



National Food Service Management Institute
The University of Mississippi

FOOD SAFETY BASICS

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Participant's Guide

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National Food Service Management Institute

The University of Mississippi

Building the Future Through Child Nutrition

The National Food Service Management Institute was authorized by Congress in 1989 and established in 1990 at The University of Mississippi in Oxford and is operated in collaboration with The University of Southern Mississippi in Hattiesburg. The Institute operates under a grant agreement with the United States Department of Agriculture, Food and Nutrition Service.

PURPOSE

The purpose of the National Food Service Management Institute is to improve the operation of child nutrition programs through research, education and training, and information dissemination.

MISSION

The mission of the National Food Service Management Institute is to provide information and services that promote the continuous improvement of child nutrition programs.

VISION

The vision of the National Food Service Management Institute is to be the leader in providing education, research, and resources to promote excellence in child nutrition programs.

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Introduction

Welcome and thank you for taking part in the *Food Safety Basics* course.

In the school nutrition program, directors, managers, and lead personnel make a big difference in how employees adhere to food safety in the work place. Tools, checklists, and training methods ensure a safe food environment in all school nutrition programs. NFSMI's *Serving It Safe* resource provides the backbone for this course.

This course has been designed to be interactive using training activities based on *Foundations for Training Excellence*. The outcome of this course is to provide tools, checklists, and strategies for basic practices in food safety.

The Participant's Guide includes numerous checklists, logs, and records ready for use in the School nutrition program. Activities allow participants to apply knowledge learned. Resources and references provide additional support for school nutrition directors.

Each lesson includes a Manager's Corner which provides simple and effective 15 minute training suggestions. The Manager's Corner provides tools for ease in planning and conducting each training session.

Enjoy *Food Safety Basics*.

Course Overview

This *Food Safety Basics* course is designed to provide new school nutrition managers, employees, and substitute cooks a basic understanding of food safety enabling them to begin the job using safe food handling practices. The course contains five lessons that cover information that was provided in NFSMI's *Serving It Safe*. Each lesson has several objectives and you will participate in activities that will reinforce the objectives. The lessons include:

Lesson 1: Staff Training Basics

Lesson 2: Food Safety Digest

Lesson 3: Tailoring Standard Operating Procedures

Lesson 4: HACCP Every Day

Lesson 5: Inspect What You Expect

Before beginning the lessons, you will complete a Pre-Assessment. This assessment will show you how much you know about food safety prior to completing *Food Safety Basics*. You will complete a Post-Assessment at the conclusion of the course to demonstrate the knowledge you have gained.

Throughout this Participant's Guide, there are guides to help you follow along with the training. There will be numerous tools you will work with and discuss during the course. This Participant's Guide provides tools you can use immediately in your school nutrition program.

Resources and References

RESOURCES

National Food Service Management Institute. (2009). *Serving it safe* (3rd ed.). University, MS: Author.

National Food Service Management Institute. (2009) *Serving it safe text book* (3rd ed.). University, MS: Author.

National Food Service Management Institute. (2009) *Serving it safe participant's workbook* (3rd ed.). University, MS: Author.

National Food Service Management Institute. (2006). *HACCP-based standard operating procedures*. University, MS: Author. Available from National Food Service Management Institute at www.nfsmi.org.

National Food Service Management Institute. (2005). *Thermometer information resource*. University, MS: Author.

U.S. Department of Health and Human Services, Food and Drug Association. (2009). *Food Code*. College Park, MD: Author.

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National Food Service Management Institute. (2009). *Serving it safe* (3rd ed.). University, MS: Author.

National Food Service Management Institute. (2009) *Serving it safe text book* (3rd ed.). University, MS: Author.

National Food Service Management Institute. (2009) *Serving it safe participant's workbook* (3rd ed.). University, MS: Author.

National Restaurant Association Educational Foundation (2008). *ServSafe®* (5th ed.). Chicago: Author.

U.S. Department of Health and Human Services, Food and Drug Administration. (2009). *Food Code*. College Park, MD: Author.

Lesson 1: Staff Training Basics

Introduction and Learning Objectives

Food safety is a major responsibility of all members of the school nutrition team. This lesson focuses on staff training on key elements to provide a safe school nutrition environment. At the end of this lesson, participants will be able to:

- Review the importance of personal hygiene, employee health, proper hand washing, and proper glove use.
- Review Employee Health and Personal Hygiene Agreement.
- Demonstrate the steps to calibrate a bi-metallic stem (dial) thermometer.
- Review definition of PHF/TCS.
- Demonstrate keeping food safe throughout the cooking and serving process.
- Review logs to monitor safe food handling.
- Review methods to prevent equipment-to-food cross-contamination.
- Review checklists to maintain safe food handling.

Tool 1: Food Thermometers

How to Calibrate a Food Thermometer

Use these methods to calibrate food thermometers.

Ice-Point Method

The ice-point method is used most often unless a thermometer cannot register a temperature of 32 °F (0 °C).

1. Fill a glass with crushed ice. Add water until the glass is full.
2. Place the thermometer in the center of the glass of ice water, not touching the bottom or sides of the glass.
3. Agitate the glass of ice water to ensure even temperature distribution throughout. Wait until the indicator stops.
4. The temperature should register 32 °F. If it does not, adjust the calibration nut by holding it with pliers or a wrench and turning the face of the thermometer to read 32 °F. If using a digital thermometer with a reset button, adjust the thermometer to read 32 °F while the metal probe is in the ice water, or replace the battery.

Tool 2: Food Thermometers

How to Use Food Thermometer

- Clean and sanitize the stem of the thermometer after every use.
- After washing the stem, sanitize the stem with a sanitizing solution or a sanitizing wipe. Allow to air dry.
- Store in a clean and sanitized case.
- The clean case should be sanitized by immersing in a sanitizing solution.
- For digital thermometers, remember to check and change batteries on a routine basis.
- Measure the internal temperature of a food by inserting the stem of the thermometer into the center and thickest part of the food.
- Insert the thermometer into the center of the food far enough to cover the sensor.
- Avoid pockets of fat in meat and touching bone.
- Wait for the dial or digital indicator to stop (about 15 seconds) and then read the temperature.
- Insert the thermometer again in a different part of the food for a second reading and a third time to confirm the internal temperature meets requirements.
- Clean and sanitize the thermometer before inserting it into the next food.
- Use the food thermometer to check the temperature of refrigerated foods during the receiving process. Refrigerated foods should be delivered at or below 41 °F, except as specified in local laws governing milk, shell eggs, and molluscan shellfish.
- Packaged foods—Insert the thermometer between two packages without puncturing the packages.
- Milk—Open a carton and insert the thermometer at least two inches into the milk.
- Record the temperature.
- Use a food thermometer to check the temperature of frozen foods if necessary. Insert the stem of the food thermometer between frozen packages. Frozen foods should be delivered frozen solid.
- Calibrate the food thermometer on a routine basis. Teach employees how to calibrate a food thermometer and establish a routine of having each thermometer calibrated at the beginning of the workday. If a food thermometer is dropped, calibrate prior to using it to be sure the temperature reading is accurate.

