
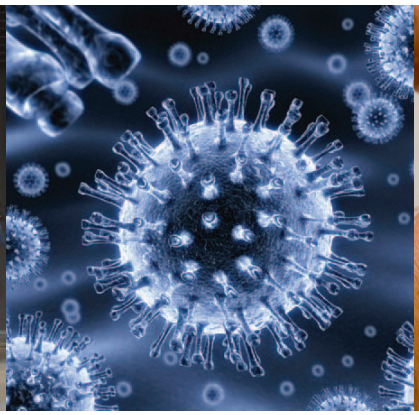

Food Safety in Schools




Participant's Workbook

INSTITUTE OF child nutrition
RESOURCES • TRAINING • RESEARCH

USDA

Food Safety in Schools

Participants Workbook

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INSTITUTE OF child nutrition
RESOURCES • TRAINING • RESEARCH

Key Area: 2
Code: 2600 Food Safety and HACCP

2015

Institute of Child Nutrition

The University of Mississippi

The Institute of Child Nutrition 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 Institute of Child Nutrition is to improve the operation of child nutrition programs through research, education and training, and information dissemination.

MISSION

The mission of the Institute of Child Nutrition is to provide information and services that promote the continuous improvement of child nutrition programs.

VISION

The vision of the Institute of Child Nutrition is to be the leader in providing education, research, and resources to promote excellence in child nutrition programs.

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For more information, please contact helpdesk@theicn.org.

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Introduction

Welcome and thank you for taking part in the *Food Safety in Schools* training.

In the school nutrition environment, individual employees can make a big difference in positive as well as negative ways. This is especially true when it comes to food safety. Employees can be the single most critical element in keeping the school nutrition facility safe and sanitary. However, they can also be responsible for the introduction of a food safety hazard at any point in the food production process.

All school nutrition employees have a lot at stake as they prepare and serve food each day.

- Serving food that is improperly stored, prepared, cooked, or held may cause customers to become seriously, even fatally, ill.
- Unsafe school nutrition practices also place employees in danger.
- The good reputation of a school nutrition program must be built on serving safe food.

This training has been designed to be very interactive so that you, the learner, can be actively involved in learning the food safety concepts you need to know to prepare and serve foods safely and to keep your school nutrition facility safe and sanitary.

Your instructor may choose to conduct the entire *Food Safety in Schools* training in a one-day class, or may opt to present individual lessons as need or opportunity arises. In either case, this Participant's Workbook has been designed to serve as both a guide during the training's lessons and as a reference for your use following the class.

Enjoy the training!

Training Overview

Food Safety in Schools is designed to provide school nutrition employees with up-to-date information for managing a safe and sanitary school nutrition program. Each lesson has several objectives and you will participate in activities that will reinforce the objectives. The lessons include:

Lesson 1: Food Safety is Top Priority
Lesson 2: Prevent Foodborne Illness—Understanding Microorganisms
Lesson 3: Basic Facts About Microorganisms
Lesson 4: A Clean and Sanitary School Nutrition Facility
Lesson 5: A Process for Preventing Foodborne Illness
Lesson 6: Food Safety Programs in Schools

Before beginning the lessons, you will take a Pre-Assessment. This assessment will show you and your trainer how much you know about food safety prior to the training. You will take it again at the conclusion of the training to show how much new knowledge you have gained.

Getting To Know Your Group

Who are your instructors and fellow participants? Write their names and a short description below to help you remember. You might want to ask for their contact information so that you can connect with them following the training.

Name	Description	Contact Information

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

Lesson 1: Food Safety Is Top Priority

Lesson 1: Food Safety Is Top Priority

Introduction and Learning Objectives

Food safety is one of the basic responsibilities of all school nutrition employees. This lesson will focus on basic food safety hazards that can occur in a school nutrition program and how school nutrition employees can use good food handling practices to minimize or eliminate a food safety hazard from occurring.

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.

Biological Hazards

Introduction

There are three types of hazards that can cause food to be unsafe: biological hazards, chemical hazards, and physical hazards. School nutrition employees have the responsibility to identify and minimize hazards in the food they serve.

Here Are the Facts

Biological hazards occur when bacteria, viruses, molds, yeasts, or parasites contaminate food. Controlling time and temperature of food is critical for minimizing biological hazards because microorganisms grow rapidly in the temperature danger zone–41 °F–135 °F.

Application

Follow good personal hygiene practices identified in the Standard Operating Procedures.

- Wear clean uniforms and aprons.
- Follow appropriate handwashing practices.
- Use gloves for handling ready-to-eat foods.

Purchase food from approved sources.

- Require documentation that proves vendors follow a food safety program based on HACCP principles or good manufacturing practices.
- Include food safety requirement on bid specifications.

Follow good receiving practices.

- Discard any containers that are dented, bulging, or cracked.
- Make sure that all food packaging is intact. If not, discard.

Control time and temperature of food.

- Store foods at the appropriate temperature.
- Limit the time that food is at room temperature during preparation.
- Thaw foods using proper thawing procedures.
- Cook food to the appropriate internal cooking temperature.
- Hold hot food at 135 °F or above.
- Hold cold food at 41 °F or below.
- Check temperature of food at the beginning and end of transportation.

- Cool food properly.
  - Cool from 135 °F to 70 °F in 2 hours or less. Take immediate corrective actions if cooling is not done within time guidelines or discard product.
  - Cool from 70 °F to 41 °F in an additional 4 hours
- Reheat food to 165 °F for 15 seconds within 2 hours.

Check and record time and temperatures following monitoring procedures in your foodservice operation.

Follow procedures to avoid cross contamination.
- Wash hands at appropriate times using proper procedures.
- Wash fresh produce in clean, running, drinkable water.
- Use appropriate utensils for serving food.
- Clean and sanitize work surfaces and utensils.
- Use color-coded cutting boards to minimize cross contamination.
- Clean and sanitize equipment between uses.
- Check concentration of sanitizing solutions to make sure they are appropriate.
- Check temperature of rinse water in high-temperature dishmachines to make sure they are adequate for sanitizing.

Remember, follow state or local health department requirements.

Chemical Hazards

Introduction

There are three types of hazards that can cause a food to be unsafe: chemical hazards, biological hazards, and physical hazards. School nutrition employees have the responsibility to identify and minimize hazards in the food they serve.

Here Are the Facts

Chemical hazards occur when a harmful chemical gets into a food that is then eaten by a person. A variety of chemicals are used to clean and sanitize the school nutrition facility and to control pests. Typical hazardous chemicals include detergents, sanitizers, drying agents, glass cleaners, deliming agents, and pesticides.

Application

Store chemicals away from food.

- Store chemicals in original containers, never in containers that once stored food.
- Make sure labels clearly identify chemical contents of containers.
- Use Safety Data Sheets (SDS) provided by the manufacturer to ensure chemicals are stored and used properly.
- Keep chemicals in a locked storage area and away from food and food supplies.
- Limit access to chemicals to authorized employees.

Use chemicals properly.

- Teach employees how to use chemicals.
- Measure chemicals according to manufacturer's recommendations.
- Test sanitizing solutions to make sure that they are at the appropriate concentration.

Wash hands thoroughly after using chemicals.

Hire a licensed pest control operator to use pesticides.

Remember, follow state or local health department requirements.

Physical Hazards

Introduction

There are three types of hazards that can cause a food to be unsafe: physical hazards, biological hazards, and chemical hazards. School nutrition employees have the responsibility to identify and minimize hazards in the food they serve.

Here Are the Facts

Physical hazards occur when a foreign object gets into food accidentally, or natural objects are left in food. Physical hazards can get into food by contamination or poor procedure practices throughout the food chain. Physical contaminants include dirt, hair, nail polish flakes, insects, broken glass, nails, staples, plastic fragments, bones, or bits of packaging.

Application

Follow written Standard Operating Procedures to minimize risks of physical hazards.

- Wear hair restraints such as hairnets, hats, or caps to minimize the opportunity for hair to fall into food.
- Do not wear nail polish or artificial nails. Polish can flake off and fall into food, and artificial nails can come loose and fall into food.
- Do not wear rings with stones or earrings that could fall into food.

Pay special attention to the food during preparation to identify physical contaminants.

- Take care to remove and discard all packaging from food.
- Remove all bones when deboning chicken or other meats.
- Look for possible contaminants. For example, dry beans must be sorted prior to washing to remove stones that may be there from harvest.
- Remove any toothpicks that might be used in food preparation.

Clean, maintain, and use equipment properly.

- Clean and sanitize equipment and utensils after each use.
- Clean blades of can openers after use to ensure that metal shavings do not accumulate.
- Use only commercial ice scoops when getting ice from an ice machine or portioning ice.
- Place shields on lights.
- Use shatterproof light bulbs.

Have routine pest control maintenance administered by a licensed pest control operator to reduce opportunities for pest contamination in food.

Remember, follow state or local health department requirements.

Identify Hazards and Practices to Prevent Them

Directions: Write an example of each hazards in the designated section. Then, write practices that could be used to control the type of hazard assigned.

Biological	Chemical	Physical
Examples of Hazards		
How to Prevent Hazards		

Temperature Danger Zone

Introduction

The temperature danger zone is the temperature range in which microorganisms grow quickly and sometimes reach levels that can make people ill. School nutrition employees must maintain appropriate temperatures throughout the food process, from receiving, until the food is served to children. Temperature control is a key component of a school food safety program.

Here Are the Facts

The *FDA Food Code* has identified the temperature danger zone as 41 °F–135 °F.

The saying "Keep hot food hot and cold food cold" is based on the importance of keeping food out of the temperature danger zone. In other words, cold foods must be kept at 41 °F or below and hot foods must be kept at 135 °F or above. It is important to limit the amount of time that foods served cold or hot are in the range of 41 °F to 135 °F.

Application

Remember to:

- Cook, hold, serve, and chill foods at proper temperatures.
- Use a clean, sanitized, and calibrated thermometer to take food temperatures.
- Record temperatures.
- Maintain temperature logs.

Maintain temperatures at each operational step in the foodservice process from receiving to storing.

- Receiving—Receive refrigerated foods at 41 °F or below, and frozen foods at 32 °F or below.
- Storing—Store refrigerated foods at 41 °F or below, and store frozen foods at 0 °F or below.
- Preparing—Limit the time that food is in the temperature danger zone during preparation. Batch cooking is the best way to limit time.
- Cooking—Cook food to the appropriate temperature for that item.
- Holding—Hold cold foods at 41 °F or below and hot foods at 135 °F or above.
- Serving—Serve cold food cold and hot food hot. Keep cold food below 41 °F and hot food above 135 °F.

- Cooling—Cool foods as quickly as possible. The *FDA Food Code* requires that foods be cooled from 135 °F–70 °F within 2 hours and from 135 °F–41 °F within a total of 6 hours. If food is not cooled from 135 °F–70 °F within 2 hours, the food must be reheated to 165 °F for 15 seconds and the cooling process started over. Take actions to speed the cooling process such as dividing food into smaller portions, using ice water baths, using an ice paddle, and stirring.
- Reheating—Reheat all leftover foods to 165 °F for 15 seconds within 2 hours.
- Transporting—Transport cold foods cold at 41 °F or below, and hot foods hot at 135 °F or above.

Remember, follow state or local health department requirements.

Lesson 2: Prevent Foodborne Illness —Understanding Microorganisms

Lesson 2: Prevent Foodborne Illness —Understanding Microorganisms

Introduction and Learning Objectives

Food safety is one of the basic responsibilities of all school nutrition employees. Research conducted by the U.S. Food and Drug Administration (FDA) shows that basic food safety practices need to be improved. Active managerial control of foodborne illness risk factors was recommended by FDA. Areas identified as most in need of improvement included employee handwashing, cold holding, date marking of ready-to-eat foods, and cleaning and sanitizing of food contact surfaces. Thus, three key areas that need to be improved in order to prevent foodborne illness include:

- employee personal hygiene, and
- prevention of contamination, and
- time and temperature control.

Lesson 2 will focus on preventing foodborne illness. Following this 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 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.

Safe Food Process

How can foodborne illness be prevented during the eight steps of the foodservice process?

Begin by following the rules of good personal hygiene and maintaining a clean and sanitary foodservice facility.

Step 1 Purchasing

- Buy from reputable vendors.
- Include food safety standards in purchasing agreements.

Step 2 Receiving

- Keep receiving area clean.
- Inspect the delivery truck. Make sure it is clean and free of odors. Check food temperatures, paying particular attention to frozen and refrigerated products.
- Look for signs of contamination and container damage. Reject these packages; their contents may also be contaminated or damaged.
- Check for separation between raw and ready-to-eat or prepared foods during transport.
- Store foods immediately.

Step 3 Storing

- Use the First In First Out principle (FIFO). Older products should be used first.
- Store product in original packaging. Label foods with delivery date.
- Keep raw food separate from cooked or ready-to-eat products.
- Store foods at least 6 inches off the floor and 6 inches away from the wall.
- Keep storage areas clean, dry, and pest-free.
- Store chemicals away from foods and food-related supplies.
- Maintain, monitor, and record refrigerator, freezer, and dry storage room temperatures.

Step 4 Preparing

- Wash hands frequently, properly, and at appropriate times.
- Avoid cross contamination.
- Keep foods out of the temperature danger zone.
- Use batch cooking to limit the time between preparation and service.
- Thaw foods properly.

Step 5 Cooking

- Avoid cross contamination.
- Cook foods to the proper internal temperature for appropriate time.
- Use a clean and calibrated food thermometer.
- Record internal food temperature.

