators. **Discuss use.**
 - a. Place the irreversible registering temperature indicators in a rack, along with other items being washed.
 - b. When you remove the thermometer, it will register the highest temperature reached.
 - c. That is the temperature that you record for the rinse temperature.
 2. **Show** participants a self-adhering temperature-sensitive label. **Discuss use.**
 - a. Place a label on a clean tray or other clean, flat surface. If the surface is rough, the label will not stick throughout the entire washing process.
 - b. Place the item with the label in a rack with other items being washed, and run it through a complete cycle.
 - c. When you remove the label, it will have turned black if the temperature reached 160 °F when the water contacted the surface. If it did not turn black, the rinse temperature was not hot enough for adequate sanitizing.
 3. **Show** participants a T-Stick®. **Discuss use.**
 - a. Place the T-Stick® in the tines of a fork.
 - b. Put the fork in a rack with other items being washed and run it through one cycle of the dish machine.
 - c. When you remove the T-Stick®, it will have turned black if the temperature reached 160 °F when the rinse water contacted the T-Stick®. If it did not turn black, the rinse water was not hot enough for adequate sanitizing.
 4. If you have access to a dish machine, have employees use each of the thermometers to check temperatures.
 5. Distribute a copy of the Dish Machine Temperature Log. Discuss the need to document temperatures and the need to take corrective action if appropriate temperatures are not reached.
 6. Ask participants to turn to the Mechanical Dishwashing handout for more information on mechanical dishwashing.

Objective: Demonstrate how to clean and sanitize large equipment.

(5 minutes)

SHOW SLIDE: Large Equipment

SAY: Equipment must be cleaned and sanitized to keep it free from harmful levels of bacteria or other contaminants. Some surfaces of equipment come into direct contact with food, such as the blades of a meat slicer, the blade of a can opener, or the attachments for a mixer. Just like other cleaning and sanitizing, it is a three-step process: wash, rinse, and sanitize.

Some equipment can be disassembled and parts can be cleaned and sanitized in a three-compartment sink or in a mechanical dish machine following procedures we discussed earlier. Other equipment has to be cleaned and sanitized in place. Let's talk about the steps used for cleaning and sanitizing equipment in place.

Step 1: Unplug electrical equipment.

Step 2: Remove any loose food particles.

Step 3: Wash, rinse, and sanitize any removable parts using the manual immersion method or running it through the mechanical dishwasher, and allow to air dry.

Step 4: Wash the remaining food contact surfaces and rinse with clean water. Wipe down with a chemical sanitizing solution that has been mixed according to manufacturer's directions.

Step 5: Clean and sanitize surfaces that do not come in contact with food using a clean wiping cloth. Allow all parts to air dry before reassembling. Clean the wiping cloth before and during use by rinsing it in a sanitizing solution.

Step 6: Re-sanitize any external food contact surfaces of the parts that were handled when the equipment was reassembled.

Some equipment, such as a soft-serve yogurt machine, is designed to have cleaning and sanitizing solutions pumped through them. Because they hold and dispense Time/Temperature Control for Safety (TCS) foods, they must be cleaned and sanitized daily. Always follow the manufacturer's instructions.

Lesson Wrap Up

(5 minutes)

SAY: Cleaning and sanitizing are critical steps in any school nutrition program.

- ASK:**
1. Do you have a cleaning schedule with assigned cleaning duties posted in your school nutrition program?
 2. Why is routine cleaning so important in a school nutrition program?
 3. What cleaning and sanitizing tasks need to be done more frequently in your school nutrition program?

SAY: In this lesson, we have talked about why and how cleaning and sanitizing should be done. While these tasks sound basic, sometimes they are not done as often as needed. Cleaning and sanitizing are basic requirements in any school nutrition program. Special attention needs to be given to implementing these practices to serve as the foundation for a food safety program.

ASK: Do you have any questions about anything you have learned in this lesson?

DO: Listen to individual responses. Answer questions to the best of your ability. If there are questions you can't answer, tell participants you will find the answers and let them know later. If you need assistance in finding answers, please call the Institute of Child Nutrition at 800-321-3054.

Lesson 5: A Process for Preventing Foodborne Illness

Lesson at-a-Glance

Time	Topic	Task	Materials
5 minutes	Introduction and Overview	<ol style="list-style-type: none"> 1. Introduce instructor and class participants. 2. Introduce Lesson 5. 3. List lesson objectives. 	
5 minutes	Objective Describe how purchasing relates to food safety.		
15 minutes	Objective List food safety practices that should be followed when receiving food.	Activity: Receiving Food and Supplies	Handouts: <ul style="list-style-type: none"> • Evaluation Criteria for Foods During Receiving • Sample Invoice • Receiving Deliveries • Receiving Deliveries (Sample SOP) • Pencils (one per participant)
15 minutes	Objective Describe safe food handling practices for dry, refrigerated, and frozen storage.	Activity: Storing Food and Supplies	Handouts: <ul style="list-style-type: none"> • Storing Foods • Storing and Using Chemicals • Sample Invoice

Time	Topic	Task	Materials
15 minutes	<p>Objective List good food handling practices when preparing food.</p>	<p>Activity: Preparing Recipes</p>	<p>Handouts:</p> <ul style="list-style-type: none"> • Preventing Contamination During Food Preparation • Controlling Time and Temperature During Preparation • Washing Fruits and Vegetables <p>Two copies of the following USDA recipes:</p> <ul style="list-style-type: none"> • Chicken Alfredo With a Twist • Mediterranean Quinoa Salad • Porcupine Sliders • Tasty Tots • Smokin' Powerhouse Chili • Lentils of the Southwest • Chic Penne • Harvest Stew <p>Instructor's Note: Recipes are located in Appendix A of the <i>Food Safety in Schools Participant's Workbook</i>.</p> <ul style="list-style-type: none"> • Two sheets of flip chart paper for each group • Markers

Time	Topic	Task	Materials
5 minutes	<p>Objective Describe safe methods for thawing frozen food.</p>		
15 minutes	<p>Objective List food safety guidelines for cooking food.</p> <p>Objective State internal cooking temperatures for foods often prepared in schools.</p>	<p>Activity: Thawing and Cooking Food</p>	<p>Handouts:</p> <ul style="list-style-type: none"> • Thawing Foods • Thawing Foods Activity • Cooking Foods <p>• Four signs with the following temperatures on them (one temperature per sign): 135 °F, 145 °F, 155 °F, 165 °F</p> <p>Index cards with one food item per card:</p> <ul style="list-style-type: none"> • Frozen peas • Frozen chicken patties • Taco filling • Leftover lasagna • Frozen broccoli • Pork roast • Sausage • Chicken noodle casserole • Hamburger patties • Ham • Roast beef • Sloppy Joes • Canned corn • Leftover chili • Stuffed pasta shells • Roasted turkey