Manager's Corner

The manager's corner for this section will provide brief guidance on conducting 15 minute training sessions on each of the following topics: Calibrate Thermometer; Personal Hygiene; Temperature Danger Zone; and Cleanliness. The following training sessions are an option to the activities provided in the Food Safety Basics course.

Calibrate Thermometer: Show video of calibrating a bi-metallic stem (dial) thermometer using the Ice – Point Method: Video Clip – *Calibrating Thermometers*. Provide staff with copy of *Calibrating Thermometers* Video Viewing Guide to complete during the video. Discuss answers upon completion of the video. Request a staff member demonstrate how to calibrate a bi – metallic stem (dial) thermometer. Answer all questions.

Manager's Corner *Calibrating Thermometer* Video Viewing Guide and Answers for Trainers.

Personal Hygiene: Show video of proper hand washing. Video Clip *Wash Your Hands: Educating the School and Community*. Provide staff with copy of *Wash Your Hands: Educating the School and Community* Video Viewing Guide to complete during the video. Discuss answers upon completion of the video. Request a staff member demonstrate proper hand washing. Post a hand washing poster at every sink in the kitchen and restrooms. Discuss steps for proper glove use. Reinforce proper glove use with a poster in the kitchen. Answer all questions.

Manager's Corner *Wash Your Hands: Educating the School and Community* Video Viewing Guide and Answers for Trainers.

Temperature Danger Zone: Provide staff with copy of a completed production sheet and handout of the Temperature Danger Zone. Demonstrate the temperature danger zone using the handout. Explain what happens when foods are in the temperature danger zone. Discuss keeping hot foods hot and cold foods cold. Using PowerPoint or poster paper provide the production sheet that all staff received. Demonstrate where to locate temperature information on the production sheet.

Ask the staff:

- What is the proper serving temperature for each item on the production sheet?
- Where was the serving temperature information located on the production sheet?
- Were any temperatures in the temperature danger zone?
- If a food is held at 45 °F is it in the temperature danger zone?
- If a food is held at 165 °F is it in the temperature danger zone?

Answer all questions. Reinforce using temperature information on production sheets to help keep hot foods hot and cold foods cold. Post a temperature poster in the kitchen. Manager's Corner Temperature Danger Zone handout.

Cleanliness: Demonstration: A supervisor will demonstrate the proper method of mixing the sanitizer solution and how to test with a test kit. Using poster paper: record the appropriate steps to mix, test, and store sanitizer solution. Discuss proper first aid steps and location of Material Safety Data Sheet sheets. Group discussion:

Ask the staff:

- When would you use sanitizer solution during the work day?
- What equipment would you clean with sanitizing solution?
- What surfaces would you clean with sanitizing solution?
- Why is using sanitizer solution important?

Record all responses on poster paper. Answer all questions. Emphasize the importance of cleanliness in personal work habits and in cleaning equipment and food surfaces. Post a chemical safety poster where chemicals are stored and mixed.

Note:

The video clips: *Calibrating Thermometers* and *Wash Your Hands: Educating the School and Community* are available on the NFSMI website. Prior to training, get the video ready to play. Go to www.nfsmi.org to download the video. When you get to the Web page, go to the **Document Library**. In the **Education and Training Resources by Title** listing, find the *Serving It Safe* link. On the *Serving It Safe* page, select the video. Use the WMV version to download and save to your computer. Have this clip ready to play on your computer before the seminar begins.

If you have any problems accessing the video, please contact NFSMI for additional help at 1-800-321-3054.

Calibrating Thermometers

Video Viewing Guide

1. What tools or supplies did you observe being used?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

2. What were the steps used to calibrate the thermometer using the ice-water method?

- a. Fill a _____ with crushed ice.
- b. Add _____ to within 1" of the top of container.
- c. Stir _____ .
- d. Let sit for _____ minute(s).
- e. Place _____ in container so that the
_____ is completely submerged.
- f. Let the thermometer stay in the ice-water mixture for _____ second(s).
- g. Place the _____ on the hex adjusting nut and rotate
until the thermometer reads 32 °F.

Calibrating Thermometers

Video Viewing Guide (Answers for Trainers)

1. What tools or supplies did you observe being used?

- a. **Container** _____
- b. **Ice** _____
- c. **Cold Water** _____
- d. **Thermometer** _____
- e. **Calibration Tool or Wrench** _____

2. What were the steps used to calibrate the thermometer using the ice-water method?

- a. Fill a **Container** _____ with crushed ice.
- b. Add **Water** _____ to within 1" of the top of container.
- c. Stir **Ice and Water Mixture** _____ .
- d. Let sit for **1** minute(s).
- e. Place **Thermometer** _____ in container so that the
Sensing Area _____ is completely submerged.
- f. Let the thermometer stay in the ice-water mixture for **30** second(s).
- g. Place the **Calibration Tool** _____ on the hex adjusting nut and rotate until the thermometer reads 32 °F.

Wash Your Hands: Educating the School Community

Video Viewing Guide

Directions:

As you view the video, *Wash Your Hands: Educating the School Community*, look for examples of **when** hands are washed and **how** hands are washed. Record them on the form below.

When Hands Are Washed	How Hands Are Washed

Wash Your Hands: Educating the School Community

Video Viewing Guide (Answers for Trainers)

Directions:

As you view the video, *Wash Your Hands: Educating the School Community*, look for examples of **when** hands are washed and **how** hands are washed. Record them on the form below.

When Hands Are Washed	How Hands Are Washed
After sneezing	Used soap
When reporting to work	Rubbed soapy water up to elbows
Before putting glove on	Used warm, running water
After taking gloves off	Washing for 20 seconds
Before food preparation	Rubbed hands together
After putting ground beef in tilting skillet	Rubbed between fingers
After handling money	Used single-use disposable towels to dry
After cleaning	Turned off faucet with disposable towel
After taking out the garbage	Used paper towel to open door
After handling dirty dishes	Used foot pedal on trash can to dispose of paper towel

Lesson 2: Food Safety Digest

Introduction and Learning Objectives

Throughout this lesson our focus will be on how and where to access foodborne pathogen information. At the end of this lesson, participants will be able to:

- Recognize the growth of foodborne pathogens.
- Identify food safety resources.
- Demonstrate safe food end-point cooking temperatures.

Check Your Knowledge

Growth of Harmful Microorganisms

Directions:

This is a self-assessment for you to determine your own level of knowledge. Circle the letter of the one best answer for each item in the box provided.