Step 6 Serving and Holding

- Avoid cross contamination.
- Keep foods out of the temperature danger zone.
- Monitor and record food temperatures.
- Monitor the temperature of hot holding and cold holding equipment.

Step 7 Cooling

- Speed up cooling by using techniques such as:
  - Stir frequently.
  - Divide food into small quantities.
  - Use shallow pans.
  - Use ice water bath or ice paddle whenever possible.
- Use a clean and calibrated food thermometer to check temperatures.
- Monitor and record food temperatures.
- Store foods appropriately–covered, labeled with product name and date prepared, and the proper temperature.

Step 8 Reheating

- Reheat to internal temperature of 165 °F for 15 seconds.
- Reheat food to 165 °F within 2 hours or less.
- Monitor and record internal temperatures of foods.
- Never reheat food in hot holding equipment.
- Reheat food only one time.

Personal Hygiene
(Sample SOP)

PURPOSE: To prevent contamination of food by school nutrition employees.

SCOPE: This procedure applies to school nutrition employees who handle, prepare, or serve food.

KEY WORDS: Personal Hygiene, Cross Contamination, Contamination

INSTRUCTIONS:

1. Train school nutrition employees on using the procedures in this SOP.
2. Follow state or local health department requirements.
3. Follow the Employee Health Policy. (Employee Health Policy is not included in this resource.)
4. Report to work in good health, clean, and dressed in clean attire. Report any illnesses to your manager.
5. Change apron when it becomes soiled.
6. Wash hands properly, frequently, and at the appropriate times.
7. Keep fingernails trimmed, filed, and maintained.
8. Do not wear artificial fingernails and fingernail polish.
9. Wear single-use gloves if artificial fingernails or fingernail polish are worn.
10. Do not wear any jewelry except for a plain ring such as a wedding band.
11. Treat and bandage wounds and sores immediately. When hands are bandaged, single-use gloves must be worn.
12. Cover a lesion containing pus with a bandage. If the lesion is on a hand or wrist, cover with an impermeable cover such as a finger cot or stall and a single-use glove. Show a supervisor any lesion before working.
13. Eat, drink, or chew gum only in designated break areas where food or food contact surfaces may not become contaminated.
14. Taste food the correct way:
    - Place a small amount of food into a separate container.
    - Step away from exposed food and food contact surfaces.
    - Use a teaspoon to taste the food. Remove the used teaspoon and container to the dish room. Never reuse a spoon that has already been used for tasting.
    - Wash hands immediately.
15. Wear suitable and effective hair restraints while in the kitchen.

MONITORING:

- The kitchen supervisor will inspect employees when they report to work to be sure that each employee is following this SOP.
- The kitchen supervisor will monitor that all school nutrition employees are adhering to the personal hygiene policy during all hours of operation.

CORRECTIVE ACTION:

1. Retrain any school nutrition employee found not following the procedures in this SOP.
2. Discard affected food.

VERIFICATION AND RECORD KEEPING:

The kitchen supervisor will verify that school nutrition employees are following this SOP by visually observing the employees during all hours of operation. The school nutrition manager will complete the Food Safety Checklist daily. School nutrition employees will record any discarded food on the Damaged or Discarded Product Log. The Food Safety Checklist and Damaged or Discarded Product Logs are to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ **BY:** _____

DATE REVIEWED: _____ **BY:** _____

DATE REVISED: _____ **BY:** _____

Personal Hygiene

Introduction

Good personal hygiene is a basic requirement for implementing a food safety program. All school nutrition employees must follow the Standard Operating Procedures for personal hygiene that are written for their school nutrition program.

Here Are the Facts

Research conducted by the U.S. Food and Drug Administration shows that poor personal hygiene practices often are followed in retail foodservice establishments, which includes schools, hospitals, nursing homes, and restaurants. Poor personal hygiene is a risk factor that must be controlled in all types of foodservice operations.

Application

- Report to work in good health, clean, and dressed in clean attire.
- Change apron when it becomes soiled.
- Wash hands properly, frequently, and at the appropriate times.
- Keep fingernails trimmed, filed, and maintained.
- Keep fingernails short and without artificial nails or nail polish.
- Do not wear any jewelry except for a plain ring such as a wedding band.
- Treat and bandage wounds and sores immediately. When hands are bandaged, single-use gloves must be worn.
- Report any illness to your manager.
- Cover any lesion containing pus with a bandage. If the lesion is on a hand or wrist, cover with an impermeable cover such as a finger cot or stall and a single-use glove.
- Eat, drink, or chew gum only in designated break areas where food or food contact surfaces may not become contaminated.
- Wear hairnet, hat, or cap while in the kitchen.
- Taste food the following correct way:
  - Place a small amount of food into a separate container.
  - Step away from exposed food and food contact surfaces.
  - Use a teaspoon to taste the food. Remove the used teaspoon and container to the dishroom. Never reuse a spoon that has already been used for tasting.
  - Wash hands immediately.

Remember, follow state or local health department requirements.

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

Handwashing

Introduction

Handwashing is the single most important practice in any school nutrition program. School nutrition employees can improve the safety of the food they serve by washing their hands frequently, correctly, and at the appropriate times.

Here Are the Facts

Foodborne illnesses are transmitted by food handlers that contaminate food and food contact surfaces. Individuals who handle food when they have a foodborne illness, gastrointestinal illness, infected lesion, or are around someone who is ill can pass along those illnesses. Individuals can simply touch a surface that is contaminated with a bacteria or virus and pass that along to others. Handwashing minimizes the risk of passing along bacteria or viruses that can cause foodborne illnesses. Follow state or local health department requirements.

Application

It is important to know how and when to wash hands and exposed areas of the arms.

How?

- Wet hands and forearms with warm running water at least 100 °F and apply soap.
- Scrub lathered hands and forearms, under fingernails, and between fingers for at least 10–15 seconds. Rinse thoroughly under warm running water for 5–10 seconds.
- Dry hands and forearms thoroughly with single-use paper towels.
- Dry hands using a warm air hand dryer.
- Turn off water using paper towels.
- Use paper towel to open door when exiting the restroom.

When?

- Beginning to work, either at the beginning of shift or after breaks

Before

- When moving from one food preparation area to another
- Putting on or changing disposable gloves

After

- Using the toilet
- Sneezing, coughing, or using a handkerchief or tissue
- Touching hair, face, or body
- Handling raw meats, poultry, or fish
- Eating, drinking, or chewing gum
- Clean up activity such as sweeping, mopping, or wiping counters
- Touching dirty dishes, equipment, or utensils
- Handling trash
- Handling money
- Any time that hands may have become contaminated

Remember, follow state or local health department requirements.

Washing Hands
(Sample SOP)

PURPOSE: To prevent foodborne illness by contaminated hands.

SCOPE: This procedure applies to anyone who handles, prepares, and serves food.

KEY WORDS: Handwashing, Cross Contamination

INSTRUCTIONS:

1. Train school nutrition employees on using the procedures in this SOP.
2. Follow state or local health department requirements.
3. Post handwashing signs or posters in a language understood by all school nutrition employees near all handwashing sinks, in food preparation areas, and restrooms.
4. Use designated handwashing sinks for handwashing only. Do not use food preparation, utility, and dishwashing sinks for handwashing.
5. Provide warm running water, soap, and a means to dry hands. Provide a waste container at each handwashing sink or near the door in restrooms.
6. Keep handwashing sinks accessible anytime employees are present.
7. Wash hands:
   - Before starting work
   - During food preparation
   - When moving from one food preparation area to another
   - Before putting on or changing gloves
   - After using the toilet
   - After sneezing, coughing, or using a handkerchief or tissue
   - After touching hair, face, or body
   - Eating, drinking, or chewing gum
   - After handling raw meats, poultry, or fish
   - After any clean up activity such as sweeping, mopping, or wiping counters
   - After touching dirty dishes, equipment, or utensils
   - After handling trash
   - After handling money
   - After any time the hands may become contaminated

8. Follow proper handwashing procedures as indicated below:
   - Wet hands and forearms with warm, running water at least 100 °F and apply soap.
   - Scrub lathered hands and forearms, under fingernails, and between fingers for at least 10-15 seconds. Rinse thoroughly under warm running water for 5-10 seconds.
   - Dry hands and forearms thoroughly with single-use paper towels.
   - Dry hands using a warm air hand dryer.
   - Turn off water using paper towels.
   - Use paper towel to open door when exiting the restroom.
9. Follow FDA recommendations when using hand sanitizers. These recommendations are as follows:
   - Use hand antiseptics, also called hand sanitizers, only after hands have been properly washed and dried.
   - Use only hand sanitizers that comply with the *FDA Food Code*. Confirm with the manufacturers that the hand sanitizers used meet these requirements.
   - Use hand sanitizers in the manner specified by the manufacturer.

MONITORING:

1. A designated employee will visually observe the handwashing practices of the school nutrition employees during all hours of operation.
2. The designated employee will visually observe that handwashing sinks are properly supplied during all hours of operation.

CORRECTIVE ACTION:

1. Retrain any school nutrition employee found not following the procedures in this SOP.
2. Ask employees that are observed not washing their hands at the appropriate times or using the proper procedure to wash their hands immediately.
3. Retrain employee to ensure proper handwashing procedure.

VERIFICATION AND RECORD KEEPING:

The school nutrition manager will complete the Food Safety Checklist daily to indicate that monitoring is being conducted as specified. The Food Safety Checklist is to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ **BY:** _____

DATE REVIEWED: _____ **BY:** _____

DATE REVISED: _____ **BY:** _____

Use Disposable Gloves Properly

- 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, toughing hair, or other contact with germs.
- Never re-use or wash gloves.
- Dispose of soiled gloves after use.
- Change gloves and wash hands between handling raw meat and ready-to-eat foods.

Full color poster available at www.theicn.org

Using Thermometers Video Viewing Guide

1. List the thermometer you see in this video:

2. When recording temperatures, what is important to include?
   a. time of recording
   b. temperature of food
   c. initials
   d. all of the above

3. Thermometers should be:
   a. kept in a uniform pocket
   b. soaked in a sanitizing 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.

5. Name some activities for which you should take temperatures of foods:

Types of Food Thermometers

Thermometer Description	Advantages/Disadvantages
Bimetallic Stemmed • Used to check internal temperatures of food • Range of 0–220 °F • Sensing area is from the tip to a half-inch past the dimple on the stem. It is important to insert the stem to above the dimple to get an accurate reading.	**Advantages** • Inexpensive • Readily available • Easy to calibrate **Disadvantages** • Not tip sensitive—sensing area is about 2" • Temperatures averaged over sensing area • Not effective for thin foods, such as hamburger patties • Loses calibration with physical shock such as dropping • Dial may be difficult to read
Bimetallic Stemmed, oven-safe meat • Used in muscle meats, such as roasts, while cooking in oven • Range of 130–190 °F • Inserted 2-2 ½" into thickest part of the muscle • Can remain in meat during the entire cooking process	**Advantages** • Monitors safe internal cooking temperature so recommendations are met • Monitors temperatures for quality of product **Disadvantages** • Heat conduction of metal stem can cause false high readings (especially if inserted close to bone) • Not effective for thin meats • Loses calibration with physical shock, such as dropping
Digital Stemmed (Thermistor) • Used to check internal temperatures of food	**Advantages** • Gives fast readings • Easy to read • Tip sensitive—can measure temperature of thick and thin foods **Disadvantages** • Not all models can be calibrated

Thermometer Description	Advantages/Disadvantages
Thermocouple Used with probes of various types: • Immersion—measures temperature of liquids • Penetration—measures internal temperature of solid or liquid food • Surface—measures surface temperatures, such as griddle tops	**Advantages** • Digital temperature reading • Tip sensitive • Variety of probes are available • Provides rapid readings • Durable **Disadvantages** • May be expensive to calibrate • Accuracy may vary due to signal or change in voltage • Accuracy seems to vary proportional to cost
Infrared • Designed to take surface temperatures from up to 4 feet away • Provides quick check of temperatures at receiving • Remove barriers because glass and shiny surfaces affect readings	**Advantages** • Fast • Accurate • Nondestructive, noncontact measurement of temperature • Eliminates cross contamination **Disadvantages** • Cannot measure internal temperatures • Environmental conditions, such as relative humidity, affect accuracy • Accuracy is affected by surface emissivity (ability of a surface to emit heat by radiation; varies by metal type and surface color and polish) and shiny surfaces • May be expensive to calibrate

Thermometer Description	Advantages/Disadvantages
Temperature Sensitive Strips (such as T-Sticks®) • Single-use • Designed for specific internal temperatures	**Advantages** • Accurate • Easy to use • Fast • Time savings—does not require calibration and sanitizing • Available for a variety of temperatures • Reads temperatures within 5 seconds • Eliminates possibility for cross contamination • Temperature indicator can be saved on temperature documentation forms as evidence that temperatures were checked **Disadvantages** • Expensive because of single-use design • Several different ones are needed, depending on use. For example, T-Sticks® are available for 140 °F, 160 °F, 165 °F, and 170 °F.

Source: Adapted from Institute of Child Nutrition. (2009). *Thermometer Information Resource*. University, MS: Author.

Using Food Thermometers

Introduction

Thermometers are essential tools in any school nutrition program, and are necessary to implement a food safety program. School nutrition employees need to know how to use thermometers to check food temperatures.