Time	Topic	Task	Materials
5 minutes	Objective State appropriate holding temperatures for hot and cold food.		Handouts: <ul style="list-style-type: none"> • Holding Cold Foods • Holding Hot Foods
10 minutes	Objective Describe food safety guidelines for serving food.	Activity: Training Employees on Serving Techniques	Handouts: <ul style="list-style-type: none"> • Serving Safe Food • Using Suitable Utensils When Handling Ready-to-Eat Foods • Preventing Contamination in Food Bars
15 minutes	Objective List steps for the safe cooling of food.	Activity: <i>Cool It! Methods for Cooling Food Safely</i> Video Clip	<ul style="list-style-type: none"> • DVD player and monitor OR computer with Internet connection and monitor. • <i>Cool It! Methods for Cooling Food Safely</i> Video Handouts: <ul style="list-style-type: none"> • <i>Cooling Food</i> Video Viewing Guide • Cooling Food
5 minutes	Objective Describe the reheating process for food.		Handout: <ul style="list-style-type: none"> • Reheating Foods
5 minutes	Objective (optional) Describe the steps for ensuring food safety when transporting food.		Handout: <ul style="list-style-type: none"> • Transporting Foods
5 minutes	Wrap Up		

Lesson Plan

Introduction and Overview

(5 minutes)

SHOW SLIDE: Lesson 5: A Process for Preventing Foodborne Illness

SAY: Lesson 5 focuses on the process for preventing foodborne illness. It is important to follow basic food handling practices at each operational step. These operational steps include purchasing, receiving, storing, preparing, cooking, serving and holding, cooling, reheating, and transporting. Basic food handling practices needed at each step include time and temperature control; employee personal hygiene; and prevention of contamination. In this lesson, you will be asked to analyze each step of the foodservice process and apply principles that you have learned in previous lessons.

Let's begin this lesson by talking about using standard practices at each step of the foodservice process, how we monitor those standard practices, and how we take corrective actions if the standard practices are not being followed. The process of taking corrective actions is an important key to any food safety program.

DO: Refer participants to the lesson objectives in the Participant's Workbook.

SHOW SLIDE: Foodservice Process Steps

SAY: After this lesson, you will be able to:

1. describe how purchasing relates to food safety;
2. list food safety practices that should be followed when receiving food;
3. describe safe food handling practices for dry, refrigerated, and frozen storage;
4. list good food handling practices when preparing food;
5. describe safe methods for thawing frozen food;
6. list food safety guidelines for cooking food;
7. state internal cooking temperatures for foods often prepared in schools;
8. state appropriate holding temperatures for hot and cold food;
9. describe food safety guidelines for serving food;
10. list steps for the safe cooling of food; and

11. describe the reheating process for food.

Optional (depending on need of participants)

12. describe the steps for ensuring food safety when transporting food.

Objective: Describe how purchasing relates to food safety.

(5 minutes)

SHOW SLIDE: Purchasing

SAY: Now we are ready to review the steps of the foodservice process.

DO: Tell participants to turn to the Safe Food Process handout in Lesson 2 of the Participant's Workbook.

SAY: The first step of the foodservice process is purchasing followed by receiving, storing, preparing, cooking, serving and holding, cooling, and reheating. We will talk about each of these steps as we progress through Lesson 5. We'll also include one additional step, transporting food.

Let's talk about purchasing (the first step). The goal of purchasing is to obtain safe and wholesome food to meet the menu requirements of a school nutrition program. The person responsible for purchasing has to select vendors who maintain high standards for food safety. In purchasing, both the vendors and the purchasers share responsibility for food safety.

ASK: Can you think about some responsibilities that are important for the individual who does the purchasing for the school nutrition program?

DO: Listen for responses. Summarize, making sure that the following points are made.

SAY: You brought up some important responsibilities. In addition to what you have mentioned, the purchaser must also:

- work with vendors to establish an appropriate food delivery schedule for each school;
- tell vendors what performance is expected;

- request a copy of vendors' standardized procedures for sanitation or a letter documenting that the vendor follows a hazard analysis critical control point (HACCP) program or good manufacturing practices;
- include food safety standards in purchase specifications, such as the requirement for the vendor to follow HACCP or good manufacturing practices;
- work with vendors to be aware of all food ingredients and sub-ingredients;
- request a copy of vendors' most recent health inspection report;
- inform vendor that the purchaser will make unannounced sanitation inspections of truck;
- visit vendors' warehouses periodically to check on cleanliness; and
- reject all products that do not meet requirements established for the school nutrition program.

Decisions are made at the point of purchasing about the form in which food will be purchased—decisions that can impact food handling in the school nutrition program. For example, a decision might be made to purchase precooked meats so that raw meat does not come into the facility. Or, a decision might be made not to purchase high risk foods, such as sprouts or melons.

Based on our discussion of purchaser's responsibilities, some of the vendor's responsibilities are evident.

ASK: What do you think are important responsibilities of vendors to ensure food safety?

DO: Listen for responses. Summarize, making sure that the following points are made.

SAY: You have identified several important responsibilities for vendors who sell food and supplies to a school nutrition program. It is important for vendors to:

- meet all federal and state health standards;
- follow Standardized Operating Procedures for food safety;
- train employees in sanitation;
- have clean delivery trucks with adequate refrigeration;
- deliver foods in clean containers (for example, milk crates should be free of visible soil);
- deliver foods packaged in protective, leak-proof, and durable packaging;

- deliver foods at the correct temperatures;
- organize foods to separate raw products from processed foods and produce; and
- provide written documentation about their food safety program, and how to handle returns and food recalls.

Objective: List food safety practices that should be followed when receiving food.

(15 minutes)

SHOW SLIDE: Receiving

SAY: After food and supplies are purchased, they are delivered to the school nutrition program by the vendor and received by school nutrition employees. The goals of receiving are to make sure that foods are fresh and safe when they are delivered to the operation and to transfer foods to proper storage areas as quickly as possible upon delivery. The employee who receives a food delivery is responsible for monitoring the quality and safety of the foods that are accepted, and that employee must be trained on how to receive deliveries. There are some basic guidelines for receiving that all employees should know.