1. A pathogen is

- a. A harmful microorganism
- b. Any microorganism
- c. Always a harmful bacteria
- d. All of the above

2. The one way to be sure that bacteria are killed is to

- a. Cook at low temperature for a long period of time
- b. Keep the food out of the temperature danger zone
- c. Freeze the food for four hours
- d. Heat to the required safe temperature for the required time

3. The conditions that favor the growth of most foodborne microorganism (excluding viruses) are

- a. Food, acidity, temperature, time, oxygen, moisture
- b. Food, time, and temperature
- c. Food and temperature
- d. Food, temperature, and moisture

4. Which of the foods listed below would not be considered a potentially hazardous food?

- a. Lemon
- b. Sliced melon
- c. Baked potato
- d. Cooked rice

5. Bacteria grow best at what pH level?

- a. Very alkaline
- b. Very acidic
- c. Neutral to slightly acidic
- d. Water

6. A food is in the temperature danger zone when the internal temperature is between

- a. 165°F to 212°F
- b. 41°F to 135°F
- c. 65°F to 165°F
- d. 0°F to 40°F

7. When cooling a hot food from 135°F down to 41°F, it must be reheated immediately to 165°F for 15 seconds if it has not reached 70°F within

- a. 1 hour
- b. 2 hours
- c. 4 hours
- d. 6 hours

8. Which of the following foods would be most like to support bacterial growth if contaminated?

- a. Dry rice
- b. Cooked rice
- c. Fresh fruit
- d. Bread

9. All of the following behaviors would help prevent foodborne illness except

- a. Washing hands
- b. Avoiding jewelry except a plain ring, such as a wedding band
- c. Wearing closed toe shoes
- d. Using single-use gloves correctly

10. Four types of pathogens that cause foodborne illness include

- a. Bacteria, viruses, fungi, and parasites
- b. Viruses, fungi, bone chips, larvae
- c. Bacteria, viruses, fungi, insecticide
- d. All of the above

Check Your Knowledge

Growth of Harmful Microorganisms

Directions:

This is a self-assessment for you to determine your own level of knowledge. Circle the letter of the one best answer for each item in the box provided.

1. A pathogen is

a. A harmful microorganism

- b. Any microorganism
- c. Always a harmful bacteria
- d. All of the above

2. The one way to be sure that bacteria are killed is to

- a. Cook at low temperature for a long period of time
- b. Keep the food out of the temperature danger zone
- c. Freeze the food for four hours
- d. Heat to the required safe temperature for the required time**

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- b. 41°F to 135°F**
- c. 65°F to 165°F
- d. 0°F to 40°F

7. When cooling a hot food from 135°F down to 41°F, it must be reheated immediately to 165°F for 15 seconds if it has not reached 70°F within

- a. 1 hour
- b. 2 hours**
- c. 4 hours
- d. 6 hours

8. Which of the following foods would be most like to support bacterial growth if contaminated?

- a. Dry rice
- b. Cooked rice**
- c. Fresh fruit
- d. Bread

9. All of the following behaviors would help prevent foodborne illness except

- a. Washing hands
- b. Avoiding jewelry except a plain ring, such as a wedding band
- c. Wearing closed toe shoes**
- d. Using single-use gloves correctly

10. Four types of pathogens that cause foodborne illness include

- a. Bacteria, viruses, fungi, and parasites**
- b. Viruses, fungi, bone chips, larvae
- c. Bacteria, viruses, fungi, insecticide
- d. All of the above

Answers:

1-a; 2-d; 3-a; 4-a; 5-c;
6-b; 7-b; 8-b; 9-c; 10-a

Common Foodborne Illnesses/Pathogens

Symptoms and Prevention

Illness/Bacteria	Symptoms	Where the Bacteria Can Be Found	Prevention
Botulism <i>Clostridium botulinum</i>	Symptoms begin 18 to 36 hours after eating contaminated food and include • diarrhea or constipation; • weakness; • dizziness; • double vision or blurred vision; • difficulty speaking swallowing, • breathing; and • paralysis.	• Home-canned foods • Improperly processed foods • Sausages and meats • Canned low-acid foods, such as some vegetables • Untreated garlic in oil • Leftover, unrefrigerated foil-wrapped baked potatoes • Sautéed onions in butter sauce	• Discard damaged cans. • Do not use home-canned foods in an establishment. • Do not mix and then store oil and garlic. • Follow rules for time and temperature control. • Sauté onions as needed; do not sauté and then store unrefrigerated for later use. • Do not store leftover baked potatoes in foil wrapping. Unwrap and chill correctly. • Chill foods properly.
Campylobacteriosis <i>Campylobacter jejuni</i>	Symptoms begin 2 to 5 days after eating contaminated food, can last 7 to 10 days, and include • diarrhea (watery or bloody), • fever, • nausea and vomiting, • abdominal pain, • headache, and • muscle pain.	• Unpasteurized milk and dairy products • Raw poultry • Raw beef • Nonchlorinated or fecal-contaminated water • Birds and flies can carry and contaminate food	• Practice good personal hygiene. • Follow hand washing guidelines. • Follow procedures to avoid cross-contamination. • Cook all poultry, meat, and other foods to appropriate internal temperature and test with a thermometer. • Maintain good pest control. • Use only pasteurized dairy products. • Use water from approved sources.

Illness/Bacteria	Symptoms	Where the Bacteria Can Be Found	Prevention
Escherichia coli O157:H7	Symptoms begin 3-8 days after eating contaminated food, can last 2-9 days, and include • cramping, • diarrhea (watery or bloody), • vomiting, and • hemolytic uremic syndrome (HUS).	• In intestinal tract of animals, particularly cattle and humans • Raw or undercooked ground beef • Raw milk or dairy products • Unpasteurized apple cider or juice • Imported cheeses • Dry salami • Uncooked fruits and vegetables	• Practice good personal hygiene. • Follow hand washing guidelines. • Follow procedures to avoid cross-contamination. • Cook all poultry and meat to correct internal temperature, and test with a thermometer. • Use only pasteurized milk, dairy products, or juices. • Wash all produce in cold, running water. • Cool foods properly.
Listeriosis <i>Listeria monocytogenes</i>	Symptoms begin 3 to 70 days after eating contaminated food; 21-day onset is most common. Symptoms include • sudden onset of fever, • muscle aches, • diarrhea or vomiting, • headaches, • stiff neck, • confusion, • loss of balance, and • convulsions.	• In soil, ground water, plants, and intestinal tracts of humans and animals • Unpasteurized milk and cheese • Ice cream • Raw vegetables • Raw and cooked poultry • Raw meat and fish • Prepared and chilled ready-to-eat foods • Deli meats, luncheon meats, hot dogs • Soft cheese such as feta, Brie, Mexican-style cheeses.	• Practice good personal hygiene. • Follow hand washing guidelines. • Follow procedures to avoid cross-contamination. • Cook all poultry and meat to correct internal temperature and test with a thermometer. • Use only pasteurized milk, dairy products, or juices. • Wash all fresh produce in cold, running water. • Clean and sanitize food contact surfaces. • Maintain temperatures of food.