Here Are the Facts

Thermometers are designed for different uses and different temperature ranges. Food thermometers need to measure temperatures between 0 °F and 220 °F. Thermometers needed to check food temperatures include the following:

- Thermistor or thermocouple with a thin probe

- Bimetallic stemmed thermometer
- Oven-safe bimetallic thermometers

- Equipment thermometers

Application

How to Use Thermometers

- Clean and sanitize thermometers before each use.
- Wash the stem of the thermometer, and sanitize by dipping stem into sanitizing solution or wiping with a sanitizing wipe. Allow to air dry.
- Store food thermometers in an area that is clean and where they are not subject to contamination.
- Check and change batteries in digital thermometers on a routine basis.

How to Take Temperatures

Measure the internal temperature of food by inserting the stem of the thermometer into the thickest part of the food being sure to cover the sensor. Wait for the dial or digital indicator to stabilize at desired temperature for about 15 seconds. Take temperatures based on the type of food.

- Meats
  - Roasts—insert thermometer in the middle of the roast avoiding any bones.
  - Poultry—insert thermometer at the thickest part avoiding any bones.
  - Casseroles—check temperature in the center and at several other points.
  - Thin meats, such as hamburger patties—use a thermistor or probe that is tip sensitive to check temperatures.
- Milk—open a carton and insert thermometer at least 2 inches into the milk.
- Packaged foods—insert the thermometer between two packages without puncturing the packages.

Recording Temperatures

When food temperatures are taken, they should be recorded on the production record or on a separate cooking and reheating log.

Remember, follow state or local health department requirements.

Calibrating Thermometers

Introduction

Food temperatures must be checked throughout the food preparation process, and the thermometers used must be accurate. School nutrition employees are responsible for checking the accuracy of thermometers and calibrating them if they are not accurate.

Here Are the Facts

Thermometers that are not accurate will give misleading information. For example, if you use a thermometer that registers 10 °F higher than the actual temperature, you would cook ground beef to 145 °F rather than 155 °F. That would be inadequate cooking to make sure the ground beef is safe to serve. If the thermometer registers too low, you could easily overcook food.

Application

It is important for school nutrition employees to know when and how to calibrate bimetallic stemmed and digital (that can be calibrated) thermometers. Follow state or local health department requirements.

When?

Thermometers are sensitive and can lose calibration. It is important to calibrate them:

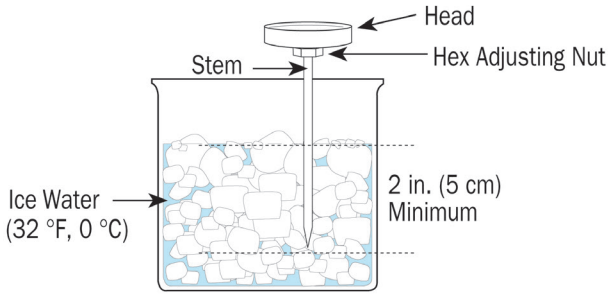
- Ideally daily, but at least weekly,
- When they are dropped,
- More often if specified by local policy.

How?

There are two methods that can be used to calibrate thermometers.

Ice Water Method

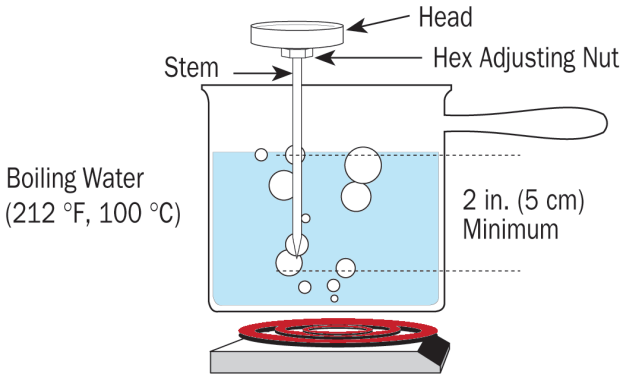
1. Fill a 2-quart measure with ice.
2. Add water to within 1 inch of top of container.
3. Stir mixture well.
4. Let sit for one minute.
5. Place thermometer in container so that the sensing area of stem or probe is completely submerged over the dimple.



6. Keep the thermometer from touching sides or bottom of container.
7. Let thermometer stay in ice water for 30 seconds or until the dial stops moving.
8. Place the calibration tool on the hex adjusting nut and rotate until the dial reads 32 °F, while in ice water.
9. Some digital stemmed thermometers (thermistors) and thermocouples have a reset button that should be pushed.
10. Repeat process with each thermometer.

Boiling Water Method

1. Fill a saucepan or stockpot with water.
2. Bring water to a rolling boil.
3. Place thermometer in the container so that the sensing area of the stem or probe is completely submerged over the dimple.
4. Do NOT let the thermometer stem/probe touch sides or bottom of container.
5. Let thermometer stay in the boiling water for 30 seconds or until the dial stops moving.



6. Place the calibration tool on the hex adjusting nut and rotate until the thermometer dial reads 212 °F, while in boiling water.
7. Some digital thermometers (thermistors) and thermocouples have a reset button that should be pushed.
8. Repeat process with each thermometer.

Note: The boiling point of water is about 1 °F lower for every 550 feet above sea level. If you are in high altitude areas, the temperature for calibration should be adjusted. For example, if you were at 1100 feet above sea level, the boiling point of water would be 210 °F.

Documenting Calibration

Each time thermometers are calibrated, the process should be documented. The food safety program should include a form for documenting the calibration process of each thermometer.

Remember, follow state or local health department requirements.

Ice-Water Method for Thermometer Calibration

(for bimetallic stemmed and digital thermometers that can be calibrated)

Equipment/Ingredients	Quantity	Directions
2-quart measure Crushed ice Cold water	1 per participant To fill container	1. Fill the 2-quart measure with ice. 2. Add water to within 1" of top of container. 3. Stir mixture well. 4. Let sit for 1 minute.
Thermometer	1 per participant, if available	5. Place thermometer in container so that the sensing area of stem or probe is completely submerged (over the dimple). 6. Do not let the thermometer stem/probe touch sides or bottom of container. 7. Let thermometer stay in the ice water for 30 seconds or until the dial stops moving.
Calibration tool or wrench	1 per participant (or two participants could share)	8. Place the calibration tool on the hex adjusting nut and rotate until the thermometer dial reads 32 °F (while in ice water). 9. Some digital stemmed thermometers (thermistors) and thermocouples have a reset button, which should be pushed. 10. Repeat process with each thermometer.

Source: Institute of Child Nutrition. (2009). *Thermometer information resource*. University, MS: Author.

Thermometer Calibration Log

Instructions: School nutrition employees will record the calibration temperature and corrective action taken, if applicable, on the Thermometer Calibration Log each time a thermometer is calibrated. The school nutrition manager will verify that school nutrition employees are using and calibrating thermometers properly by making visual observations of employee activities during all hours of operation. The school nutrition manager will review and initial the log daily. Maintain this log for a minimum of 1 year.

Date	Thermometer Being Calibrated	Temperature Reading	Corrective Action	Initials	Manager Initials/Date

Lesson 3: Basic Facts About Microorganisms

Lesson 3: Basic Facts About Microorganisms

Introduction and Learning Objectives

Microorganisms are everywhere in our environment. Some of them can make people sick. It is important to know the common causes of foodborne illness and the ways that school nutrition employees can prevent growth of microorganisms.

Lesson 3 will focus on the basic facts about microorganisms. Following this 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.

Common Foodborne Illnesses—Symptoms and Prevention

Bacteria/Virus	Symptoms	Where the Microorganism Can Be Found	Prevention
Shiga toxin-producing ***Escherichia coli*** *(STEC)*	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 handwashing guidelines. • Follow procedures to avoid cross contamination. • Cook all beef 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.
Salmonellosis *Salmonella spp.* **Nontyphoidal** *Salmonella*	Symptoms begin 6-72 hours after eating contaminated food, last 4-7 days, and include • stomach cramps, • headache, • nausea, • fever, • diarrhea, • vomiting, and • severe dehydration (infants and elderly).	• Raw meats, poultry, and unpasteurized eggs • *Milk and dairy products • Fish, shrimp • Sauces and salad dressing • Sliced fresh fruits and vegetables such as melons, strawberries, tomatoes • Raw sprouts • Intestinal tract of humans and animals *unpasteurized	• Practice good personal hygiene. • Follow handwashing 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. • Thoroughly wash produce. • Use only pasteurized milk and dairy products.

Bacteria/Virus	Symptoms	Where the Microorganism Can Be Found	Prevention
***Samonella* Typhi** *Typhoid Fever*	Symptoms of typhoid fever usually begin in 1 to 3 weeks, but may be as long as 2 months after exposure. Symptoms include: • high fever, • stomach pain, • diarrhea or constipation, • aches, • headaches, • fatigue, • loss of appetite, and • rash of flat, rose-colored spots.	• In the human intestinal tract • Untreated or fecal-contaminated water or ice • Raw fish, meats, and poultry • Unpasteurized milk and dairy products • Raw vegetables, fresh fruit, and salads washed with untreated or sewage-contaminated water	• Follow handwashing guidelines. • Avoid bare hand contact with ready-to-eat and ready-to-serve foods. • Report symptoms of diarrhea and vomiting, diagnosis of typhoid fever, or exposure within the past 14 days to others with typhoid fever to your school nutrition director. Do not work when you have these symptoms. • Use potable (clean) water for handwashing, cleaning, and sanitizing food contact surfaces and washing produce. • Ensure all foods are purchased from a safe supplier. • Cook all foods to correct internal temperature and test with a thermometer.
Shigellosis *Shigella spp*	Symptoms begin 1-3 days 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 handwashing guidelines. • Follow procedures to avoid cross contamination. • Use water from approved sources. • Control flies. • Maintain storage temperatures. • Cool foods properly.

Bacteria/Virus	Symptoms	Where the Microorganism Can Be Found	Prevention
Norovirus **Norwalk-Like Viral Agents**	Symptoms begin from 1 to 2 days after eating contaminated food or water, and include: • nausea, • vomiting, • diarrhea, • abdominal pain, • headache, • mild fever, and • body aches.	• Contaminated drinking water • Shellfish from contaminated water • Raw vegetables, fresh fruit, and salads contaminated by dirty hands • Contaminated ready-to-eat foods	• Do not work when sick with Norovirus. • 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 thermometer.
Hepatitis A **Hepatovirus**	Symptoms may be seen 10 days to almost 2 months after eating contaminated food or water. Symptoms include: • fever, • fatigue, • headache, • nausea, • loss of appetite, • vomiting, • stomach pain, and • later jaundice (yellow skin and eyes).	• Human intestinal 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 thermometer.

Bacteria/Virus	Symptoms	Where the Microorganism Can Be Found	Prevention
Botulism *Clostridium botulinum*	Symptoms begin 18-36 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 a school nutrition 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 *Campylobacter jejuni*	Symptoms begin 2 to 5 days after eating contaminated food, can last 7 to 10 days, and include • diarrhea (watery or bloody), • nausea and vomiting, • abdominal pain, • headache, and • muscle pain.	Unpasteurized milk and dairy products • Raw poultry • Raw beef • Nonchlorinated or fecal-contaminated • Birds and flies can carry and contaminate food	• Practice good personal hygiene. • Follow handwashing guidelines. • Follow procedures to avoid cross contamination. • Cook all poultry, meat, with a thermometer. • Maintain good pest control. • Use only pasteurized dairy products. • Use water from approved sources.

Bacteria/Virus	Symptoms	Where the Microorganism Can Be Found	Prevention
Listeriosis *Listeria monocytogenes*	Symptoms begin 3-70 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 handwashing 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.
Clostridium perfringens	Symptoms begin 8-24 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 handwashing 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.

Bacteria/Virus	Symptoms	Where the Microorganism Can Be Found	Prevention
Staphylococcus aureus	Symptoms begin 1-4 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 handwashing guidelines. • Follow procedures to avoid cross contamination. • Cook all foods to correct internal temperature and test with a thermometer. • Hold food at 41 °F or below or at 135 °F or above. • Cool foods properly. • Avoid bare hand contact with ready-to-eat foods.

Exclude or Restrict Ill Employees

Symptoms	Exclude or Restrict from school	Return to work
Vomiting Diarrhea	Exclude	Symptom free 24 hours
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: *Salmonella* typhi *Shigella* Nontyphoidal *Salmonella* (NTS) Shiga toxin-producing *Escherichia coli* (STEC) Norovirus	Exclude	Consult with local health department

Responding to a Foodborne Illness

1. Be calm and _____ with the health department.

2. Talk with your _____ immediately to communicate the situation and seek additional guidance.

3. Stop serving the suspected _____.

4. Keep _____ of suspect foods.

5. Cooperate with the _____ to gather information.

6. Report the _____ you were asked to assemble.

7. Do not give _____ advice—that should be left to the _____.

8. Direct all _____ inquiries to the designated _____ representative.

Lesson 4: Clean and Sanitary School Nutrition Facility

Lesson 4: A Clean and Sanitary School Nutrition Facility

Introduction and Learning Objectives

In previous lessons, we have focused on three key areas:

- employee personal hygiene,
- prevention of contamination, and
- time and temperature control.

Lesson 4 focuses on how to maintain a clean and sanitary school nutrition facility to prevent contamination of food. Following this 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.

Food Safety Checklist

Date:_____ **Observer:**_____

Directions: Use this checklist as a periodic monitor. Encourage employees to be responsible for sections, this makes it more manageable. Determine areas in your operations requiring corrective action. Record corrective action taken and keep completed records in a notebook for future reference.