First, the receiving area should be organized and appropriate for receiving. That includes:

- making sure that the receiving area is clean and free of boxes or other items that might encourage pests;
- making sure that the receiving area is well lit; and
- having the correct equipment and supplies, including
 - pen and hard writing surface such as a clip board,
 - food thermometer for checking temperatures,
 - receiving form for documenting temperatures (or, this may be done directly on the invoice), and
 - clean cart or hand truck for transporting goods from the receiving area to storage.

Second, the delivery truck should be checked to make sure that it looks and smells clean and is at the appropriate temperature.

There are times when deliveries are done outside regular business hours; this is referred to as a Key Drop Delivery. Specifications for these deliveries must be agreed upon before delivery.

Finally, food and supplies should be inspected when they are delivered to make sure that they are of the quality ordered and delivered in good condition. When checking food items, we want to make sure that:

- foods meet delivery temperature, food specification, and quality requirements;
- foods are within the expiration date—especially items such as milk, eggs, and other perishable items;
- foods are in airtight, moisture-proof packaging;
- frozen foods are frozen solid and show no signs of thawing and refreezing, which might include large ice crystals, solid areas of ice, excessive ice in containers, or wet looking spots on cardboard packaging;
- canned foods show no signs of deterioration, such as swollen sides or ends, flawed seals or seams, dents, or rust;
- packaged foods are not damaged and do not show signs of insect infestation;
- dairy, bakery, and other foods are delivered in clean flats or crates; and
- for key drop deliveries, verify that they are from an approved supplier, stored properly, protected from contamination, and presented authentically.

If there are any problems noted with the criteria we have just discussed, the person doing the receiving needs to reject the item, mark that on the invoice, and notify the school nutrition supervisor.

DO: Complete Activity: Receiving Food and Supplies.

Activity: Receiving Food and Supplies

Materials needed:

- Pencils
- Handouts:
 - Evaluation Criteria for Foods During Receiving
 - Sample Invoice
 - Receiving Deliveries
 - Receiving Deliveries (Sample SOP)

1. Ask participants to turn to the two handouts for the activity: Evaluation Criteria for Foods During Receiving and Sample Invoice.
2. Divide participants into pairs by having them count themselves off as a 1 or 2.
3. Assign each pair one item from the sample invoice. Ask the pair to discuss how they would evaluate that product upon receiving and what receiving steps they would follow for the item.
4. Have each pair present their evaluation and receiving steps.

DO: Ask participants to turn to the handouts Receiving Deliveries and Receiving Deliveries (Sample SOP) and discuss key points.

Objective: Describe safe food handling practices for dry, refrigerated, and frozen storage.

(15 minutes)

SHOW SLIDE: Storing

DO: Refer to the “Storing” step on the Safe Food Process handout in Lesson 2.

SAY: Now that deliveries have been received, the next step is storing. The goal of storing is to maintain food and supplies in conditions that will ensure their safety, quality, and shelf life. With storing, we are concerned about the temperature of the storage area, humidity, cleanliness, and air flow.

There are four types of storage areas in all school nutrition facilities: dry storage, chemical storage, refrigerated storage, and freezer storage. Some school nutrition facilities may also have a deep chilling storage unit.

Let's make sure that we all know the proper temperatures for the storage areas.

Instructor's Note: As you talk about temperatures, do Activity: Storing Food and Supplies, items 1 and 2.

Temperatures for storage areas should be as follows.

- Dry storage areas should be between 50 °F and 70 °F.
- Refrigerated storage areas should be at or below 41 °F. (Remember, the refrigerator temperature will need to be a little cooler than the temperature desired for the food itself, because if the refrigerator temperature is at 41 °F, it will be difficult to maintain the food temperatures at 41 °F.)
- Deep chilling storage areas should be between 26 °F and 32 °F. Deep chilling storage increases the shelf life of many foods without compromising their quality by freezing. Deep chilling storage is often used in central kitchens (or commissaries) when they are preparing food on days prior to service.
- Freezer storage areas should be between -10 °F and 0 °F. Remember, the colder the temperature, the better it is for food quality.

Once food is received at the facility, it is important to transfer it into storage as quickly as possible. Remember that items should be marked with the receiving date before they are placed into storage. That way, inventory rotation can be monitored. Remember FIFO—First In, First Out.

Recalled products need to be segregated, labeled, and held in designated areas that are separate from food and food supplies.

DO: Complete Activity: Storing Food and Supplies.

Activity: Storing Food and Supplies

Materials needed:

- Handouts:
 - Sample Invoice (used in the Activity: Receiving Food and Supplies)
 - Storing Foods
 - Storing and Using Chemicals

1. Ask participants which of the items on the sample invoice should be transferred to storage first, second, and third.
2. Discuss the fact that refrigerated items would be stored first, followed by the frozen items. The items for dry storage (including chemicals) would be placed in storage last. The rationale is that the refrigerated items would be most likely to enter the temperature danger zone first.
3. Ask participants to turn to the Storing Foods and Storing and Using Chemicals handouts and discuss the key points.

Objective: List good food handling practices when preparing food.

(10 minutes)

SHOW SLIDE: Preparing

SAY: The next step in the process is preparing food. In the preparation step, the main concerns of food handlers are to prevent contamination of food, control the time that food is in the temperature danger zone, and use safe food handling practices.

DO: Complete Activity: Preparing Recipes.

Activity: Preparing Recipes

Materials needed:

- Eight recipes:
 - Chicken Alfredo With a Twist
 - Mediterranean Quinoa Salad
 - Porcupine Sliders

- Tasty Tots
- Smokin' Powerhouse Chili
- Lentils of the Southwest
- Chic Penne
- Harvest Stew

Instructor's Note: Recipes are located in Appendix A of the Participant's Workbook.

- Markers
 - Two sheets of flip chart paper for each group
 - Handouts:
 - Preventing Contamination During Food Preparation
 - Controlling Time and Temperature During Preparation
 - Washing Fruits and Vegetables
1. Ask participants to turn to the Preventing Contamination During Food Preparation and Controlling Time and Temperature During Preparation handouts and discuss key points.
 2. Divide participants into eight small groups.
 3. Assign each group one recipe.
 4. Ask the group to label one sheet of flip chart paper "prevent contamination" and one sheet of flip chart paper "control time and temperature."
 5. Tell each group to read their recipe and list all of the practices that they can think of to prevent contamination and to control time and temperature.
 6. Bring the entire group together and discuss each recipe. Note the similarities and the differences among the recipes.