Illness/Bacteria	Symptoms	Where the Bacteria Can Be Found	Prevention
Clostridium perfringens	Symptoms begin 8 to 24 hours after eating contaminated food, last 24 hours, and include • abdominal cramping, and • diarrhea.	• In intestinal tracts of humans and animals • Cooked meat and poultry • Gravy • Beans	• Practice good personal hygiene. • Follow hand washing guidelines. • Follow procedures to avoid cross-contamination. • Cook all foods to correct internal temperature and test with a thermometer. • Hold food at 135° or above. • Cool foods properly.
Salmonellosis - <i>Salmonella spp.</i>	Symptoms begin 6-48 hours after eating contaminated food, last 1-2 days, and include • stomach cramps, • headache, • nausea, • fever, • diarrhea, • vomiting, and • severe dehydration (infants and elderly).	• Raw meats and poultry • Milk and dairy products • Fish, shrimp • Sauces and salad dressing • Cake mixes • Cream-filled desserts and toppings • Peanut butter • Cocoa and chocolate • Sliced fresh fruits and vegetables such as melons, strawberries, tomatoes • Raw sprouts.	• Practice good personal hygiene. • Follow hand washing guidelines. • Follow procedures to avoid cross-contamination. • Cook all foods to correct internal temperature and test with a thermometer. • Hold food at 135 °F or above. • Cool foods properly.

Illness/Bacteria	Symptoms	Where the Bacteria Can Be Found	Prevention
Shigellosis <i>Shigella spp</i>	Symptoms begin 12-50 hours after eating contaminated food, last up to 2 weeks, and include • abdominal pain, • diarrhea containing blood and mucus, • fever, • nausea, • vomiting, • chills, • fatigue, and • dehydration.	• In intestinal tract of humans and polluted water; spread by flies and food handlers • Meat Salads • Potato and pasta salads • Lettuce and other raw vegetables • Milk and dairy products • Ready-to-eat foods	• Practice good personal hygiene. • Follow hand washing guidelines. • Follow procedures to avoid cross-contamination. • Use water from approved sources. • Control flies. • Maintain storage temperatures. • Cool foods properly.
Staphylococcus Aureus	Symptoms begin 1 to 4 hours after eating contaminated food, last 2-3 days, and include • nausea, • vomiting, • stomach cramping, and • exhaustion.	• Humans and animals main carriers • Leftovers • Meat and poultry • Eggs and egg products • Milk and dairy products • Meat and potato salads • Salad dressings • Sandwich fillings	• Practice good personal hygiene. • Cover burn, cut, or wound with waterproof bandage and wear disposable gloves. • Follow hand washing guidelines. • Follow procedures to avoid cross-contamination. • Cook all foods to correct internal temperature and test with a thermometer. • Hold food at 41° or below or at 135° or above. • Cool foods properly.

Illness/Viruses	Symptoms	Where the Virus May Be Found	Prevention
Gastroenteritis from Noroviruses <i>Norwalk and Norwalk-Like Viral Agents</i>	Symptoms begin from 1 to 2 days after eating contaminated food or water, and include • nausea, • vomiting, • diarrhea, • abdominal pain, • headache, • mild fever.	• Drinking water • Shellfish from contaminated water • Raw vegetables, fresh fruit, and salads contaminated by dirty hands.	• Practice good personal hygiene. • Follow procedures for avoiding cross-contamination. • Wash all fresh produce which will be served whole, peeled, or cooked, in cold, running water. • Use water from approved sources. • Obtain shellfish from approved health-inspected sources and cook thoroughly. • Cook all foods to required safe internal temperatures and test with a food thermometer.
Hepatitis A <i>Hepatovirus</i>	Symptoms may be seen 10 days to almost 2 months after eating contaminated food or water • fever, • fatigue, • headache, • nausea, • loss of appetite, • vomiting, • stomach pain, • later jaundice (yellow skin and eyes).	• Human intestinal tract • Human urinary tract • Contaminated water • Foods contaminated by food handlers, processing plants, foodservice facilities • Foods of particular concern – prepared foods requiring no additional cooking: deli meats, salads, sandwiches, fruit and fruit juices, milk and dairy products, raw fruits and vegetables.	• Practice good personal hygiene • Follow procedures for avoiding cross-contamination • Wash all fresh produce, which will be served whole, peeled, or cooked, in cold, running water • Use water from approved sources • Cook all foods to the required safe internal temperature and test with a food thermometer.

Food Spoilage/Fungi	Conditions	Toxins May Be Dangerous	Prevention
Molds	Can grow on almost any food in any condition • Moist • Dry • Acidic • Non-Acidic • Salty • Sweet • Cold • Warm	• Heat stable and not destroyed by heating to 140° F for 10 minutes • Linked to cancer in animals • Infections and allergies • Aflatoxin can cause liver disease	• Discard food with visible mold unless is a natural part of the food. Examples: Brie, Camembert, Gorgonzola, and blue cheese.
Yeasts	• Sugar-loving • Spoil foods		• Discard food with unnatural color or smell.

Illness/Parasites	Symptoms	Where the Parasites May Be Found	Prevention
<i>Cyclospora cayentanensis</i>	Symptoms appear 7 days after parasite ingested and can last from 7 to 30 days • watery diarrhea • stomach cramps • nausea • vomiting • muscle aches • low-grade fever • fatigue	• Contaminated water • Anything that has touched the stool of a person or animal with cyclosporiasis • Recent years involved with berries from outside the United States, mixed lettuce products, and fresh herbs	• Practice good personal hygiene • Follow procedures for avoiding cross-contamination • Wash all fresh produce, served whole, peeled, or cooked in cold running water • Use water from approved sources • Purchase food from reputable sources
<i>Giardia dyodenalis</i>	Symptoms appear 1 to 2 weeks after parasite ingested and can last from 4 to 6 weeks or may be no symptoms. Adults and children in daycare centers are at risk.	• Contaminated water • Anything that has touched the stool of a person or animal with giardiasis	• Practice good personal hygiene • Use only pasteurized milk, dairy products, and juices • Wash all fresh produce, which be served whole, peeled, or cooked, in cold, running water • Use water from approved sources
<i>Trichinella spiralis</i>	Symptoms appear from 2 to 28 days after eating infected meat • nausea • vomiting • fever • abdominal pain • followed by headaches, eye swelling, aching joints, and muscles, weakness, and itchy skin • later symptoms include sore muscles, fever or rash	• Undercooked pork • Game meat infested with <i>Trichinella</i> larvae	• Foods that could contain <i>Trichinella</i> larvae include undercooked pork and pork sausage • Ground meats contaminated through meat grinders that have been used to grind contaminated pork

Resources for Food Safety Information

1. Title: 2009 U.S. FDA *Food Code* and *Supplement to the 2009 Food Code*

Source: Food and Drug Administration

Description: The *Food Code* is a reference document for regulatory agencies responsible for overseeing food safety in retail outlets such as restaurants and grocery stores and institutions such as nursing homes and child care centers. The *Food Code* is updated every 2 years, and state, local, and some tribal jurisdictions may use the *Food Code* as a model for their sanitation codes. The most recent *Food Code* is available from the Web site below.