PERSONAL HYGIENE	Yes	No	Corrective Action
• Employees wear clean and proper uniforms including shoes.	☐	☐	_____
• Hair nets or caps are worn properly.	☐	☐	_____
• Fingernails are short, unpolished, and clean (no artificial nails).	☐	☐	_____
• Jewelry is limited to a plain ring, such as wedding band.	☐	☐	_____
• Hands are washed properly, frequently, and at appropriate times.	☐	☐	_____
• Burns, wounds, sores, scabs, or splints and water-proof bandages are bandaged and completely covered with a single-use glove.	☐	☐	_____
• Eating, drinking, and chewing gum, are allowed only in designated areas.	☐	☐	_____
• Employees use disposable tissues when coughing or sneezing and then immediately wash hands.	☐	☐	_____
• Employees appear in good health.	☐	☐	_____
• Hand sinks are unobstructed, operational, and clean.	☐	☐	_____
• Hand sinks are stocked with soap, disposable towels, and warm water.	☐	☐	_____
• A handwashing reminder sign is posted.	☐	☐	_____
• Employee restrooms are operational and clean.	☐	☐	_____

FOOD PREPARATION	Yes	No	Corrective Action
• All food stored or prepared in the facility is from approved sources.	☐	☐	_____
• Food equipment, utensils, and food contact surfaces are properly washed, rinsed, and sanitized before every use.	☐	☐	_____
• Frozen food is thawed under refrigeration, in cold running water, or cooked to proper temperature from frozen state.	☐	☐	_____
• Thawed food is not refrozen.	☐	☐	_____
• Preparation is planned so ingredients are kept out of the temperature danger zone to the extent possible.	☐	☐	_____
• Food is tasted using the proper procedure.	☐	☐	_____
• Procedures are in place to prevent cross contamination.	☐	☐	_____
• Food is handled with suitable utensils, such as single-use gloves or tongs.	☐	☐	_____
• Food is prepared in small batches to limit the time it is in the temperature danger zone.	☐	☐	_____
• Clean, reusable towels are used only for sanitizing equipment and surfaces and not for drying hands, utensils, or floor.	☐	☐	_____
• Food is cooked or reheated to the required safe internal temperature for the appropriate time and is tested with a calibrated food thermometer.	☐	☐	_____
• The internal temperature of food being cooked is monitored and documented.	☐	☐	_____

HOT HOLDING	Yes	No	Corrective Action
• Hot holding unit is clean.	☐	☐	_____
• Food is cooked to the required safe internal temperature before placed in hot holding.	☐	☐	_____
• Hot holding units are not used to reheat Time/ Temperature Control for Safety (TCS) foods.	☐	☐	_____
• Hot holding unit is pre-heated before hot food is placed in unit.	☐	☐	_____
• Temperature of hot food being held is at or above 135 °F.	☐	☐	_____

• Food is protected from contamination.	☐	☐	_____

COLD HOLDING	**Yes**	**No**	**Corrective Action**
• Refrigerators are kept clean and organized.	☐	☐	_____
• Temperature of cold food being held is at or below 41 ºF.	☐	☐	_____
• Food is protected from contamination.	☐	☐	_____

REFRIGERATOR, FREEZER, AND MILK COOLER	**Yes**	**No**	**Corrective Action**
• Thermometers are available and accurate.	☐	☐	_____
• Temperature is appropriate for pieces of equipment.	☐	☐	_____
• Food is stored at least 6 inches above the floor or in walk-in cooling equipment.	☐	☐	_____
• Refrigerator and freezer units are clean and neat.	☐	☐	_____
• Proper cooling procedures are used.	☐	☐	_____
• All food is properly wrapped, labeled, and dated.	☐	☐	_____
• The FIFO (First In, First Out) method of inventory management is used.	☐	☐	_____
• Ambient air temperature of all refrigerators and freezers is monitored and documented at the beginning and end of each shift.	☐	☐	_____

FOOD STORAGE AND DRY STORAGE	**Yes**	**No**	**Corrective Action**
• Temperature of dry storage area is between 50 ºF and 70 °F or state public health department requirement.	☐	☐	_____
• All food and paper supplies are stored at least 6 inches above the floor.	☐	☐	_____
• All food is labeled with name and received date.	☐	☐	_____
• Open bags of food are stored in containers with tight fitting lids and labeled with common name.	☐	☐	_____
• The FIFO (First In, First Out) method of inventory management is used.	☐	☐	_____
• There are no bulging or leaking canned goods.	☐	☐	_____
• Food is protected from contamination.	☐	☐	_____
• All food surfaces are clean.	☐	☐	_____

• Chemicals are clearly labeled and stored away from food and food-related supplies.	☐	☐	_____
• There is a regular cleaning schedule for all food surfaces.	☐	☐	_____
• Food is stored in original container or a food grade container.	☐	☐	_____

CLEANING AND SANITIZING	**Yes**	**No**	**Corrective Action**
• Three-compartment sink is properly set up for ware washing.	☐	☐	_____
• Dish machine is working properly (gauges and chemicals are at recommended levels).	☐	☐	_____
• Water is clean and free of grease and food particles.	☐	☐	_____
• Water temperatures are correct for washing and rinsing.	☐	☐	_____
• If heat sanitizing, the utensils are allowed to remain immersed in 171 °F water for 30 seconds.	☐	☐	_____
• If using a chemical sanitizer, it is mixed correctly and a sanitizer strip is used to test chemical concentration.	☐	☐	_____
• Smallware and utensils are allowed to air dry.	☐	☐	_____
• Wiping cloths are stored in sanitizing solution while in use.	☐	☐	_____

UTENSILS AND EQUIPMENT	**Yes**	**No**	**Corrective Action**
• All small equipment and utensils, including cutting boards and knives, are cleaned, sanitized, and allowed to air dry before use.	☐	☐	_____
• Work surfaces are cleaned and sanitized before use.	☐	☐	_____
• Thermometers are cleaned and sanitized after each use.	☐	☐	_____
• Thermometers are calibrated on a routine basis.	☐	☐	_____
• Can opener is clean and sanitized before use.	☐	☐	_____
• Drawers and racks are clean and sanitized before use.	☐	☐	_____
• Clean utensils are handled in a manner to prevent contamination of areas that will be in direct contact with food or a person's mouth.	☐	☐	_____

LARGE EQUIPMENT	Yes	No	Corrective Action
• Food slicer is clean and sanitized after every use.	☐	☐	_____
• Exhaust hood and filters are clean.	☐	☐	_____

GARBAGE STORAGE AND DISPOSAL	Yes	No	Corrective Action
• Kitchen garbage cans are clean and kept covered.	☐	☐	_____
• Garbage cans are emptied daily.	☐	☐	_____
• Boxes, containers, and recyclables are removed from site.	☐	☐	_____
• Loading dock and area around dumpster are clean, and dumpsters have tight fitting lids.	☐	☐	_____

PEST CONTROL	Yes	No	Corrective Action
• Outside doors have screens, are well-sealed, and are equipped with self-closing devices.	☐	☐	_____
• No evidence of pests is present.	☐	☐	_____
• There is a regular schedule of pest control by a licensed pest control operator.	☐	☐	_____

Case Study–Pest Problems at Red Oak High School

Jim began the new school year at Red Oak High School after several years as manager at another school in the district. The week before school started, Jim noticed evidence of pests, including cockroaches and flies. Although the school had been closed for the summer, Jim found out from the principal that the pest control company serviced the school regularly. Jim decided to make some changes to help prevent infestations. Jim first walked around the kitchen to observe where and why pests were in the kitchen. Jim's observations are listed below.

Directions: In the right column, write the change that should be made in order to have a more effective pest control program.

Jim's Observations	Changes to Be Made
1. Fan at the back door does not work.	
2. Unscreened back door does not fit securely when closed.	
3. One bag of rice in storeroom is broken at the bottom and has spilled.	
4. Cases of cans are stored in cardboard cartons.	
5. Pipes from steam-jacketed kettle have space around them.	
6. Garbage cans are not covered at any time of the day.	
7. Loading dock is clean in the middle but the sides are dirty.	
8. Bins of flour and sugar were left half-full over the summer.	
9. 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.	
10. Safety Data Sheets (SDS) were not available for the cleaning chemicals used in the kitchen.	

Cleaning and Sanitizing

Introduction

Cleaning and sanitizing is an important prerequisite program for food safety in any school nutrition program. School nutrition employees who follow proper cleaning and sanitizing practices reduce the risk of cross contamination that can lead to foodborne illness.

Here Are the Facts

Research conducted by the U.S. Food and Drug Administration shows that contaminated equipment is a risk factor for food safety in retail foodservice establishments, which include schools, hospitals, nursing homes, and restaurants. This is an area in which a high number of foodservice operations did not follow appropriate practices.

Application

Clean and sanitize work surfaces, equipment, and other food contact surfaces using proper procedures.

- Follow state and local health department requirements.
- Follow manufacturer's instructions regarding the use and cleaning of equipment.
- Follow manufacturer's instructions regarding the use of chemicals for cleaning and sanitizing food contact surfaces.
- Refer to the Safety Data Sheet (SDS) provided by the manufacturer if you have questions about the use of specific chemicals.
- Wash, rinse, and sanitize food contact surfaces of sinks, tables, equipment, utensils, thermometers, carts, and equipment:
  - Before each use.
  - Between uses when preparing different types of raw animal foods such as eggs, fish, meat, and poultry.
  - Between uses when preparing ready-to-eat foods and raw animal foods such as eggs, fish, meat, and poultry.
  - Any time contamination occurs or is suspected.
- Wash, rinse, and sanitize food contact surfaces using the following procedures:
  - Wash surface with detergent solution to clean.
  - Rinse surface with clean water to remove debris and detergent.
  - Sanitize surface using a sanitizing solution mixed at the concentration specified on the manufacturer's label.
  - Allow items to air dry.

Take corrective action to make sure that cleaning and sanitizing is done properly.

- Wash, rinse, and sanitize dirty food contact surfaces.
- Sanitize food contact surfaces if it cannot be determined if they have been sanitized properly.
- Discard food that comes in contact with food contact surfaces that have not been sanitized properly.

Remember, follow state or local health department requirements.

Cleaning and Sanitizing Food Contact Surfaces (Sample SOP)

PURPOSE: To prevent foodborne illness by ensuring that all food contact surfaces are properly cleaned and sanitized.

SCOPE: This procedure applies to school nutrition employees involved in cleaning and sanitizing food contact surfaces.

KEY WORDS: Food Contact Surface, Cleaning, Sanitizing

INSTRUCTIONS:

1. Train school nutrition employees on using the procedures in this SOP.
2. Follow state or local health department requirements.
3. Follow manufacturer's instructions regarding the use and maintenance of equipment and use of chemicals for cleaning and sanitizing food contact surfaces. Refer to Storing and Using Poisonous or Toxic Chemicals SOP.
4. If state or local requirements are based on the *FDA Food Code*, wash, rinse, and sanitize food contact surfaces of sinks, tables, equipment, utensils, thermometers, carts, and equipment:
   - Before each use.
   - Between uses when preparing different types of raw animal foods, such as eggs, fish, meat, and poultry.
   - Between uses when preparing ready-to-eat foods and raw animal foods, such as eggs, fish, meat, and poultry.
   - Any time contamination occurs or is suspected.
5. Wash, rinse, and sanitize food contact surfaces of sinks, tables, equipment, utensils, thermometers, carts, and equipment using the following procedure:
   - Wash surface with detergent solution.
   - Rinse surface with clean water.
   - Sanitize surface using a sanitizing solution mixed at a concentration specified on the manufacturer's label.
   - Place wet items in a manner to allow air drying.
6. If a 3-compartment sink is used, setup and use the sink in the following manner:
   - In the first compartment, wash with a clean detergent solution at or above 110 °F or at the temperature specified by the detergent manufacturer.

- In the second compartment, rinse with clean water.
- In the third compartment, sanitize with a sanitizing solution mixed at a concentration specified on the manufacturer's label or by immersing in hot water at or above 171 °F for 30 seconds. Test the chemical sanitizer concentration by using an appropriate test kit.

7. If a dishmachine is used:
   - Check with the dishmachine manufacturer to verify that the information on the data plate is correct.
   - Refer to the information on the data plate for determining wash, rinse, and sanitization (final) rinse temperatures; sanitizing solution concentrations; and water pressures, if applicable.
   - Follow manufacturer's instructions for use.
   - Ensure that food contact surfaces reach a surface temperature of 160 °F or above if using hot water to sanitize.

MONITORING:

School nutrition employees will:

1. During all hours of operation, visually and physically inspect food contact surfaces of equipment and utensils to ensure that the surfaces are clean.
2. In a 3-compartment sink, on a daily basis:
   - Visually monitor that the water in each compartment is clean.
   - Take the water temperature in the first compartment of the sink by using a calibrated thermometer.
   - If using chemicals to sanitize, test the sanitizer concentration by using the appropriate test kit for the chemical.
   - If using hot water to sanitize, use a calibrated thermometer to measure the water temperature. It should be at or above 171 °F. Refer to Using and Calibrating Thermometers SOPs.
3. In a dishmachine, on a daily basis:
   - Visually monitor that the water and the interior parts of the machine are clean and free of debris.
   - Continually monitor the temperature and pressure gauges, if applicable, to ensure that the machine is operating according to the data plate.
   - For hot water sanitizing dishmachine, ensure that food contact surfaces are reaching the appropriate temperature at or above 160 °F by placing a piece of heat sensitive tape on a smallware item or a irreversible registering temperature indicator on a rack and running the item or rack through the dishmachine.
   - For chemical sanitizing dishmachine, check the sanitizer concentration on a recently washed food-contact surface using an appropriate test kit.