SHOW SLIDE: Produce Safety

SAY: Washing fresh fruits and vegetables is a special area of concern when preparing.

ASK: What are some of the food handling and food safety concerns about fresh fruits and vegetables?

DO: Write the concerns on a piece of flip chart paper.

SAY: You have mentioned several important concerns. In addition to what you have mentioned, we should also think about... (Add items from this list that may not have been mentioned.)

Areas to Discuss:

- Cross contamination
 - Handwashing
 - Cleaning and sanitizing food contact surfaces, equipment, and utensils
 - Washing fruits and vegetables in designated sinks
- Use of chemicals
 - Correct concentrations for cleaning and sanitizing
 - Use of approved chemical washes for fruits and vegetables
- Washing fruits and vegetables
 - Use cold, running water
 - Remove damaged or bruised areas
- Storing fruits and vegetables
 - Label, date, and refrigerate
 - Store at appropriate temperature
 - Use cut melons and other cut fruit within 7 days

DO: Ask participants to turn to the Washing Fruits and Vegetables handout and discuss key points.

Objective: Describe safe methods for thawing frozen food.

(10 minutes)

SHOW SLIDE: Thawing

SAY: Thawing food is closely related to preparing. We purchase many foods frozen and many of them need to be thawed prior to cooking. It is important to plan ahead when using frozen foods so that the correct thawing method can be used. For example, if frozen pork roasts were needed for cooking on Thursday, they should be placed in the refrigerator on Tuesday morning. That step should be included on the production sheet to ensure that the roasts are ready to use on Thursday.

DO: Ask participants to turn to the Thawing Foods handouts and discuss key points.

SAY: According to the *Food Code*, there are four acceptable methods for thawing food.

1. As part of the cooking process.
2. In the refrigerator (depending on the density of the food, this method of thawing could require 2-3 days).
3. Under clean, drinkable, running water at a temperature of 70 °F or less
4. In a microwave oven, if food will be cooked immediately (although this is not considered a best practice in schools).

Objective: List food safety guidelines for cooking food.

Objective: State internal cooking temperatures for foods often prepared in schools.

(15 minutes)

SHOW SLIDE: Cooking

SAY: Cooking foods to the correct internal temperature will destroy existing bacteria, even though it may not kill toxins or bacterial spores. The key to this step of the foodservice process is to reach recommended temperatures within an appropriate time frame.

ASK: What are some important internal cooking temperatures we use in school nutrition programs?

DO: Post the large thermometer with hatch marks at 5 °F. When someone mentions an important temperature, ask them to mark it on the thermometer.

Temperatures to Mark on Thermometer

165 °F—Poultry, stuffing, stuffed meats, stuffed pasta, casseroles, leftovers

155 °F—Ground meats, such as hamburger, ground pork, sausage

145 °F—Beef and pork roasts, beef steaks, ham, fish

135 °F—Ready-to-eat foods taken from a commercially processed, hermetically sealed package; vegetables (frozen or canned)

SAY: Notice that all of these cooking temperatures are above the temperature danger zone. The final cooking temperature is based on the temperature that is needed to destroy the bacteria that is most likely to be associated with the product. Also, keep in mind that there is a time related to that temperature—the product must be heated to that temperature for at least 15 seconds.

DO: Complete Activity: Thawing and Cooking Foods.

Activity: Thawing and Cooking Foods

Materials needed:

- Handouts:
 - Thawing Foods
 - Thawing Foods Activity
 - Cooking Foods
 - Four pieces of flip chart paper with one temperature written per sheet: 135 °F, 145 °F, 155 °F, 165 °F
 - List of menu items written on index cards
1. Post the four flip chart sheets on the wall.
 2. Distribute an index card with one menu item written in it to each participant. (roasted whole turkey, hamburger patties, roast beef, frozen eggs, frozen chicken patties [precooked], frozen chicken patties [not pre-cooked], frozen peas, leftover chili, soup, frozen broccoli, chicken noodle casserole, sausage patties, pork roast, taco filling, leftover lasagna, ham, sloppy joes, and stuffed pasta shells)
 3. Ask participants to write the most appropriate thawing method for each item and place the card under the appropriate internal cooking temperature.
 4. Go to each sheet and ask the participants if the proper thawing method and the correct cooking temperature has been identified. Tell the participants to use the Thawing Foods and Cooking Foods handouts for assistance.

Responses to Thawing and Cooking Foods Activity

135 °F	145 °F	155 °F	165 °F
<p>Frozen peas</p> <p><i>Thaw as part of the cooking process because it will thaw quickly in hot water or steam used for cooking.</i></p>	<p>Pork roast</p> <p><i>Thaw in the refrigerator because it is a dense food.</i></p>	<p>Sausage patties</p> <p><i>Thaw in the refrigerator or thaw as part of the cooking process (it is a thin product).</i></p>	<p>Frozen chicken patties (not pre-cooked)</p> <p><i>Thaw as part of the cooking process because it is a thin product.</i></p>
<p>Frozen chicken patties (precooked)</p> <p><i>Thaw as part of the cooking process because it is a thin product.</i></p>	<p>Ham</p> <p><i>Thaw in the refrigerator because it is a dense food.</i></p>	<p>Taco filling</p> <p><i>Thaw as part of the cooking process.</i></p>	<p>Leftover lasagna</p> <p><i>Thaw in the refrigerator or thaw as part of the cooking process.</i></p>
<p>Frozen broccoli</p> <p><i>Thaw as part of the cooking process because it will thaw quickly in hot water or steam used for cooking.</i></p>	<p>Roast beef</p> <p><i>Thaw in the refrigerator because it is a dense food.</i></p>	<p>Sloppy Joes</p> <p><i>Thaw in the refrigerator or thaw as part of the cooking process.</i></p>	<p>Chicken noodle casserole</p> <p><i>Thaw in the refrigerator or thaw as part of the cooking process.</i></p>
		<p>Hamburger patties</p> <p><i>Thaw in the refrigerator to shorten cooking process or thaw as part of the cooking process.</i></p>	<p>Leftover chili</p> <p><i>Thaw in the refrigerator or thaw as part of the cooking process.</i></p>
		<p>Frozen eggs</p> <p><i>Thaw in the refrigerator in the original container.</i></p>	<p>Stuffed pasta shells</p> <p><i>Thaw as part of the cooking process.</i></p>
		<p>Fish sticks</p> <p><i>Thaw as part of the cooking process.</i></p>	<p>Whole turkey</p> <p><i>Thaw in the refrigerator because it is a dense food.</i></p>
			<p>Soup</p> <p><i>Thaw in the refrigerator or thaw as part of the cooking process.</i></p>

DO: Ask participants to turn to the Cooking Foods handout.