Web Site: <http://www.fda.gov/food/foodsafety/retailfoodprotection>

2. Title: *ServSafe Manager*, 6th Edition

Source: Chicago: National Restaurant Association Educational Foundation

Phone: 800-765-2122

Description: References and course books for the *ServSafe* training course.

Web Site: <http://www.servsafe.com>

3. Title: *Thermometer Education Campaign as Thermy™ Art and Educational Materials*

Source: U.S. Department of Agriculture, Food Safety Education Office, Washington, D.C.

Phone: 301-344-4755

Description: Consumer art and educational materials featuring *Thermy™*, a messenger for food safety. The materials can be reproduced for use with consumer education. Note that because these materials were designed for the public, some temperatures may not be consistent with state and local public health department regulations for institutional foodservice. Always refer to state and local public health department regulations.

Web Site: http://www.fsis.usda.gov/Food_Safety_Education/Thermy/Note.asp

4. Title: *Using Partnerships to Fight BAC!—A Workbook for Local Food Safety Educators*

Source: Partnership for Food Safety Education, New York, NY

Fax: 301-504-2092

USDA Meat and Poultry Hotline: 800-535-4555

Description: A Workbook for Local Food Safety Educators describes how to partner in a community to promote food safety. The workbook includes examples of community programs, reproducible worksheets, and other information to use at state and local partner meetings.

Web Site: www.fightbac.org

5. Title: Food safety resources from the National Food Service Management Institute include:

- *Child Care Mini-Posters*
- *Child Care Tips Poster*
- *Developing a School Food Safety Program*
- *Employee Health and Personal Hygiene*
- *Food Safety and Sanitation*
- *Food Safety Fact Sheets*
- *Food Safety in the Child Care Food Program*
- *Food Safety Mini-Posters*
- *Food Safety Standard Operating Procedures (SOPs)*
- *Serving It Safe*
- *Wash Your Hands: Educating the School Community*

Source: National Food Service Management Institute, University, MS

Phone: 800-321-3054

Fax: 800-321-3061 or 662-915-5615

Description: NFSMI disseminates quality publications at an affordable cost in media appropriate to the needs of child nutrition program personnel. All published materials are available on the NFSMI Web site.

Web Site: www.nfsmi.org

6. Title: *Bad Bug Book*, 2nd edition

Description: This handbook has recently been updated and provides basic facts regarding foodborne pathogenic microorganisms and natural toxins. A new feature is brief consumer sections which will be of interest to consumers, providing information and links to information on safe food handling.

Web Site:

www.fda.gov/.../FoodborneIllness/FoodborneIllnessFoodbornePathogensNaturalToxins/BadBugBook/default.htm

Food Safety Web Sites

<http://healthymeals.nal.usda.gov>

The Healthy School Meals Resource System (HSMRS) is a searchable Web site, providing information to persons working in USDA's Child Nutrition Programs. This Web site includes a Food Safety button that links to resources, current food safety information, and activities.

<http://cnsafefood.k-state.edu>

The Center of Excellence for Food Safety Research in Child Nutrition Programs at Kansas State University provides science-based solutions to problems impacting food safety in child nutrition programs across the United States.

Additional Resources for Food Safety Materials

The following federal agencies and private organizations offer food safety materials. For statespecific resources, contact state and local agriculture and public health agencies.

Academy of Nutrition and Dietetics

120 South Riverside Plaza

Suite 2000

Chicago, IL 60606-6995

Phone: 800-877-1600

Web Site: www.eatright.org

American Public Health Association (APHA)

800 I Street NW Washington, DC 20001

Phone: 202-777-2742

Web Site: www.apha.org

American Society for Microbiology

1752 N Street, NW Washington, DC 20036

Phone: 202-737-3600

Web Site: www.asm.org

Centers for Disease Control and Prevention (CDC)

1600 Clifton Road Atlanta, GA 30333

Phone: 404-639-3311

Web Site: www.cdc.gov

Food Allergy Research and Education

11781 Lee Jackson Highway

Suite 160

Fairfax, VA 22030-3309

Phone: 800-929-4040

Web Site: www.foodallergy.org

Food and Drug Administration Office of Regulatory Affairs

Phone: 301-827-3101

Web Site: www.fda.gov/ora/inspect_ref/iom

National Center for Infectious Diseases:

CDC Diseases and Conditions: <http://www.cdc.gov/DiseasesConditions/>

NCIRD: <http://www.cdc.gov/ncird/Note.html>

NCHHSTP: <http://www.cdc.gov/nchhstp/>

National Environmental Health Association (NEHA)

720 South Colorado Boulevard

Suite 1000-N

Denver, CO 80246-1926

Phone: 303-756-9090

Web Site: <http://www.neha.org>

Manager's Corner

The manager's corner for this section will provide brief guidance on how to conduct a 15 minute training session on the following topics: Prevent foodborne illness through Personal Hygiene; and Foodborne Illness Prevention Is OUR Business. Posters will be used during training and posted in the kitchen for reference during the work day.

Prevent Foodborne Illness Through Personal Hygiene: Discuss the importance of personal hygiene and proper hand washing. Show video on proper hand washing. Video Clip *Wash Your Hands: Educating the School Community*.

Ask the staff:

- How do you wash your hands?
- When should you wash your hands?
- What symptoms of an illness should be reported to your supervisor?

Record the answers on poster paper for everyone to see. Discuss answers recorded. Show Personal Appearance poster. Discuss the importance of Personal Appearance. Answer all questions. After training post a poster on personal appearance in the employee break room.

Foodborne Illness Prevention Is OUR Business Part 1: Post posters on walls in the training room. Posters may include: Keep Hot Foods Hot! Keep Cold Foods Cold!; Hand Washing –The number 1 Defense Against Foodborne Illness; Refrigerate for Safety; Use That Thermometer; Cutting Boards; and Reheating Foods. Ask a volunteer to read the information on the poster assigned.

Ask the staff:

- How can they prevent foodborne illness?
- What are the temperatures in the temperature danger zone?
- If a refrigerator thermometer is reading 45 °F is this safe?
- A calibrated thermometer is at 30 °F in an ice-water bath.
- Is this thermometer calibrated correctly?

Reinforce prevention and steps to maintain a safe food preparation and service environment. Answer all questions. After training post all posters in the kitchen.

Foodborne Illness Prevention Is OUR Business Part 2: Schedule all staff to meet in the center of the kitchen. Walk around kitchen and stop at each of the following:

Refrigerator/Walk in
Freezer/Walk in
Cutting Boards

Hand Sink
Smallwares
Equipment.

At each stop ask a volunteer to share how to prevent foodborne illness at this location. Ask staff if they have any other suggestions to prevent foodborne illness. Summarize the information that was shared. Answer all questions.