CORRECTIVE ACTION:

1. Retrain any school nutrition employee found not following the procedures in this SOP.
2. Wash, rinse, and sanitize dirty food contact surfaces. Sanitize food contact surfaces if it is discovered that the surfaces were not properly sanitized. Discard food that comes in contact with food contact surfaces that have not been sanitized properly.
3. In a 3-compartment sink:
   - Drain and refill compartments periodically and as needed to keep the water clean.
   - Adjust the water temperature by adding hot water until the desired temperature is reached.
   - Add more sanitizer or water, as appropriate, until the proper concentration is achieved.
4. In a dishmachine:
   - Drain and refill the machine periodically and as needed to keep the water clean.
   - Contact the appropriate individual(s) to have the machine repaired if the machine is not reaching the proper wash temperature indicated on the data plate.
   - For a hot water sanitizing dishmachine, retest by running the machine again. If the appropriate surface temperature is still not achieved on the second run, contact the appropriate individual(s) to have the machine repaired. Wash, rinse, and sanitize in the 3-compartment sink until the machine is repaired or use disposable single service/ single-use items if a 3-compartment sink is not available.
   - For a chemical sanitizing dishmachine, check the level of sanitizer remaining in bulk container. Fill, if needed. "Prime" the machine according to the manufacturer's instructions to ensure that the sanitizer is being pumped through the machine. Retest. If the proper sanitizer concentration level is not achieved, stop using the machine and contact the appropriate individual(s) to have it repaired. Use a 3-compartment sink to wash, rinse, and sanitize until the machine is repaired.

VERIFICATION AND RECORD KEEPING:
School nutrition employees will record monitoring activities and any corrective action taken on the Food Contact Surfaces Cleaning and Sanitizing Log. The school nutrition manager will verify that school nutrition employees have taken the required temperatures and tested the sanitizer concentration by visually monitoring school nutrition employees during the shift and reviewing, initialing, and dating the Food Contact Surfaces Cleaning and Sanitizing Log. The log will be kept on file for at least 1 year. The school nutrition manager will complete the Food Safety Checklist daily. The Food Safety Checklist is to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ **BY:** _____

DATE REVIEWED: _____ **BY:** _____

DATE REVISED: _____ **BY:** _____

Manual Dishwashing

Introduction

Manual dishwashing is done in school nutrition programs to clean and sanitize dishes, small wares, and utensils especially when there is not a dishmachine. School nutrition employees must use proper dishwashing procedures and monitor to ensure that sanitizing is done.

Here Are the Facts

Dishwashing is a three-step process: wash, rinse, and sanitize. Sanitizing can be done with the use of either hot water at the proper temperature or chemical sanitizers at the appropriate concentrations. If sanitizing is not done appropriately, cross contamination can occur.

Application

Clean and sanitize dishes, small wares, and utensils using proper dishwashing procedures.

- Follow state and local health department requirements.
- Follow manufacturer's instructions regarding the use and cleaning of equipment.
- Follow manufacturer's instructions regarding use of chemicals for cleaning and sanitizing.
- Refer to the Safety Data Sheet (SDS) provided by the manufacturer if you have questions about use of specific chemicals.
- Set-up and use the three-compartment sink in the following manner:
  - In the first compartment, wash with a clean detergent solution at or above 110 °F or at the temperature specified by the detergent manufacturer.
  - In the second compartment, rinse with clean water.
  - In the third compartment, sanitize with a sanitizing solution mixed at a concentration specified on the manufacturer's label or by immersing in hot water at or above 171 °F for 30 seconds. Test the chemical sanitizer concentration using an appropriate test strip.

Reminder: Always wash hands before handling clean and sanitized dishes, equipment, and utensils. NEVER load dirty dishes and then handle clean dishes without washing hands.

Monitor cleaning and sanitizing procedures.

- Inspect food contact surfaces of equipment and utensils visually to ensure that surfaces are clean.
- Monitor use of three-compartment sink on a daily basis.
  - Monitor the water visually in each sink to make sure it is clean and free of food debris.
  - Take the water temperature in the first compartment of the sink by using a calibrated thermometer.
  - Test sanitizer concentration in the third sink using appropriate test strips if chemical sanitizing is used.
  - Test temperature of water in the third sink with a calibrated thermometer if hot water sanitizing is used.

Take corrective action to make sure that cleaning and sanitizing is done properly.

- Drain and refill compartments periodically and as needed to keep the water clean and free of debris.
- Adjust the water temperature by adding hot water until the desired temperature is reached.
- Add more sanitizer or water, as appropriate, until the proper sanitizing solution concentration is achieved.

Remember, follow state or local health department requirements.

Dish Machine Temperature Log (optional)

Instructions: Record time, temperatures or sanitizer concentration as appropriate, and any corrective action taken on this form. The school nutrition manager will verify that school nutrition employees have taken the required information by visually monitoring school nutrition employees and preparation procedures during the shift and by reviewing, initialing, and dating this log daily. Maintain this log for a minimum of 1 year.

Date and Time	Wash Temperature	Rinse Temperature	Final Rinse (Sanitation) Temperature	Heat Sensitive Tape (place here)	Sanitizer Concentration (in ppm)	Corrective Action	Employee Initials	Manager Initials

Mechanical Dishwashing

Introduction

Dishmachines are used in most school nutrition programs to clean and sanitize dishes, small wares, and utensils. School nutrition employees must use the dishmachine properly and monitor that the machine is working properly to ensure proper sanitation.

Here Are the Facts

Dishwashing is a three-step process: wash, rinse, and sanitize. Sanitizing can be done with the use of either hot water at the proper temperature or chemical sanitizers at the appropriate concentrations. If sanitizing is not done appropriately, cross contamination can occur.

Application

Clean and sanitize dishes, small wares, and utensils using proper dishwashing procedures.

- Follow state and local health department requirements.
- Follow manufacturer's instructions regarding use of chemicals for cleaning and sanitizing.
- Refer to the Safety Data Sheet (SDS) provided by the manufacturer if you have questions about use of specific chemicals.
- Use the dishmachine correctly.
  - Check with the dishmachine manufacturer to verify that the information on the data plate is correct. Refer to information on the data plate to determine wash, rinse, and sanitizing (final) rinse temperatures; sanitizing solution concentrations; and water pressures, as applicable.

Reminder: Always wash hands before handling clean and sanitized dishes, equipment, and utensils. NEVER load dirty dishes and then handle clean dishes without washing hands.

Monitor cleaning and sanitizing of dishmachines.

- Inspect food contact surfaces of equipment and utensils visually to ensure that surfaces are clean.
- Monitor use of dishmachine on a daily basis.
  - Monitor visually to see if the water and interior parts of the machine are clean and free of debris.
  - Monitor the temperature and pressure gauges to ensure that the machine is operating according to recommendations on the data plate.
  - Ensure that food contact surfaces reach a surface temperature of 160 °F or above if using hot water to sanitize. Check the temperature gauge on the machine, but also do a secondary check using a heat sensitive tape or irreversible registering temperature indicator to ensure that appropriate temperatures for sanitizing are reached.
  - Check the sanitizer concentration of the rinse water in chemical dishmachines using appropriate test strips.

Take corrective action to make sure cleaning and sanitizing is done properly. Follow your Standard Operating Procedure.

Remember, follow state or local health department requirements.

Lesson 5: A Process for Preventing Foodborne Illness

Lesson 5: A Process for Preventing Foodborne Illness

Introduction and Learning Objectives

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. There are safe food handling practices that need to be followed at each step, including time and temperature control; employee personal hygiene; and prevention of contamination.

Following this 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.

Evaluation Criteria for Foods During Receiving

Directions: Use this checklist to evaluate food products during receiving.

Meat and Poultry

Red Meat

Quality, Appearance, Texture

- ☐ USDA inspected stamp
- ☐ Firm and elastic to touch
- ☐ Beef is bright red; pork is light pink

Internal Temperature

- ☐ Fresh meat at or below 41 °F
- ☐ Frozen meat delivered frozen solid

Signs of Spoilage

- ☐ Brown, green, or purple discoloration
- ☐ Black, white, or green spots indicating mold
- ☐ Freezer burn (tan, dried look)
- ☐ Slimy, sticky, or dry feel

Poultry

Quality, Appearance, Texture

- ☐ USDA inspected stamp
- ☐ Firm, meaty flesh

Internal Temperature

- ☐ Fresh poultry at or below 41 °F
- ☐ Fresh poultry surrounded by crushed ice
- ☐ Frozen poultry delivered frozen solid

Signs of Spoilage

- ☐ Purplish or greenish discoloration
- ☐ Abnormal odor
- ☐ Stickiness under wings and around joints
- ☐ Dark wing tips
- ☐ Freezer burn

Eggs

Quality, Appearance, Texture

- ☐ USDA inspected (shield displayed)
- ☐ Clean, dry shells without cracks

Temperature

- ☐ Delivery truck temperature at or below 45 °F

Signs of Spoilage

- ☐ Cracked, checked, or dirty shells

Dairy Products

Milk, Yogurt, Cheese, Butter/Margarine

Quality, Appearance, Texture

- ☐ Pasteurized or ultra-pasteurized
- ☐ Sweet smell
- ☐ Packaging clean and intact

Internal Temperature

- ☐ At 41 °F or below
- ☐ Delivered refrigerated

Signs of Spoilage

- ☐ Sour, moldy odor
- ☐ Check the sell-by-date
- ☐ Mold

Fresh Produce

Quality, Appearance, Texture
- ☐ Little or no dirt
- ☐ Reasonably unblemished
- ☐ Firm texture

Internal Temperature
- ☐ Refrigerated produce between 33 ºF and 41 ºF
- ☐ Non-refrigerated produce between 50 ºF and 60 ºF
- ☐ Fresh-cut produce between 33 ºF and 41 ºF
- ☐ Cut melons at or below 41 ºF

Signs of Spoilage
- ☐ Signs of insect infestation
- ☐ Mold
- ☐ Mushiness, wateriness, or wilting
- ☐ Discoloration or blemishes
- ☐ Cuts

Frozen Foods

Quality, Appearance, Texture
- ☐ Packaging intact and clean

Internal Temperature
- ☐ Frozen foods should be frozen solid
- ☐ Insert stem of food thermometer between packages in case

Signs of Spoilage
- ☐ Signs of thawing (liquids at bottom of carton)
- ☐ Signs of thawing and refreezing (ice crystals or ice on boxes)

Canned and Dry Foods

Canned Foods

Quality, Appearance
- ☐ Packaging intact and clean

Signs of Spoilage
- ☐ Swollen, leaking, rusty, or dented cans
- ☐ Flawed seals
- ☐ Label intact

Dry Foods

Quality, Appearance
- ☐ Packaging intact
- ☐ Dry and undamaged

Signs of Spoilage
- ☐ Damp or moldy container
- ☐ Insect infestation

Modified Atmosphere Packaged or Vacuum Packed Foods

Milk, Yogurt, Cheese, Butter/Margarine
- ☐ Insert a food thermometer between two packages, being careful not to puncture packaging; temperature as specified by manufacturer.
- ☐ Examine color indicators on package to see if the temperature was maintained.

Sample Invoice

Custom Foods
2818 S. Foodway Drive
Orange City, ST 99292
416-978-3452

INVOICE

Sold to: Top Notch School District
2919 W. 32nd Street
Appletown, ST 99343

Deliver to: A-One School
119 N. Gala Street
Appletown, ST 99343

Date: February 15, 2015
Invoice No.: XB1348575
Purchase Order No.: TNS3405986
Delivery Date: February 17, 2015

Quantity Ordered	Quantity Delivered	Back Order	Product Number	Product Description	Unit Price	Extension
10 boxes	8 boxes	2 boxes	M3651	Hamburger Patties, 5/1, frozen		
10 boxes	10 boxes		M3659	Chicken Nuggets, frozen		
1 case	1 case		V4590	Broccoli, chopped, frozen		
2 boxes	2 boxes		P6900	Apples, Gala, 113 ct.		
1 lug	1 lug		P6978	Tomatoes, 5 x 6 lug		
1 box	1 box		P6914	Oranges, 88 ct.		
1 case	1 case		D1234	Green Beans, #10 cans, 6/case		
4 bags	4 bags		M9887	Flour, 50 lb. bag		
3 bags	3 bags		M9888	Sugar, 25 lb. bag		
1 case	1 case		R7890	Eggs, case		
1 case	1 case		R8799	Yogurt, strawberry, ½ pint		
1 case	1 case		R8792	Yogurt, blueberry, ½ pint		
4 cases	4 cases		R1000	Milk, white, 1%, ½ pint		
5 cases	5 cases		R1001	Milk, chocolate, fat-free, ½ pint		
1 case	1 case		C2997	Degreaser, 1 gal., 4/case		

Receiving Deliveries

Introduction

It is important to make sure all food that is received into the school nutrition facility is fresh and safe. Accepting sub-standard products can contribute to a potential foodborne illness.

Here Are the Facts

Temperature of foods delivered to a school nutrition facility is important for quality and safety. Refrigerated foods should be 41 °F or below and frozen foods should be frozen solid and show no sign of thawing and refreezing.