SAY: Let's look at the handout. There are several statements related to monitoring cooking temperatures.

- Check food temperatures with a clean, sanitized, and calibrated thermometer.
- Avoid inserting the thermometer into pockets of fat or near bones when taking internal temperatures.
- Take at least two internal temperatures from each batch of food.
- Insert the thermometer into the thickest part of the food.
- Record the temperature and the time that the temperature was checked.

If a temperature is taken and it does not meet the standard, the typical corrective action is to continue cooking until the appropriate temperature is reached.

Objective: State appropriate holding temperatures for hot and cold food.

(5 minutes)

SHOW SLIDE: Holding

SAY: Holding food after it has been cooked until serving time is done routinely in foodservice operations that serve large numbers of people. In the holding step, the main consideration is the need to keep **cold** food **cold** and **hot** food **hot!** Cold food should be held at or below 41 °F and hot food should be held at or above 135 °F. In other words, it is important to keep food out of the temperature danger zone while holding prior to service.

Research has shown that there often are more problems keeping cold food cold than hot food hot.

ASK: What are some strategies that can be used to keep cold food cold?

DO: Pause to allow time for participants to respond.

SAY: Some responses that might be given and discussed are below.

- Use refrigeration unit maintained at appropriate temperature.
- Surround cold items with ice.

- Use ice sheets under cold items.
- Use insulated containers.
- Use containers that are frozen before use.
- Use batch preparing and serving methods (put out a small amount at a time and change containers frequently).

ASK: What are some strategies that can be used to keep hot food hot?

DO: Pause to allow time for participants to respond.

SAY: Some responses that might be given and discussed are below.

- Use a heated holding unit that has a thermometer gauge.
- Use batch preparation to reduce the holding time.
- Use steam tables for serving lines.

DO: Ask participants to turn to the Holding Cold Foods and Holding Hot Foods handouts.

SAY: Let's look at each handout. These sheets provide methods of holding, monitoring, and providing corrective actions for holding foods at appropriate temperatures both hot and cold. As you can see, it is important to monitor hot and cold holding and take corrective action when necessary.

Objective: Describe food safety guidelines for serving food.

(10 minutes)

SHOW SLIDE: Serving

SAY: Serving food to customers is typically the last step of the foodservice process. School nutrition employees can do everything correctly up to the point of service and still serve unsafe food.

There are two main food safety concerns at the serving step.

1. Contamination
2. Temperature control

DO: Complete Activity 4: Training Employees on Serving Techniques.

Activity: Training Employees on Serving Techniques

Materials needed:

- Flip chart paper
- Painter's tape (one roll)
- Markers (one set)
- Handouts:
 - Serving Safe Food
 - Using Suitable Utensils when Handling Ready-to-Eat Foods
 - Preventing Contamination in Food Bars

1. Ask participants to turn to the Handouts: Serving Safe Foods, Using Suitable Utensils when Handling Ready-to-Eat Foods, and Preventing Contamination in Food Bars and discuss key points.
2. Divide the group into two teams by numbering off the group.
3. Assign one group to self-service food bars and one group to develop training related to traditional serving lines in which employees portion and serve the meals.
4. Ask each group to develop a list of key concepts that should be included in new employee training.
5. Ask each group to record the key concepts to be taught on a sheet of chart paper.
6. Provide about 5 minutes for group discussion.
7. Reassemble the entire group.
8. Ask each group to appoint a spokesperson.
9. Ask each group to post their chart paper and present orally the key concepts they identified.
10. After both groups have presented, go through the list of key concepts and ask the group to identify if the concept is related to cross contamination or temperature control.
11. Summarize by noting the number of items related to each topic.

Objective: List the steps for the safe cooling of food.

(15 minutes)

SHOW SLIDE: Cooling

SAY: Cooling is a step of the foodservice process that may not occur frequently or may not be done at all in some school nutrition programs. If cooling is done, temperature control is extremely important.

Next, we will talk about the time and temperature guidelines for cooling. Hot foods should be cooled using a two-step process:

1. Hot food must be cooled from 135 °F to 70 °F within 2 hours. If this is not achieved, the food must be reheated to 165 °F for 15 seconds or discarded.
2. It must be cooled within a total of 6 hours from 135 °F to 41 °F (if step one is achieved).

Foods that start at room temperature (70 °F) must be cooled to 41 °F within 4 hours.

SHOW SLIDE: Video: Cooling Food

DO: Complete Activity: *Cool It! Methods for Cooling Food Safely* video.

Activity: Cool It! Methods for Cooling Food Safely Video Clip

Materials needed:

- DVD player and monitor OR computer with Internet connection and monitor
- *Cool It! Methods for Cooling Food Safely* video
- Handouts:
 - *Cooling Food* Video Viewing Guide
 - Cooling Foods

1. Ask participants to turn to the Cooling Foods handout and discuss key points.
2. Ask participants to name some examples of foods that they cool in their program.
3. Ask participant to turn to the *Cooling Food* Video Viewing Guide.
4. Show the video clip on cooling food.
5. Review key points on the video viewing guide.

Responses to The Cooling Food Video Viewing Guide

- Food must cool within the most dangerous temperatures, 135 °F-70 °F, within 2 hours.
- The food must further cool to 41 °F within a total of 6 hours.

Factors that impact cooling time.

1. Amount of food
2. Depth of pan
3. Density

What cooling techniques were suggested in the video?

1. Shallow pans
2. Chill stick
3. Blast chiller
4. Cut into thinner pieces
5. Ice bath

During the cooling process, temperatures should be taken and recorded at regular intervals. What is the recommended depth of a pan to cool food?

2 inches

What is proper corrective action if food is not cooling quickly enough to meet regulations?

Reheat food to 165 °F for 15 seconds and restart cooling process.