Note:

The Video clip *Wash Your Hands: Educating the School and Community* is available on the NFSMI website. Prior to training get the video ready to play. Go to www.nfsmi.org to download the video. When you get to the Web page, go to the **Document Library**. In the **Education and Training Resources by Title** listing, find the *Serving It Safe* link. On the *Serving It Safe* page, select the video. Use the WMV version to download and save to your computer. Have this clip ready to play on your computer before the seminar begins.

If you have any problems accessing the video, please contact NFSMI for additional help at 1-800-321-3054.

Wash Your Hands: Educating the School Community

Video Viewing Guide

Directions:

As you view the video, *Wash Your Hands: Educating the School Community*, look for examples of **when** hands are washed and **how** hands are washed. Record them on the form below.

When Hands Are Washed	How Hands Are Washed

Wash Your Hands: Educating the School Community

Video Viewing Guide (Answers for Trainers)

Directions:

As you view the video, *Wash Your Hands: Educating the School Community*, look for examples of **when** hands are washed and **how** hands are washed. Record them on the form below.

When Hands Are Washed	How Hands Are Washed
After sneezing	Used soap
When reporting to work	Rubbed soapy water up to elbows
Before putting glove on	Used warm, running water
After taking gloves off	Washing for 20 seconds
Before food preparation	Rubbed hands together
After putting ground beef in tilting skillet	Rubbed between fingers
After handling money	Used single-use disposable towels to dry
After cleaning	Turned off faucet with disposable towel
After taking out the garbage	Used paper towel to open door
After handling dirty dishes	Used foot pedal on trash can to dispose of paper towel

Checking Cooking Temperature Knowledge

Materials needed

- Four signs with the following temperatures on them (one temperature per sign): 135°F, 145°F, 155°F, 165°F
- List of menu items on sticky notes

1. Post the four temperature signs on the wall near the exit.
2. Ask participants to partner with the person on their right. If class is twenty or less this step is not necessary.
3. Distribute a sticky note with one menu item written on it to each pair of participants (each participant if less than twenty). Menu items include: canned green beans, 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.
4. Assign two pairs (four participants) to be the reviewers.
5. Ask participants to place their menu item under the appropriate end-point cooking temperature.
6. Provide the review pairs with the answer key Temperature-Rules Cooking for Foodservice. They will share with all participants what menu items are placed under the correct temperature. If not, they will share where the menu item should be placed.

135° F	145° F	155° F	165° F
Canned green beans	Pork roast	Sausage	Roast Turkey
			Stuffed Pasta Shells
		Scrambled Eggs, cooked & held for service	
Frozen Chicken Patties (precooked)		Taco filling	Leftover Lasagna
Frozen Broccoli	Roast beef	Sloppy Joes	Chicken Noodle Casserole
Canned Corn		Hamburger Patties	Leftover Chili

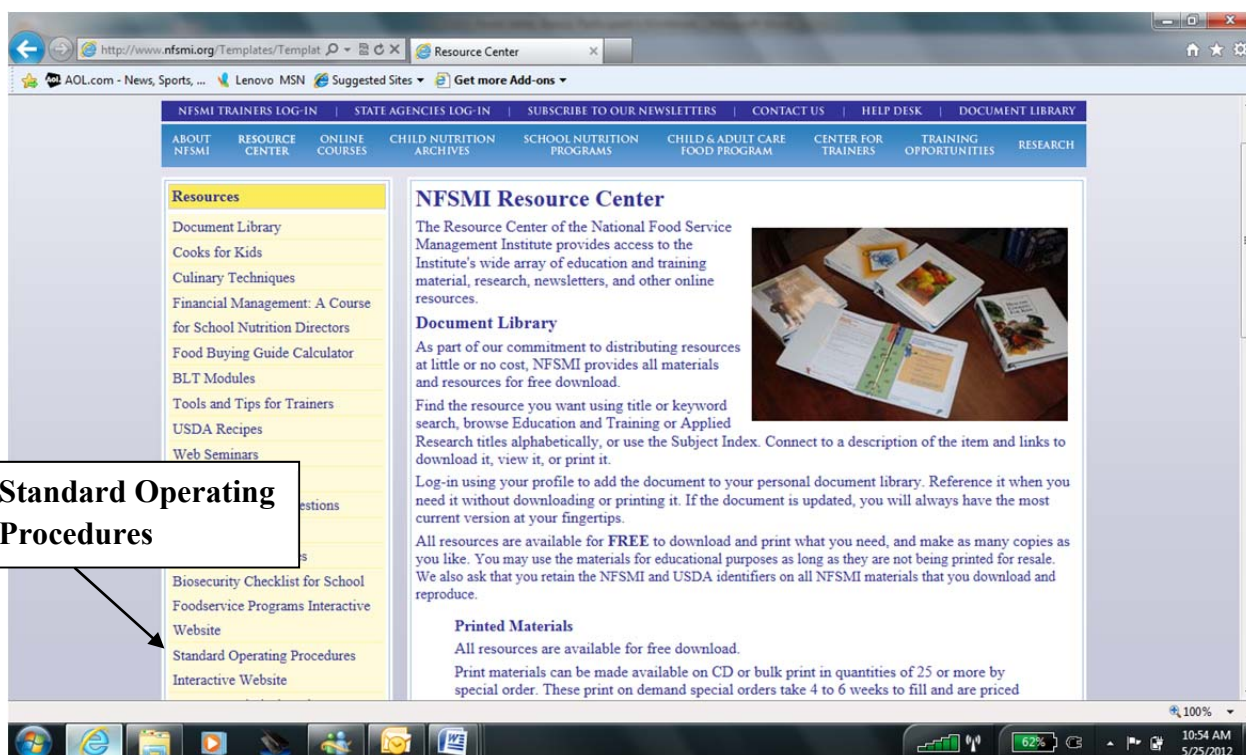
Lesson 3: Tailoring Standard Operating Procedures

Introduction and Learning Objectives

Throughout this lesson our focus will be on Standard Operating Procedures. Recognizing, identifying, and tailoring existing Standard Operating Procedures for the school nutrition program.

At the end of this lesson, participants will be able to:

- Recognize the importance of Standard Operating Procedures.
- Recognize the information needed in Standard Operating Procedures.
- Identify how to access the NFSMI website and locate sample Standard Operation Procedures.
- Tailor existing Standard Operating Procedures to individual school nutrition programs.



List of SOP's

MySOP Login
About SOPs
List of SOPs
NFSMI
USDA
FDA CFSAN
FDA Food Code

National Food Service Management Institute
 United States Department of Agriculture

USDA

Standard Operating Procedures

A Standard Operating Procedure (SOP) is a set of directions that should (must) be followed to ensure food safety when completing certain tasks such as cooking chicken, cooling a food, or sanitizing a work surface. These SOP's should be used as a guide to establishing a food safety program for your operation.