Application

Employees who receive food play an important role by following good receiving practices. It is critical that the product received is the product ordered and that it is in good wholesome condition.

Good Receiving Practices

- Inspect then accept or reject deliveries only during operational hours.
- Post the delivery schedule–names of vendors, days and times of deliveries, names of drivers.
- Keep receiving area clean and well lighted.
- Date product when delivered.
- Compare invoice with products delivered.
- Move foods to storage quickly, beginning with refrigerated foods, then frozen foods, then foods for dry storage.
- Verify that key drop deliveries are from approved supplier, stored properly, protected from contamination, and presented authentically.

Monitoring Practices

- Inspect delivery trucks for cleanliness and organization to minimize cross contamination.
- Check temperatures of refrigerated trucks or trucks delivering refrigerated products.
- Check frozen foods to make sure that they are frozen solid and show no signs of thawing and refreezing. Large ice crystals or liquid on the bottom of the carton are signs of thawing.

- Check temperatures of refrigerated foods.
  - Fresh meat and poultry should be 41 °F or below.
  - Packaged products should be 41 °F or below.
  - Milk and eggs should be 45 °F or below. Milk must be put in a 41 °F or lower cooler after receiving.
- Check expiration dates of milk, eggs, and other perishable products.
- Check packaging to make sure that it is sealed properly and that cans are free from dents, bulges, or other signs of deterioration.
- Check cleanliness of shipping containers.

Corrective Actions

When there are deviations from the standards listed, corrective actions are required. Examples of corrective actions include:

- Reject the following products:
  - Frozen foods that show signs of thawing.
  - Cans that have signs of deterioration such as dents, rust, flawed seals or seams, and swollen sides or ends.
  - Packages that have been punctured or torn.
  - Products that have out-dated expiration dates.
  - Refrigerated foods that are above appropriate temperatures.
- Report problems with delivery days, times, or changes in delivery personnel to vendor.

Remember, follow state or local health department requirements.

Receiving Deliveries
(Sample SOP)

PURPOSE: To ensure that all food is received fresh and safe when it enters the school nutrition facility and to transfer food to proper storage as quickly as possible.

SCOPE: This procedure applies to school nutrition employees who handle, prepare, or serve food.

KEY WORDS: Cross Contamination, Temperatures, Receiving, Holding, Frozen Goods, Delivery

INSTRUCTIONS:

1. Train school nutrition employees on using the procedures in this SOP.
2. Follow state or local health department requirements.
3. Schedule deliveries to arrive at designated times during operational hours.
4. Post the delivery schedule, including the names of vendors, days and times of deliveries, and drivers' names.
5. Establish a rejection policy to ensure accurate, timely, consistent, and effective refusal and return of rejected goods.
6. Organize freezer and refrigeration space, loading docks, and store rooms before deliveries.
7. Gather product specification lists and purchase orders, temperature logs, calibrated thermometers, pens, flashlights, and clean loading carts before deliveries. Refer to the Using and Calibrating Thermometers SOP.
8. Keep receiving area clean and well lighted.
9. Do not touch ready-to-eat foods with bare hands.
10. Determine whether foods will be marked with the date arrival or the "use by" date and mark accordingly upon receipt.
11. Compare delivery invoice against products ordered and products delivered.
12. Transfer foods to their appropriate locations as quickly as possible.
13. Verify that Key Drop Deliveries are from approved supplier, stored properly, protected from contamination, and presented authentically.

MONITORING:

1. Inspect the delivery truck when it arrives to ensure that it is clean, free of putrid odors, and organized to prevent cross contamination. Be sure refrigerated foods are delivered on a refrigerated truck.
2. Check the interior temperature of refrigerated trucks.
3. Confirm vendor name, day and time of delivery, as well as driver's identification before accepting delivery. If driver's name is different from what is indicated on the delivery schedule, contact the vendor immediately.
4. Check frozen foods to ensure that they are all frozen solid and show no signs of thawing and refreezing, such as the presence of large ice crystals or liquids on the bottom of cartons.
5. Check the temperature of refrigerated foods.
   a. For fresh meat, fish, and poultry products, insert a clean and sanitized thermometer into the center of the product to ensure a temperature of 41 °F or below. The temperature of milk should be 45 °F or below. Milk may be received at 45 °F, but must be stored at 41 °F.
   b. For packaged products, insert a food thermometer between two packages being careful not to puncture the wrapper. If the temperature exceeds 41 °F, it may be necessary to take the internal temperature before accepting the product.
   c. For eggs, the interior temperature of the truck should be 45 °F or below.
6. Check expiration dates of milk, eggs, and other perishable goods to ensure safety and quality.
7. Check the integrity of food packaging.
8. Check the cleanliness of crates and other shipping containers before accepting products. Reject foods that are shipped in dirty crates.

CORRECTIVE ACTION:

1. Retrain any school nutrition employee found not following the procedures in this SOP.
2. Reject the following:
   - Frozen foods with signs of previous thawing.
   - Cans that have signs of deterioration, such as swollen sides or ends, flawed seals or seams, dents, or rust.
   - Punctured packages.
   - Foods with out-dated expiration dates.
   - Foods that are out of safe temperature zone or deemed unacceptable by the established rejection policy.

VERIFICATION AND RECORD KEEPING:
Record the temperature and the corrective action on the delivery invoice or on the Receiving Log. The school nutrition manager will verify that school nutrition employees are receiving products using the proper procedure by visually monitoring receiving practices during the shift and reviewing the Receiving Log at the close of each day. Receiving Logs are kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ **BY:** _____

DATE REVIEWED: _____ **BY:** _____

DATE REVISED: _____ **BY:** _____

Storing Foods

Introduction

Proper storing of food will help maintain food quality and safety. Employees who store food play an important role in a school nutrition program by following proper storing practices.

Here Are the Facts

Food is a perishable product so it is important to store it at the appropriate temperature for an appropriate time. Dry storage areas should be maintained at 50–70 °F, refrigerated storage areas should be maintained at 41 °F or below, and frozen storage areas should be maintained at 0 °F – -10 °F.

Application

Follow good storage practices.

- Keep storage areas clean.
- Store all food and supplies at least 6 inches off the floor.
- Keep food in original containers or labeled containers approved for food storage.
- Label all food with the name and delivery date.
- Use the First In, First Out (FIFO) method of inventory rotation. Dating products and storing new products behind old products will make FIFO easier.
- Store chemicals in a separate area from foods, preferably in a locked room or cabinet.
- Check products for damage or spoilage, and discard products that show signs of damage or spoilage.
- Avoid cross contamination and cross contact.
- Store allergen free foods in an isolated place, preferably its own shelf.
- Designate a place for recalled products as needed.
- Store ready-to-eat foods in the refrigerator separately from raw foods. If multiple products are stored in one refrigerator, place them in the following order:

Highest shelf	Cooked and ready-to-eat foods
	Whole meat
	Ground meat
Lowest shelf	Poultry

Monitor storage practices.
- Check storage areas for cleanliness.
- Check product expiration dates.
- Check temperatures of all storage areas a minimum of once a day.
- Record the temperatures and the time temperatures are taken for all storage areas.
- Record recalled products on the Damaged and Discarded Product Log.

Take corrective action if appropriate storage practices are not followed.
- Clean storage areas.
- Discard foods that are past the expiration date.
- Report to the supervisor if storage areas are not at the appropriate temperature.

Remember, follow state or local health department requirements.

Storing and Using Chemicals

Introduction

Chemicals are used in school nutrition programs for a variety of cleaning and sanitizing functions. School nutrition employees must use and store these chemicals properly to minimize the risk of food contamination.

Here Are the Facts

Chemical hazard is one of the three major types of hazards in a school nutrition program. A foodborne illness can result from a harmful chemical getting into a food that is eaten by a person.

Application

Follow safe practices for handling chemicals.

- Know where the Safety Data Sheets (SDS) are stored for any chemical that you handle. The SDS are provided by the manufacturer. The SDS provides information on how to use the chemical and what to do if someone is exposed to inappropriate quantities of the chemical.
- Follow the manufacturer's directions for mixing, storing, and first aid instructions on the chemical containers or on the SDS.
- Store all chemicals in a designated secured area away from food and food contact surfaces using spacing or partitioning.
- Limit access to chemicals by use of locks, seals, or key cards.
- Maintain a perpetual inventory of chemicals.
- Store only chemicals that are necessary to the operation and maintenance of the kitchen.
- Mix, test, and use sanitizing solutions as recommended by the manufacturer and the state or local health department.
- Use the appropriate chemical test kit to measure the concentration of sanitizer each time a new batch is mixed.
- Use chemical containers only for storing the original chemical that came in the container and not for storing any food or water.
- Use only hand antiseptics, also called hand sanitizers, that comply with the *FDA Food Code*. Confirm with the manufacturer that a hand sanitizer complies with the *FDA Food Code* before using.

- Label and store first aid supplies in a container that is located away from food or food contact surfaces.
- Label and store medicines for employees in a designated area and away from food contact surfaces. Do not store medicines in food storage areas.
- Store refrigerated medicines in a covered, leak proof container where they are not accessible to children and cannot contaminate food.

Take corrective action if chemicals contaminate food or food contact surfaces.

- Discard any food that may have been contaminated by chemicals.
- Label and properly store any unlabeled or misplaced chemicals.
- Discard any chemical that cannot be identified.

Remember, follow state or local health department requirements.

Preventing Contamination During Food Preparation

Introduction

Cross contamination is the transfer of bacteria or viruses from hands to food, food to food, or equipment and food contact surfaces to food. Chemical contamination, or hazard, is when chemicals unintentionally come in contact with food. 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. All three - cross contamination, chemical contamination/hazard, and cross contact - are types of contamination that can happen in a school. School nutrition employees can minimize or eliminate contamination by following the Standard Operating Procedures in their school food safety program.

Here Are the Facts

One of the most common causes of foodborne illness is cross contamination. Cross contamination may occur when 1) a sick employee handles food, 2) raw food contaminates a ready-to-eat food, 3) food contact surfaces are not cleaned and sanitized properly and come in contact with a ready-to-eat food, or 4) equipment is used for multiple foods without cleaning and sanitizing between preparing foods. Chemical contamination may occur if chemicals are improperly handled or if manufacturer instructions are not followed. Cross contact may occur if proper cleaning and food handling procedures are not followed while preparing allergen-free foods.

Application

There are many practices in the Standard Operating Procedures that school nutrition employees can follow to minimize or eliminate contamination.

Hand-to-Food Cross Contamination

- Wash hands properly, frequently, and at appropriate times.
- Wash hands before putting on single-use gloves and change gloves frequently.
- Wear gloves when handling ready-to-eat foods.
- Cover cuts, sores, and wounds with a clean bandage and a single-use glove.
- Keep fingernails short, unpolished, and clean.
- Do not wear jewelry, except for a plain band such as a wedding ring.
- Do not allow sick employees to work.

Food-to-Food Cross Contamination

- Separate raw animal foods from ready-to-eat foods during receiving, storage, and preparation.
- Separate different types of raw animal foods, such as eggs, fish, meat, and poultry, from each other except when combined in recipes.
- Separate unwashed fruits and vegetables from washed fruits and vegetables and other ready-to-eat foods.
- Place food in covered containers or packages, except during cooling. Store in the refrigerator or cooler.

Equipment and Food Contact Surface-to-Food Cross Contamination

- Use only dry, cleaned, and sanitized equipment and utensils for food preparation.
- Clean and sanitize work tables, equipment, and cutting boards after each use and before beginning a new task. For example, after slicing ham, the slicer should be cleaned and sanitized before slicing turkey.
- Clean and sanitize surfaces that are handled often, such as refrigerator and freezer handles.
- Maintain a fresh bucket of cleaning solution and a fresh bucket of sanitizing solution in the work area so that cleaning and sanitizing can be done easily.

Chemical Contamination/Hazard

- Store chemicals away from food. Keep chemicals in a locked storage area with access only to authorized employees.
- Use Safety Data Sheets (SDS) provided by the manufacturer to ensure chemicals are stored and used properly.
- Check the concentration of the sanitizing solution with a sanitizing test kit to make sure it is at appropriate levels to sanitize.
- Store chemicals in original containers, never in containers that once stored food.
- Teach employees how to use chemicals.

Cross Contact

- Use color coded utensils, equipment, etc., or designate equipment and utensils for foods that are allergen-free.
- Isolate ingredients that are allergen-free in storage and preparation.
- Prepare allergen-free foods first, wrap and label them (with name, color code, or stickers), and place them on the top storage shelf until service.
- Follow proper handwashing procedures, and wash hands between handling allergen-free foods and foods which contain allergens.
- Properly clean and sanitize all utensils, equipment, and surfaces before preparing allergen-free foods.

Remember, follow state or local health department requirements.

Controlling Time and Temperature During Preparation

Introduction

Preparation is an important step in the foodservice process. School nutrition employees can use good food handling practices during preparation to ensure that food temperatures are controlled and the time that foods are in the temperature danger zone is minimized.

Here Are the Facts

The temperature danger zone, between 41 °F and 135 °F, is the temperature range in which bacteria grow most rapidly.

Application

Limit the time that foods are in the temperature danger zone during preparation.

- Pre-chill ingredients for cold foods, such as sandwiches, salads, and cut fruits, to 41 °F or below before combining with other ingredients.
- Prepare foods as close to serving times as the menu will allow.
- Prepare food in small batches. For example, when assembling deli sandwiches, remove only enough meat and cheese to prepare 25 sandwiches. Return the sandwiches to the refrigerator and then remove enough meat and cheese to prepare another 25 sandwiches.
- Limit the time for preparation of any batches of food so that the ingredients are not at room temperature for more than 30 minutes before cooking, serving, or returning to the refrigerator.
- Chill all cold foods as quickly as possible.