Key Points for Cooling Foods

- Cooling hot food is critical.
- A standard operating procedure is needed for cooling foods.
- Temperatures of food must be taken regularly during the cooling process.
- State and local requirements should be followed.

SAY: Research has shown that it often is difficult to meet the standards for cooling time and temperature unless active cooling methods are used. Be sure to use these recommended methods to increase the speed of cooling.

It is best to use some of these methods before beginning the cooling process to increase the likelihood that food will be cooled from 135 °F to 70 °F within 2 hours. But, there is still a possibility that the food may not cool quickly enough.

ASK: If you take the temperature at the end of 2 hours and find that the food is not at 70 °F, what corrective action would you take?

DO: Pause to allow time for participants to respond.

SAY: Yes, the only corrective action you can take is to reheat the food to 165 °F for at least 15 seconds and begin the cooling process again. This process can be done only one time. If you need to reheat and begin cooling again, it is extremely important the second time to take some actions to speed the cooling process.

It also is important to document the time and temperatures during the cooling process, especially at the 2- and 6-hour time periods. If the food is not cooled quickly enough and corrective actions are taken, it is important to document the corrective actions that were used.

Objective: Describe the reheating process for food.

(5 minutes)

SHOW SLIDE: Reheating

SAY: Reheating is the final step of the foodservice process. Reheating is the process of heating a previously cooked food or a leftover. Reheating must be done to the appropriate temperature using the correct equipment, and it must be done quickly. The rule for reheating is that food must be heated to 165 °F for 15 seconds within 2 hours.

The goal is to take the food through the temperature danger zone as quickly as possible. Because of the need to quickly reheat food, use only cooking equipment and never use hot-holding equipment for reheating.

There are two other guidelines to keep in mind when reheating.

1. Never mix leftover foods with fresh food.
2. Use refrigerated leftovers within one week and only if they are held at 41 °F or below.

DO: Ask participants to turn to the Reheating Foods handout and discuss key points.

Objective: Describe the steps for ensuring food safety when transporting food. (Optional)

(5 minutes)

SHOW SLIDE: Transporting

SAY: Transporting is another step of the foodservice process that may be used in some school nutrition programs, but not all. Transporting is done when food is prepared at a central kitchen for service at another site. Food may be produced in a central kitchen designed for large scale production or it may be done at one large kitchen as a way to save labor costs. Food may be transported either hot or cold and may be transported in bulk or in individual servings. Another time food may be transported is for a field trip.

The two major areas of concern when transporting food are

1. temperature control and
2. cross contamination.

ASK: What temperature should food be during transport?

DO: Pause to allow time for participants to respond.

SAY: Yes, you are correct. Remember, the temperature danger zone is your guide. Keep cold food at or below 41 °F and hot food at or above 135 °F.

We have also talked about monitoring procedures throughout this lesson.

ASK: What monitoring should be done when transporting foods?

DO: Pause to allow time for participants to respond.

Potential Responses

- Check temperatures of all food carriers:
 - cold carriers at the warmest part, and
 - hot carriers at the coldest part.
- Check food temperatures when placed in food carriers.
- Check food temperatures when received at satellite kitchen.

ASK: What corrective actions would you take if temperatures are not appropriate for cold and/or hot foods?

DO: Pause to allow time for participants to respond.

Potential Responses

- Continue heating or cooling food carriers if not at appropriate temperatures.
- Reheat food to 165 °F for 15 seconds.
- Use active cooling methods to cool food (ice bath, blast chiller, etc.).
- Repair equipment if temperature control continues to be a problem.
- Discard food that has been held more than 4 hours in the temperature danger zone.

SAY: It is also important to record all of the monitoring and the corrective actions that are taken. When transporting food, it is important to document the time and temperature of the food when it leaves the production kitchen and again when it arrives at the receiving kitchen. Remember, if it has not been documented, it has not been done.

DO: Ask participants to turn to the Transporting Foods handout and review key points

Lesson Wrap Up

(5 minutes)

SAY: In this lesson, we have discussed the steps of the foodservice process from receiving to serving. At each step, school nutrition employees need to use appropriate food handling practices to keep food safe to eat. It is particularly important to control cross contamination and to control food temperatures.

It is also important to remember that each employee must take an active role in preventing foodborne illness, no matter what their role is in preparing and serving food to children.

ASK: Do you have any questions about anything you have learned in this lesson?

DO: Listen to individual responses. Answer questions to the best of your ability. If there are questions you can't answer, tell participants you will find the answers and let them know later. If you need assistance in finding answers, please call the Institute of Child Nutrition at 800-321-3054.

Lesson 6: Food Safety Programs in Schools

Lesson-at-a-Glance

Time	Topic	Task	Materials
5 minutes	Introduction and Overview	<ol style="list-style-type: none"> 1. Introduce instructor and class participants. 2. Introduce Lesson 6. 3. List lesson objectives. 	
10 minutes	Objective List components of a food safety program.		Handouts: <ul style="list-style-type: none"> • Reheating Time/ Temperature Control for Food Safety (Sample SOP)
5 minutes	Objective Describe the Process Approach.	Activity: <i>Process Approach Overview</i> Video Clip	Handouts: <ul style="list-style-type: none"> • <i>Process Approach Overview</i> Video Viewing Guide • The Process Approach • No Cook Process • Same Day Service Process • Complex Process • DVD player and monitor OR computer with Internet connection and monitor. • <i>Process Approach Overview</i> video clip (from the Developing a Food Safety Program Using the Process Approach video)

Time	Topic	Task	Materials
15 minutes	<p>Objective Identify menu items that fit into the three process categories: No Cook, Same Day Service, and Complex Food Preparation.</p>	<p>Activity: Menu Items by Process Category</p>	<p>Handouts:</p> <ul style="list-style-type: none"> • Menu Items by Process Category • Markers • Flip chart paper
5 minutes	Wrap Up		

Lesson Plan

Introduction and Overview

(5 minutes)

SHOW SLIDE: Lesson 6: Food Safety Programs in Schools

SAY: It is important to follow basic food handling practices at each step in the food preparation process. These operational steps include purchasing, receiving, storing, preparing, cooking, serving and holding, cooling, reheating, and transporting. Three key food safety practices are stressed at each operational step: time and temperature control, personal hygiene, and prevention of contamination.

All of these areas provide the basis for implementing a school food safety program. Lesson 6 will focus on the introduction of basic principles for developing a school food safety program. Knowledge that you have gained from completing the *Food Safety in Schools* course will prepare you for moving on to the next steps of implementing a food safety program in your school. For a more comprehensive resource for developing a written school food safety program, refer to the resource *Developing a School Food Safety Program*.