The National Food Service Management Institute (NFSMI) has developed food safety SOPs in conjunction with USDA and FDA. Although the NFSMI SOPs include HACCP-based principles, you should remember that SOPs are only one component of an overall food safety program. Food safety SOPs include the following principles:

- Corrective actions
- Monitoring procedures
- Verification procedures
- Record keeping procedures

This resource provides sample food safety Standard Operating Procedures (SOPs) and worksheets which contain the minimum elements that can assist you when developing your food safety program. Print the food safety SOPs and complete the worksheets which have been included in this resource and you will see a model for developing your food safety program.

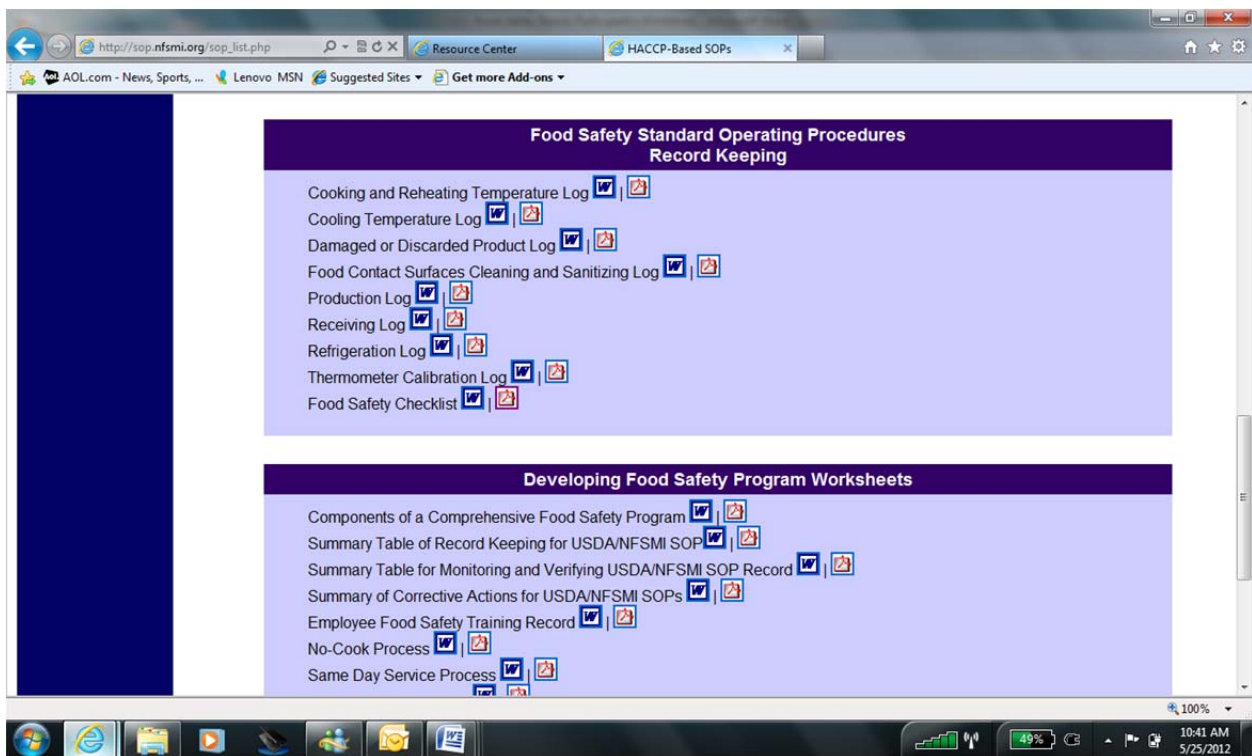
I would like to:

Food Safety Standard Operating Procedures (SOPs)

- Cleaning and Sanitizing Food Contact Surfaces [W](#) [P](#)
- Controlling Time and Temperature During Preparation [W](#) [P](#)
- Cooking Potentially Hazardous Foods [W](#) [P](#)
- Cooling Potentially Hazardous Foods [W](#) [P](#)
- Date Marking Ready-to-Eat, Potentially Hazardous Foods [W](#) [P](#)
- Handling a Food Recall [W](#) [P](#)
- Holding Hot and Cold Potentially Hazardous Foods [W](#) [P](#)
- Personal Hygiene [W](#) [P](#)
- Preventing Contamination at Food Bars [W](#) [P](#)
- Preventing Cross-Contamination During Storage and Preparation [W](#) [P](#)
- Receiving Deliveries [W](#) [P](#)
- Reheating Potentially Hazardous Foods [W](#) [P](#)
- Serving Food [W](#) [P](#)
- Storing and Using Poisonous or Toxic Chemicals [W](#) [P](#)
- Transporting Food to Remote Sites (Satellite Kitchens) [W](#) [P](#)
- Using and Calibrating Thermometers [W](#) [P](#)
- Using Suitable Utensils When Handling Ready-to-Eat Foods [W](#) [P](#)
- Using Time Alone as a Public Health Control to Limit Bacteria Growth in Potentially Hazardous Foods [W](#) [P](#)
- Washing Fruits and Vegetables [W](#) [P](#)
- Washing Hands [W](#) [P](#)

LESSON 3

TAILORING STANDARD OPERATING PROCEDURES



Standard Operating Procedures Checklist

Directions: Use this checklist when creating, tailoring, reviewing, or updating Standard Operating Procedures for food safety.

	Completed	Comments
PURPOSE		
Explains why Standard Operating Procedures are important	☐	_____
Explains what it is used for	☐	_____
INSTRUCTIONS		
Step-by-step procedures	☐	_____
Monitoring		
Monitoring requirements explained in writing	☐	_____
CORRECTIVE ACTION		
Steps to be taken if upon observation instructions are not followed and food safety goals are not met	☐	_____
VERIFICATION AND RECORD KEEPING		
A place to record monitoring activities: who is responsible for monitoring, was SOP followed, and any corrective action taken. The school nutrition director verifies that action has been taken, and dates and initials the verification.	☐	_____

Manager's Corner

The manager's corner for this section will provide brief guidance on how to conduct a training session on the importance of food safety Standard Operating Procedures for managers and lead personnel.

View video clip: *Quick Reference Video: Standard Operating Procedures.* Discuss the importance of Standard Operating Procedures. Provide the current Standard Operating Procedure for Holding Hot and Cold Potentially Hazardous Foods. Have staff read and discuss.

Ask the following questions:

- What steps must be taken to properly calibrate and use a thermometer?
- How do you monitor that the proper steps are taking to maintain hot food outside the temperature danger zone?
- What records would provide you the temperature of a hot food during production and service?
- How do you monitor that cold foods are kept outside the temperature danger zone?
- What corrective action would you take if the cold food records showed the walk in refrigerator to be at 45 °F?