Monitor the time and temperatures of foods during preparation.

- Use a clean, sanitized, and calibrated thermometer (preferably a thermocouple) to check temperatures.
- Take at least two internal temperatures from each pan of food at various stages of preparation.
- Monitor the amount of time that food is in the temperature danger zone. It should not exceed 4 hours.

Take corrective action to make sure that time and temperature are maintained during preparation.

- Begin the cooking process immediately after preparation for any foods that will be served hot.
- Cool rapidly any ready-to-eat foods or foods that will be cooked at a later time.
- Return ingredients to the refrigerator if the anticipated preparation time is expected to exceed 30 minutes.
- Discard food held in the temperature danger zone for more than 4 hours.

Remember, follow state or local health department requirements.

Washing Fruits and Vegetables

Introduction

Fresh fruits and vegetables can be contaminated either when they are purchased or if they are handled incorrectly. Thorough washing of fruits and vegetables will minimize the risk of serving a contaminated product to customers.

Here Are the Facts

Fresh fruits and vegetables can be exposed to harmful bacteria because of growing conditions and handling by humans. Some fruits such as cantaloupes have a very rough rind that can trap dirt and bacteria. Because these products are not cooked, they can cause foodborne illness if not handled properly.

Application

Follow safe practices when handling fresh fruits and vegetables.

- Wash hands using the proper procedure before handling fresh fruits and vegetables.
- Wash, rinse, sanitize, and air dry all food contact surfaces, equipment, and utensils that will be in contact with fresh produce. This includes cutting boards, knives, and sinks. Always use sinks designated for food preparation.
- Follow manufacturer's instructions for proper use of chemicals. For example, using sanitizers at too high a concentration may cause contamination of the produce.
- Wash all raw fruits and vegetables thoroughly before combining with other ingredients, including the following:
  - Unpeeled fresh fruit and vegetables that are served whole or cut into pieces, and
  - Fruits and vegetables that are peeled and cut to use in cooking or served ready-to-eat.
- Wash fresh produce vigorously under cold running water or by using chemicals that comply with the *FDA Food Code* or your state or local health department. It is not recommended to rewash packaged fruits and vegetables labeled as being previously washed and ready-to-eat.
- Remove any damaged or bruised areas of the fruits and vegetables.
- Label, date, and refrigerate fresh-cut items.
- Serve cut melons within 7 days if held at 41 °F or below.
- Do NOT serve raw seed sprouts to highly susceptible populations such as preschool-age children.

Monitor handling procedures for fresh fruits and vegetables.

- Check fruits and vegetables visually to make sure they are properly washed, labeled, and dated.
- Check daily the quality of fruits and vegetables in cold storage.
- Check labels and use-by dates.

Take corrective action if fresh fruits and vegetables are not handled properly.

- Remove unwashed fruits and vegetables and wash them before they are served.
- Label and date fresh cut fruits and vegetables.
- Discard cut melons after 7 days.

Remember, follow state or local health department requirements.

Thawing Foods

Introduction

Thawing frozen food correctly is important for keeping food safe to eat. The *FDA Food Code* states that the temperature of food should not exceed 41 °F during the thawing process. Cooks must plan ahead so that they can use an appropriate method for thawing.

Here Are the Facts

Freezing food keeps most bacteria from multiplying, but it does not kill them. If food is allowed to enter the temperature danger zone of 41 °F–135 °F, bacteria will grow rapidly. There are four acceptable methods for thawing food: in a refrigerator, under cold running water, in a microwave, or as part of the cooking process.

Application

Use good production planning to determine the quantity of food needed and when food should be thawed in advance. Indicate preparation such as thawing that needs to be done on the daily production record.

Use one of the four safe methods when thawing frozen foods.

1. Thaw frozen food in the refrigerator at a temperature at or below 41 °F.
   - Place packages of frozen food in a pan so that juices cannot drip on other foods.
   - Change the drip pan when liquid is visible in the pan.
   - Allow adequate time for thawing. A small quantity of food may thaw in one day, while a large product such as a turkey may take several days.
2. Thaw frozen food completely submerged under clean, drinkable running water.
   - The water temperature should be 70 °F or below.
   - The water should be at sufficient velocity as to agitate and float off loose particles in an overflow.
   - Ready-to-eat foods should never be allowed to rise above 41 °F.
   - Foods that will be cooked should never be allowed to rise above 41 °F for more than 4 hours, including thawing and cooking time or thawing and chilling time.
3. Thaw frozen food in a microwave oven only if it will be cooked immediately.
4. Thaw frozen food as part of the cooking process. This method typically is used for products such as frozen patties, nuggets, pizza, lasagna, chili, soup, and vegetables.

Monitor thawing process for frozen foods.

- Check temperature of food during the thawing process using a temperature measuring device.
  - For thawing as part of the cooking process, temperatures should be checked as they would be for cooking. Food should be heated to the internal cooking temperature within 2 hours.
  - For refrigerator thawing, check the temperature at the end of the thawing process. If the refrigeration unit is working properly, the food will never exceed 41 °F.
  - For microwave thawing, food should be cooked immediately and temperature checked at the end of the cooking process, which should not exceed 2 hours.
  - For thawing in running water, check the temperature of the food every 30 minutes.
- Check food temperatures with a clean, sanitized, and calibrated thermometer.
- Check the water temperature with a clean, sanitized, and calibrated thermometer if cold running water is used for thawing.
- Record the temperature and the time the temperature is checked.

Take corrective action if appropriate thawing temperature of the food is not met.

- If water temperature is warmer than 70 °F from the tap, use another thawing method.
- Record corrective actions taken.

Remember, follow state or local health department requirements.

Thawing Foods Activity

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	Stuffed Pasta Shells

Cooking Foods

Introduction

Cooking is a critical control point, or a point at which reaching proper internal temperatures can help ensure that a food is safe to eat. Cooks must know the proper temperatures for cooking food, monitor internal cooking temperatures, and record cooking temperatures.

Here Are the Facts

The appropriate temperature for cooking foods is based on temperatures that will kill bacteria associated with that specific food. That is why, for example, poultry products have a higher cooking temperature than beef. It is important to know the temperature requirements for menu items used in your school nutrition program.

Application

Cook foods to the appropriate internal temperature.

- 135 °F for 15 seconds
  - Fresh, frozen, or canned fruits and vegetables cooked for hot holding
  - Ready-to-eat food that has been commercially processed
- 145 °F for 15 seconds
  - Beef, pork, and seafood
- 155 °F for 15 seconds
  - Ground products containing beef, pork, or fish
  - Fish nuggets or sticks
  - Cubed or Salisbury steaks
  - Eggs cooked for hot holding
- 165 °F for 15 seconds
  - Poultry
  - Stuffed beef, pork, or seafood
  - Pasta stuffed with beef, eggs, pork, or seafood such as lasagna or manicotti

Monitor cooking temperatures.

- Check food temperatures with 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 thermometer into the thickest part of the food, which usually is in the center.
- Record the temperature and the time the temperature was checked.

Take corrective action if appropriate temperatures are not met, which usually means that cooking is continued until the temperature at the thickest part of the food is appropriate.

Remember, follow state or local health department requirements.

Holding Cold Foods

Introduction

Holding is a point at which maintaining proper temperatures can help ensure that a food is safe to eat. Cooks and servers must know the proper temperature for holding food, monitor the holding process, and record temperatures of foods during holding.

Here Are the Facts

The *FDA Food Code* requires that all cold foods be maintained at 41 °F or below. When temperatures of food are above 41 °F, they are in the temperature danger zone—temperatures at which pathogens grow rapidly. Research has shown that inadequate cold holding temperatures are a problem in many foodservice operations.

Application

Hold cold foods at 41 °F or below.

- Pre-chill ingredients for items to be served cold.
- Schedule food production to minimize the time that food is maintained on the serving line.
- Use batch preparation for cold items to minimize the time that ingredients and completed foods are at room temperature.

Monitor holding process for cold foods.

- Check temperature of all cold holding units by placing a calibrated thermometer in the warmest part of the holding unit. The unit should be 41 °F or below.
- Check internal temperatures of cold food with a clean, sanitized, and calibrated thermometer.
- Take at least two internal temperatures from each batch of food during holding.
- Insert thermometer into the thickest part of the food, which usually is in the center.
- Record the temperature and the time the temperature is checked.

Take corrective action if appropriate holding temperature of cold food is not met.

- Rapidly chill food using an appropriate cooling method if the temperature is found to be above 41 °F, and the last temperature taken was 41 °F or below and taken within the last 2 hours.
  - Place food in shallow containers (no more than 2 inches deep) and uncovered on the top shelf in the back of the walk-in or reach-in cooler.
  - Use a quick chill unit, such as a blast chiller.
  - Stir the food in a container placed in an ice water bath.
  - Separate food into smaller or thinner portions.
- Repair or reset holding equipment before returning the food to the unit, if applicable.
- Discard food if it cannot be determined how long the food temperature was above 41 °F.
- Record corrective actions taken.

Remember, follow state or local health department requirements.

Holding Hot Foods

Introduction

Holding is a critical control point, or a point at which maintaining proper temperatures can help ensure that a food is safe to eat. Cooks must know the proper temperature for holding food, monitor the holding process, and record temperatures of foods during holding.

Here Are the Facts

The *FDA Food Code* requires that all hot foods be maintained at 135 °F or above. When temperatures of food fall below 135 °F, they are in the temperature danger zone—temperatures at which bacteria grow rapidly.

Application

Hold hot foods at 135 °F or above.

- Preheat steam tables and hot holding cabinets.
- Schedule food production to minimize the time that food is maintained on a steam table or other hot holding unit.

Monitor holding process for hot foods.

- Check temperature of hot holding units by placing a calibrated thermometer in the coolest part of the holding unit.
- Check food temperatures with a clean, sanitized, and calibrated thermometer.
- Check food temperatures when product is placed in steam table or hot holding unit and at least every 2 hours thereafter.
- Take at least two internal temperatures from each batch of food during holding.
- Insert thermometer into the thickest part of the food, which usually is in the center.
- Record the temperature and the time the temperature was checked.

Take corrective action if appropriate holding temperature of the hot food is not met.

- Reheat food to 165 °F for 15 seconds if the temperature is found to be below 135 °F and the last temperature measurement was 135 °F or higher and taken within the last 2 hours.
- Repair or reset holding equipment before returning the food to the unit if temperatures are not maintained.
- Discard food if it cannot be determined how long the food temperature was below 135 °F.
- Record corrective actions taken.

Remember, follow state or local health department requirements.

Serving Safe Foods

Introduction

School nutrition employees take pride in serving healthy foods to their customers. Many schools participate in the HealthierUS School Challenge which includes a commitment of serving a variety of fresh fruits, vegetables, and whole-grain products. In addition to serving healthy foods, it is important to make sure all food served is safe to eat.

Here Are the Facts

We eat with our five senses, sight, smell, taste, touch, and sound. Serving food at the proper temperature not only enhances the quality of the product, but can also reduce the possibility of a foodborne illness. A single case of foodborne illness can cost a food establishment their reputation, loss of revenue due to liability, time lost from work, and hungry children without a well-balanced meal.

Application

It is important to visually observe the serving line to ensure that the quality, safety, and appearance of the food has not been compromised during service.

Good Serving Practices

- Avoid touching ready-to-eat foods with bare hands.
- Use clean and sanitized utensils.
- Hold
  - plates by the edge or bottom,
  - cups by the handle or bottom, and
  - utensils by the handles.
- Keep food at the proper temperature.
- Keep the serving line clean and attractive during serving time.
- Practice good personal hygiene.
- Use disposable gloves appropriately.
- Use clean and sanitized linens, such as cloth napkins, to line a container for the service of food and make sure to replace each time the container is refilled.

Remember, follow state or local health department requirements.

Using Suitable Utensils When Handling Ready-to-Eat Foods

Introduction

Ready-to-eat foods will not be cooked further before serving; it is important to handle them properly. School nutrition employees must follow appropriate food handling techniques to ensure that these foods do not become contaminated during preparation, storage, holding, and service to customers.

Here Are the Facts

Because ready-to-eat foods will not have further heat treatment to kill microorganisms, special care is needed to decrease opportunities for cross contamination. Use of suitable utensils when handling ready-to-eat foods is one important way to ensure safety.

Application

Use suitable utensils when handling ready-to-eat foods.

- Wash hands and exposed parts of the arms properly before preparing or handling food, or at anytime the hands may become contaminated.
- Use proper procedures for glove use, including washing hands before putting on gloves.
- Use utensils that are clean and sanitized when working with ready-to-eat food. Examples include the following:
  - Single-use gloves,
  - Deli tissue,
  - Foil wrap, and
  - Tongs, spoodles, spoons, and spatulas.
- Change utensils when they become contaminated.

Monitor use of utensils for handling ready-to-eat foods.

- Conduct visual inspections to make sure that guidelines for use of utensils are followed.
- Check to make sure that hands are washed at appropriate times.
- Check to make sure that utensils and gloves are changed at appropriate times.

Take corrective actions to ensure appropriate use of utensils when handling ready-to-eat foods.

- Replace contaminated utensils with clean and sanitized utensils.
- Discard ready-to-eat food that has been touched with bare hands.
- Record corrective actions taken.