DO: Refer participants to the lesson objectives in the Participant's Workbook.

SAY: After this lesson, you will be able to:

1. list components of a food safety program;
2. describe the Process Approach; and
3. identify menu items that fit into the three process categories: No Cook, Same Day Service, and Complex Food Preparation.

Objective: List the components of a food safety program.

(10 minutes)

SHOW SLIDE: Food Safety Programs

SAY: Section 111 of the Child Nutrition & WIC Reauthorization Act of 2004 (Public Law 108-265) amended section 9(h) of the Richard B. Russell National School Lunch Act by requiring school food authorities (SFAs) to implement a food safety

program for the preparation and service of school meals served to children. The food safety program must be based on all the food safety principles outlined in the U.S. Department of Agriculture guidance for the implementation of comprehensive food safety programs in schools participating in the National School Lunch Program. USDA recommends the Process Approach.

There are two components of a food safety program.

1. Written Standard Operating Procedures
2. Written food safety program for each school

Written Standard Operating Procedures guide practices and procedures for producing safe food. They address basic cleaning and sanitation programs and each step in the foodservice process (purchasing, receiving, storing, preparing, cooking, serving and holding, cooling, reheating, and transporting).

Standard Operating Procedures provide the foundation for the food safety program, and support use of the Process Approach. It is recommended that Standard Operating Procedures are written and include the following information:

- Temperature control points
- Monitoring procedures
- Corrective actions
- Suggested record keeping documents
- Verification procedures

DO: Ask participants to turn to the Reheating Time/ Temperature Control for Safety Foods (Sample SOP).

SAY: Please use this SOP as a reference as we walk through the parts of the SOP.

The key sections in a SOP are: purpose, instructions, monitoring, corrective actions, and verification and record keeping.

The **purpose statement** indicates why the Standard Operating Procedure is important and how it fits into the food safety program. The **instructions** provide a step-by-step description of procedures that should be followed.

Monitoring is the process of checking to make sure that an operation is following Standard Operating Procedures and meeting important times and temperatures for

food. Documenting temperatures and times is part of the monitoring process.

Corrective Actions are specific, pre-planned actions that must be taken if a Standard Operating Procedure is not followed or if a time and temperature is not met. For example, if a cooking temperature is not met, additional cooking would be needed.

Verification is the procedure that confirms that a food safety program is working according to plan. The supervisor or kitchen manager plays an important role in verification by checking to make sure that monitoring and documentation is done. The verification process will identify changes that need to be made in the food safety program so that it will be effective.

Record Keeping is needed to document monitoring and corrective actions taken. Records should be retained for 1 year (or longer if required by your state).

DO: Remind participants that the USDA/ICN Standard Operating Procedures are templates and should be modified to meet the needs of a specific school nutrition program.

Objective: Describe the Process Approach.

(5 minutes)

SHOW SLIDE: Using the Process Approach

SAY: The Food and Drug Administration (FDA) developed a process approach to implementing HACCP programs. This approach was adopted and modified by USDA when they developed guidance for developing school food safety programs.

ASK: Just what is the Process Approach?

SAY: Using the Process Approach, menu items are grouped into three broad categories based on how many times the item moves through the temperature danger zone. The three categories are No Cook Process, Same Day Service Process, and Complex Food Preparation Process. Although the menu items within a category may be varied, the measures used to prevent or control hazards are the same within the category.

The steps in the foodservice process are key to analyzing menu items and pointing out when monitoring needs to be done and when temperatures need to be taken. To introduce the process approach, we will watch a short video clip.

SHOW SLIDE: Video: Process Approach

DO: Activity: *Process Approach Overview* Video Clip

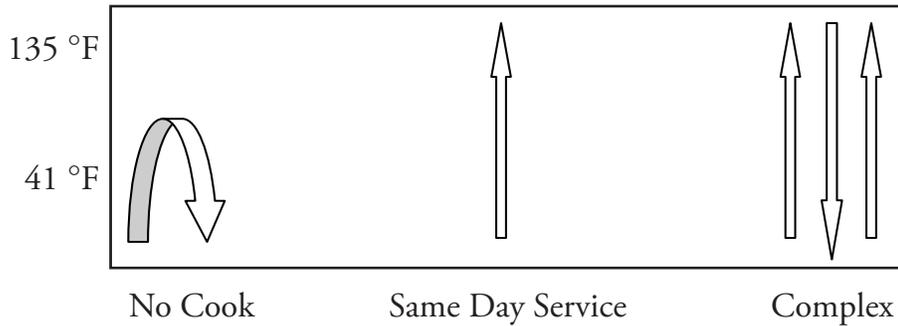
Activity: Process Approach Overview Video Clip

Materials needed:

- DVD player and monitor **OR** computer with Internet connection and monitor
 - *Process Approach Overview* video clip (from the *Developing a Food Safety Program Using the Process Approach* video)
 - Handouts:
 - *Process Approach Overview* Video Viewing Guide
 - The Process Approach
 - No Cook Process
 - Same Day Service Process
 - Complex Process
1. Show the *Process Approach Overview* video clip of *Developing a Food Safety Program Using the Process Approach* video and ask participants to complete the video viewing guide.
 2. Ask participants to turn to the handouts and review key points.
 3. Post flow charts for all three processes.

Responses to the *Process Approach Overview Video Guide*

1. The process approach is recommended for developing a food safety program.
2. Draw what happens to the temperatures for foods in each of the three process categories.



3. List the menu item that was used as an example of a
 - a. No Cook Item tuna salad
 - b. Same Day Service Item taco salad
 - c. Complex Food Preparation Item leftovers
4. List the steps where temperature should be controlled.

receiving, storing, preparing,
cooking, cooling, reheating,
hot holding, serving.

Key Points for Developing a Food Safety Program

1. A food safety plan is needed at each site where food is prepared and served.
2. Each site must be evaluated.
3. Menu items should be sorted into process categories.
4. Temperatures must be controlled at each process step.
5. It is important to take and record temperatures.

SAY: Let's review the three processes and discuss control measures that need to be taken at each step for each process.

SHOW SLIDE: Process 1

DO: Refer participants to the No Cook handout. Walk through the steps on the slide.

SHOW SLIDE: Process 2

DO: Refer participants to the Same Day Service handout. Walk through the steps on the slide.