Show staff where to locate Standard Operating Procedures in the kitchen. Answer all questions. Annually, schedule managers and lead personnel to review Standard Operating Procedures. Document the date and time the review of Standard Operating Procedures was completed by all managers and lead personnel. Manager's Corner Appendix Holding Hot and Cold Potentially Hazardous Foods (Sample SOP)

Note:

The video clip *Quick Reference Video: Standard Operating Procedures* is available on the NFSMI website. Prior to training get the video ready to play. Go to www.nfsmi.org to download the video. When you get to the Web page, go to the **Document Library**. In the **Education and Training Resources by Title** listing, find the *Serving It Safe* link. On the *Serving It Safe* page, select the video. Use the WMV version to download and save to your computer. Have this clip ready to play on your computer before the seminar begins. If you have any problems accessing the video, please contact NFSMI for additional help at 1-800-321-3054.

Lesson 4: HACCP Every Day

Introduction and Learning Objectives

Throughout this lesson our focus will be on the Process Approach to HACCP to control food safety.

At the end of this lesson, participants will be able to:

- Identify the 7 HACCP principles.
- Recognize the Process Approach to HACCP.
- Demonstrate application of the Process Approach to HACCP.

HACCP Principles

	Completed	Comments
1. Conduct a Hazard Analysis		
How is the menu item prepared:		
Prepared and served without cooking	☐	_____
Prepared and cooked for same day service	☐	_____
Prepared, cooked, held, reheated and served	☐	_____
Check your menu		
What items are similarly prepared:		
What items are PHF/TCS?	☐	_____
Where is the food safety hazard during the process?	☐	_____
Where may food safety hazards occur for each item?	☐	_____
2. Determine Critical Control Points (CCPs)		
Find points in process where hazards can be prevented, eliminated, or reduced to safe levels	☐	_____
Some foods may have more than one CCP	☐	_____
3. Establish Critical Limits		
Minimum or maximum limit that must be met to prevent, eliminate, or reduce the hazard to a safe level.	☐	_____
4. Establish Monitoring Procedure		
Determine best way to check procedures and monitor for consistency.	☐	_____
Identify who will monitor and how often	☐	_____
5. Identify Corrective Actions		
Establish steps that must be taken when a critical limit is not met	☐	_____

6. Keep Records

	Completed	Comments
Maintain you HACCP plan	☐	_____
Maintain all documentation during the HACCP creation process	☐	_____
Keep all records		
Monitoring activities	☐	_____
Corrective action	☐	_____
Equipment is in working condition	☐	_____
Working with suppliers	☐	_____

7. Review and verify your overall food safety program periodically

Is your plan working as intended?	☐	_____
Plan to evaluate		
Monitoring charts	☐	_____
Records	☐	_____
How you performed your hazard analysis	☐	_____
Review all records when updating HACCP plan	☐	_____

Manager's Corner

The manager's corner for this section will provide brief guidance on how to conduct a 15 minute training session on each segment of The Process Approach of HACCP.

Session One:

The Process Approach: No Cook

Provide all staff the Food Safety Fact Sheet for the No Cook Process.

Show Video Clip: *The Process Approach: No Cook*. Review information discussed in the video and the Food Safety Fact Sheet.

Ask staff:

- What are the temperatures in the temperature danger zone?
- What steps do you take to keep foods safe?
- Are the steps you take keeping foods out of the danger zone?

Provide all staff a lunch menu. Write the lunch menu on poster paper and post at front of room. Ask staff to share which foods on the lunch menu are the No Cook Process. Circle the menu items on the poster papers. Discuss what they learned. Answer staff questions.

Session Two:

The Process Approach: Same Day Service

Provide all staff the Food Safety Fact Sheet for Same Day Service.

Show Video Clip: *The Process Approach: Same Day Service*. Review information from the video and the Food Safety Fact Sheet. Provide all staff a completed production sheet.

Ask staff:

- What steps do you take during food preparation to prevent cross contamination?
- What are the temperatures in the temperature danger zone?
- How do you limit the time food is in the temperature danger zone?
- What information is available on the production sheet to assist you in maintaining the proper temperature of foods?
- How does personal hygiene affect keeping foods safe during same day service?

Answer staff questions.

Session Three: The Process Approach: Complex

Provide all staff the Food Safety Fact Sheet for Complex Process.

Show video clip: *The Process Approach: Complex* Review information from the video and the Food Safety Fact Sheet.

Show video clip: *Cooling*. Provide staff a completed production sheet. Select an item on the production sheet and write the item on posted poster paper.

Ask staff:

- What are the temperatures in the temperature danger zone?
- What steps do you take to check the end-point cooking temperature of the complex food listed on the production sheet?
- Where do you record the temperature of the complex food?
- What steps do you take in cooling the complex cooked food?
- Why is proper cooling of cooked food important?
- What steps do you take in reheating food?
- What is the holding temperature for complex menu items?

Answer staff questions. This session may take more than 15 minutes to cover the topic. A recommendation may be 20 – 30 minutes. This will provide staff ample time to absorb all the material covered.

Note:

The video clips *The Process Approach: No Cook*; *The Process Approach: Same Day Service*; *The Process Approach: Same Day Service*; *The Process Approach: Complex*; *Cooling* are available on the NFSMI website. Prior to training get the video ready to play. Go to www.nfsmi.org to download the video. When you get to the Web page, go to the Document Library. In the Education and Training Resources by Title listing, find the *Serving It Safe* link. On the *Serving It Safe* page, select the video. Use the WMV version to download and save to your computer. Have this clip ready to play on your computer before the seminar begins.

If you have any problems accessing the video, please contact NFSMI for additional help at 1-800-321-3054.

Lesson 5: Inspect What You Expect

Introduction and Learning Objectives

Throughout this lesson our focus will be to apply the learnings from *Food Safety Basics*.

At the end of the lesson, participants will be able to:

- Apply skills learned to design a training program on CCPs for PHF/TCS.
- Demonstrate knowledge of SOP.
- Demonstrate knowledge of food safety checklist usage to monitor a school nutrition program.
- Apply knowledge of The Process Approach to HACCP.

Angel School Scenario

Angel School is gearing up for the coming school year. Work is in progress to review and update the school nutrition food safety program. Recipes have never been evaluated to include CCPs for PHF/TCS. Managers do not know definition of a CCP! A SOP for Cold Holding needs to be developed. Training on personal hygiene, thermometer calibration, and recording temperature information on logs is planned before school begins. Angel's director has been looking for a good Food Safety Checklist to use this fall. All checklists have needed changes made for the Angel School Nutrition Program. A decision was made to modify the Food Safety Checklist available on the NFSMI website.

You will be helping to complete tasks before school begins September 1st.

Angel School Scenario Task List

- A.** Design a training program to educate managers on including CCPs for PHF/TCS. Include a sample recipe that includes CCPs and the steps taken to determine each CCP.
- B.** Design a training program on the Process Approach to HACCP. Include a sample menu where the Process Approach to HACCP has been applied showing examples of the processes.
- C.** Create an outline to train staff on personal hygiene, proper thermometer calibration and use, and recording temperature information on logs. Show examples of tools to be used during the training session. What other training might you suggest?
- D.** Review the Food Safety Checklist – What modifications would you suggest to the director?
- E.** Develop a SOP for Cold Holding.

Appendix



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The University of Mississippi

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