SHOW SLIDE: Process 3

DO: Refer participants to the Complex Food handout. Walk through the steps on the slide.

Objective: Identify menu items that fit into the three process categories: No Cook, Same Day Service, and Complex Food Preparation. (15 minutes)

SHOW SLIDE: Process Approach

SAY: Now that you have a good understanding of the three processes, let's group menu items into the three groups.

DO: Complete Activity: Menu Items by Process Category.

Activity: Menu Items by Process Category

Materials needed:

- Handout: Menu Items by Process Category
- Flip chart paper
- Markers

1. Divide participants into teams of two or three by counting off with “no cook,” “same day,” and “complex.” Ask participants to turn to the Menu Items by Process Category handout to each group.

2. Ask the teams to decide which processes the menu item would be placed in: No Cook, Same Day Service, or Complex Food Preparation.
3. Post three pieces of chart paper with the following headings: No Cook, Same Day Service, and Complex Food Preparation.
4. Have each group write the menu items under the appropriate process category.
5. Ask each group to choose one menu item from each process category and identify which process steps need to be monitored and have temperatures taken.
6. Discuss items that might be placed into a different process, depending on the process used in a particular school.

SAY: Let's review what control measures are needed for the different steps of the foodservice process to keep food safe.

Purchasing: The most important control measure at the purchasing step is to purchase from approved known sources.

Receiving: The most important control measure at the receiving step is monitoring receiving temperatures. Receiving temperatures need to be taken and recorded at the receiving step as part of a food safety program.

Storing: At the storing step, there are three control measures that are emphasized: store food at proper temperatures, prevent cross contamination, and store food away from chemicals. Note on the flow chart that there is a clipboard. That signifies that storage temperatures need to be monitored and recorded.

Preparing: Three control measures are important during preparation: following good personal hygiene, restricting ill employees from working with food, and preventing cross contamination.

Cooking: During the cooking step, temperature control is critical. The appropriate internal cooking temperature must be reached for the appropriate time. Cooking temperatures must be monitored and recorded.

Hot Holding: At the serving step, the important control measures include using gloves to prevent bare-hand contact with ready-to-eat food, using good personal hygiene, and restricting ill employees from handling food. Temperature control is the key control measure at the holding step. Hot food should be held at or above 135 °F. Holding temperatures need to be checked and recorded.

Cooling: Temperature control is very important during the cooling step. Hot foods should be cooled from 135 °F to 70 °F within 2 hours and within a total of 6 hours from 135 °F to 41 °F. For example; a hot food may be cooled from 135 °F to 70 °F within 1 hour and still have 5 hours to cool the food from 70 °F to 41 °F. The total cooling process from 135 °F to 41 °F may not exceed 6 hours. Corrective action must be taken immediately if the food is not cooled to 70 °F within the first 2 hours. Cooling temperatures must be taken and recorded at each step in the cooling process.

Reheating: At the reheating step, temperature control is the important control measure. Foods should be reheated to 165 °F for 15 seconds within 2 hours. Temperatures for reheated food should be monitored and recorded.

Transporting: For those school nutrition programs that transport food, time and temperature controls are very important. Temperature should be maintained at or below 41 °F for cold food and at or above 135 °F for hot food during transportation. Temperatures need to be checked and recorded when food leaves the production kitchen and again when it is delivered to the receiving kitchen.

SAY: Grouping foods that require time and temperature control depends on how the item is prepared. The same menu item can be grouped differently depending on the recipe used in a particular foodservice operation. One size does not fit all.

Lesson Wrap Up

(5 minutes)

SAY: This lesson has covered the basics of the Process Approach to developing a food safety program.

ASK: How many of you have a food safety program in your school?

DO: Pause to allow time for participants to respond.

ASK: What is your role in implementing the food safety program?

DO: Pause to allow time for participants to respond.

- SAY:** A food safety program is very important for any school nutrition program. The food safety program is only as good as the employees who implement the program. YOU are important in ensuring the safety of food served to children.
- ASK:** Do you have any questions about anything you have learned in this lesson?
- DO:** Listen to individual responses. Answer questions to the best of your ability. If there are questions you can't answer, tell participants you will find the answers and let them know later. If you need assistance in finding answers, please call the Institute of Child Nutrition at 800-321-3054.

Training Wrap Up

Lesson-at-a-Glance

Time	Topic	Task	Materials
5 minutes	Guide the Training Wrap Up	Guide the wrap up.	<ul style="list-style-type: none"> • Previous flip chart pages from prior lessons. • Pens (one for each participant) • Pencils (one for each participant)
10 minutes	Post-Assessment		<ul style="list-style-type: none"> • Post-Assessment The Pre- and Post-Assessments are available at www.theicn.org. • Pre/Post-Assessment Answers
5 minutes	Certificates of Completion	Distribute Certificates of Completion to all participants.	<i>Certificates of Completion</i>

Lesson Plan

Introduction and Overview

(25 minutes)

SAY: Thank you for taking part in the *Food Safety in Schools* training. We have discussed food safety, why it is important, how we can have a food-safe facility, and how we can prevent foodborne illness in the future. Congratulations on what you have accomplished.

SAY: To review what we have learned, let's discuss the key points of each session.

DO: Complete the Wrap Up Activity.

Training Wrap Up Activity

Materials needed:

- Flip chart pages from previous sessions.
1. Conduct a 'Gallery Walk' of all the flip chart pages that have been posted on the walls during the seminar.
 2. Gather the participants around the first set of flip chart paper (beginning with Session 1).
 3. Walk from the Session 1 set of flip chart paper to Session 2 and so on. As you go, briefly summarize what was taught in each session and what they have learned. (Have the participants move around the room with you.)
 4. Ask each participant to state the most important food safety concept that they have learned.

SHOW SLIDE: Post-Assessment

DO: Distribute the Post-Assessment to the participants.

SAY: To review in even more detail, you'll now take the Post-Assessment to see how much you have learned and retained.

DO: Allow 10 minutes for the participants to complete the assessment. Review the answers with them.

SHOW SLIDE: Training Wrap up

SAY: To commemorate your completion of this training, you will now receive your Certificate of Completion. Keep this in your files so that you have a record of completing the *Food Safety in Schools* training.

DO: Distribute the Certificates of Completion. Congratulate and thank them again and dismiss the class.

SHOW SLIDE: Institute of Child Nutrition

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