Remember, follow state or local health department requirements.

Preventing Contamination in Food Bars

Introduction

Food bars are popular because they provide a variety of healthy foods. School nutrition employees play an important role in food safety during the preparation, serving, and storing of the food.

Here Are the Facts

Food used for food bars can become contaminated, either unintentionally or intentionally. One way unintentional contamination occurs is when bacteria or viruses are transferred from one surface to another (cross contamination). For example, if a customer had a virus on her hand, it could be transferred to the handle of a serving spoon and then transferred to the hands of the next customer who used the spoon. Another way unintentional contamination occurs is when an allergen is accidentally transferred from a food containing an allergen to a food that does not contain the allergen. For example, if a spoon from an allergen containing ingredient was placed into an allergen-free food. Intentional contamination is the willful intent to contaminate a food. While this rarely happens, it can occur.

Application

School nutrition employees can prevent contamination at food bars by preparing the food bars properly and by monitoring how the food bars are used by customers.

Preparing the Food Bar

- Follow personal hygiene and handwashing Standard Operating Procedures.
- Wear gloves for handling ready-to-eat foods such as fresh apples.
- Place all exposed food under sneeze guards.
- Provide an appropriate clean and sanitized utensil for each container on the food bar.
- Change utensils at each meal period or when they are contaminated.
- Keep labeled and wrapped allergen-free foods in an isolated location until ready to give to that child.
- Replace existing containers of food with new containers when replenishing the food bar.
- Assist customers who are unable to properly use utensils.
- Store eating utensils with handles up or in a manner to prevent customers from touching the food contact surfaces.

Monitoring the Food Bar

- Place all exposed food under sneeze guards.
- Provide an appropriate clean and sanitized utensil for each container on the food bar.
- Change utensils at each meal period or when they are contaminated.
- If an allergen-free food comes into contact with an allergen, do not serve that food to a child with food allergies.
- Replace existing containers of food with new containers when replenishing the food bar.
- Assist customers who are unable to properly use utensils.
- Store eating utensils with handles up or in a manner to prevent customers from touching the food contact surfaces.

What should you do if you observe these actions?

- Remove and discard contaminated food.
- Demonstrate to customers how to properly use utensils.
- Replace contaminated serving utensil with a clean and sanitized one.
- Clean and sanitize food bar surfaces.
- If cross contact has been observed or if there are concerns that cross contact may have occured, do not feed that food to a child with food allergies.

Remember, follow state or local health department requirements.

Cooling Foods

Introduction

Cooling is a critical control point, or a point at which reaching proper temperatures within an appropriate time period can help ensure that a food is safe to eat. Cooks must know the proper temperatures for cooling food, monitor the temperature of food as it cools, and record cooling temperatures.

Here Are the Facts

Food has to go through the temperature danger zone (41 °F–135 °F) during the cooling process. Bacteria grow rapidly in the temperature danger zone, so the times that food can be at that temperature has to be minimized to limit bacterial growth. Important cooling temperatures and times include the following:

1. Hot food must be cooled from 135 °F–70 °F within 2 hours.
2. Hot food must be cooled from 135 °F–41 °F within a total of 6 hours.
3. Foods at room temperature (70 °F) must be cooled to 41 °F within 4 hours.

Application

Cool foods to the appropriate temperature within the appropriate time.

Select a rapid cooling method to speed the cooling process.

- Place food in shallow containers no more than 2 inches deep and uncovered on the top shelf in the back of a walk-in or reach-in cooler.
- Use a quick-chill unit such as a blast chiller.
- Place the container of food in an ice water bath and stir.
- Add ice as an ingredient at the end of cooking.
- Separate food into smaller or thinner portions.
- Pre-chill ingredients used for making bulk items such as salads.

Monitor cooling temperatures.

- Check food temperatures with clean, sanitized, and calibrated thermometer.
- Take the temperature of food during the cooling process frequently enough that corrective action can be taken.
- Record the temperature and the time the temperature was checked on the cooling temperature log.

Take corrective actions if the temperature and time requirements are not met.

- Reheat cooked, hot food to 165 °F for 15 seconds and begin the cooling process again using a different cooling methods when food is
  - Above 70 °F and 2 hours or less into the cooling process.
  - Above 41 °F and 6 hours or less into the cooling process.
- Discard cooked, hot food immediately when the food is
  - Above 70 °F and more than 2 hours into the cooling process.
  - Above 41 °F and more than 6 hours into the cooling process.
- Use a different cooling method for prepared ready-to-eat foods when the food is above 41 °F and less than 4 hours into the cooling process.
- Discard prepared ready-to-eat foods when the food is above 41 °F and more than 4 hours into the cooling process.

Remember, follow state or local health department requirements.

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.

2.

3.

What cooling techniques were suggested in the video?

1.

2.

3.

4.

5.

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

_____

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

_____

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.

Reheating Foods

Introduction

Reheating is a critical control point, or a point at which reaching proper internal temperatures can help ensure that a food is safe to eat. Cooks must know the proper temperature for reheating food, monitor the reheating process, and record temperatures of reheated foods.

Here Are the Facts

The *FDA Food Code* requires that all leftover foods or foods that have a precooked or leftover food as an ingredient be reheated to 165 °F for 15 seconds within 2 hours.

Application

Reheat foods using proper procedures.

- Reheat the following foods to 165 °F for 15 seconds within 2 hours:
  - Any food that has been cooked and cooled, and will be reheated for hot holding,
  - Leftovers reheated for hot holding,
  - Products made from leftovers, such as soup or casseroles, and
  - Precooked, processed foods that have been previously cooled.
- Reheat foods rapidly using the correct equipment. When reheating food, the total time the temperature of the food is between 41 °F and 165 °F cannot exceed 2 hours.
- Serve reheated food immediately or place in appropriate hot holding unit.

Monitor reheating process.

- Check food temperatures with a clean, sanitized, and calibrated thermometer.
- Take at least two internal temperatures from each batch of food that is reheated.
- Insert thermometer into the thickest part of the food, which usually is in the center.
- Record the temperature and the time the temperature is checked.

Take corrective action if appropriate temperatures of the food are not met.

- Continue reheating until required temperature is reached, up to a maximum of 2 hours.
- Discard food if reheating temperature is not met within 2 hours.

Remember, follow state or local health department requirements.

Transporting Foods

Introduction

Many school nutrition programs prepare food at one site and transport it to another site for service. The transporting process adds to the complexity of a school nutrition program and provides another step in the foodservice process that must be performed correctly to ensure temperature maintenance and to minimize cross contamination.

Here Are the Facts

Transporting adds time to holding food. The *FDA Food Code* requires that all hot foods be maintained at 135 °F or above and that all cold foods are maintained at 41 °F to minimize opportunities for bacterial growth. Proper equipment and processes must be in place so that proper temperatures are maintained and there is no cross contamination.

Application

Transport foods using appropriate equipment and processes.

- Maintain temperatures of products.
  - Keep frozen foods frozen.
  - Keep cold foods at 41 °F or below.
  - Keep hot foods at 135 °F or above.
- Transport food in containers and carriers that have been approved by the National Sanitation Foundation (NSF)® or by the state or local health department.
- Prepare food carriers before use.
  - Clean all exterior surfaces.
  - Wash, rinse, and sanitize all interior surfaces.
  - Preheat or pre-chill according to manufacturer's recommendations.
- Store food in containers suitable for transportation. Containers should be:
  - Rigid and sectioned so that foods do not mix.
  - Tightly closed to minimize spillage and to retain temperature.
  - Nonporous to avoid leakage.
  - Easy-to-clean or disposable.
  - Approved for food use.
- Schedule food transportation to minimize the time between cooking and serving at the satellite site.

Monitor transporting process.

- Check the temperature of all food carriers with a calibrated thermometer before loading with food.
  - Check cold carriers in the warmest part.
  - Check hot carriers in the coolest part.
- Check food temperatures with a clean, sanitized, and calibrated thermometer before placing it in the food carrier.
- Check food temperatures with a clean, sanitized, and calibrated thermometer when it arrives at the satellite site.
- Record the temperatures and the times temperatures were checked.

Take corrective action if appropriate holding temperature of the food is not met during transporting.

- Continue heating or chilling food carrier if it is not at the appropriate temperature.
- Reheat food to 165 °F for 15 seconds if the temperature is found to be below 135 °F and the last temperature measurement was 135 °F or higher and taken within the last 2 hours.
- Cool food to 41 °F or below using a proper cooling procedures if internal temperature of cold food is greater than 41 °F, and the last temperature measured was 41 °F or below and taken within the last two hours.
- Repair or reset equipment before returning the food to the unit if temperatures are not maintained.
- Discard food that has been held in the temperature danger zone of 41 °F–135 °F for more than 4 hours.
- Record corrective actions taken.

Remember, follow state or local health department requirements.

Lesson 6: Food Safety Programs in Schools

Lesson 6: Food Safety Programs in Schools

Introduction and Learning Objectives

The *Food Safety in Schools* training has provided basic food safety information that employees need to apply in a school nutrition program. Lesson 6 will focus on the basic requirements for a food safety program based on HACCP principles. A comprehensive written food safety program brings together all of the basic food safety practices that emphasize good food safety and prevention of foodborne illness. It focuses on three key areas: time and temperature control, personal hygiene, and prevention of contamination.

Following this 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.

There are other programs, such as *Developing a School Food Safety Program*, designed to provide more depth about developing and implementing a food safety program for schools. Knowledge gained from completing the *Food Safety in Schools* course will prepare participants for moving on to the next steps of implementing a food safety program in their schools.

Reheating Time/Temperature Control for Safety Foods (Sample SOP)

PURPOSE: To prevent foodborne illness by ensuring that all foods are reheated to the appropriate internal temperature.

SCOPE: This procedure applies to school nutrition employees who prepare or serve food.

KEY WORDS: Cross contamination, Temperatures, Reheating, Holding, Hot Holding

INSTRUCTIONS:

1. Train school nutrition employees on using the procedures in this SOP. Refer to the Using and Calibrating Thermometers SOP.
2. Follow state or local health department requirements.
3. If state or local requirements are based on the *FDA Food Code*, heat commercially processed, ready-to-eat foods, such as canned green beans or prepackaged breakfast burritos, to an internal temperature of at least 135 °F for 15 seconds for hot holding.
4. Reheat the following products to 165 °F for 15 seconds:
   - Any food that is cooked, cooled, and reheated for hot holding
   - Leftovers reheated for hot holding
   - Products made from leftovers, such as soup
   - Precooked, processed foods that have been previously cooled
5. Reheat food for hot holding in the following manner if using a microwave oven:
   - Heat commercially processed, ready-to-eat foods to at least 135 °F for 15 seconds
   - Heat leftovers to 165 °F for 15 seconds
   - Rotate (or stir) and cover foods while heating
   - Allow to sit for 2 minutes after heating
6. Reheat all foods rapidly. The total time the temperature of the food is between 41 °F and 165 °F may not exceed 2 hours.
7. Serve reheated food immediately or transfer to an appropriate hot holding unit.

MONITORING:

1. Use a clean, sanitized, and calibrated probe thermometer.
2. Take at least two internal temperatures from each pan of food.

CORRECTIVE ACTION:

1. Retrain any school nutrition employee found not following the procedures in this SOP.
2. Continue reheating and heating food if the internal temperature does not reach the required temperature.

VERIFICATION AND RECORD KEEPING:

School nutrition employees will record product name, time, the two temperatures/times, and any corrective action taken on the Cooking and Reheating Temperature Log. School nutrition manager will verify that school nutrition employees have taken the required reheating temperatures by visually monitoring school nutrition employees during the shift and reviewing, initialing, and dating the Cooking and Reheating Temperature Log at the close of each day. The temperature logs are kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ **BY:** _____

DATE REVIEWED: _____ **BY:** _____

DATE REVISED: _____ **BY:** _____

Process Approach Overview
Video Viewing Guide

1. The _____ 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 _____
   b. Same Day Service Item _____
   c. Complex Food Preparation Item _____

4. List the steps where temperature should be controlled.
   _____, _____, _____,
   _____, _____, _____,
   _____, _____

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.

The Process Approach

Introduction

The Process Approach to developing a food safety program categorizes menu items into three broad preparation processes based on the number of times the food passes through the temperature danger zone. School nutrition employees must monitor foods at various steps in the foodservice process and must control temperatures to ensure food safety.

Here Are the Facts

Menu items served must be categorized into three processes: no cook, same day service, and complex preparation. No cook menu items do not go through the temperature danger zone, same day service menu items go through the temperature danger zone one time, and complex menu items pass through the temperature danger zone three times.

Application

Sort menu items based on similarity of the preparation process. Menu items within the same group share the same potential hazards.

- No cook menu items are kept cold from preparation through service.
- Same day menu items are prepared hot and served hot on the same day.
- Complex menu items are prepared hot, cooled, and possibly reheated.

Indicate the menu groupings as part of your food safety plan.

- Use a menu grouping form to show categories.
- Write the category number on each recipe card or production record.

Follow Standard Operating Procedures for all menu items prepared in your school nutrition program.

- Purchase foods from approved sources.
- Store foods properly.
- Follow proper handwashing practices.
- Verify food temperatures.
- Receive foods properly.
- Use good personal hygiene.
- Limit time food is held in the temperature danger zone.

Monitor and record time and temperatures of food throughout the foodservice process.

- For no cook menu items, monitor temperatures at receiving, storing, and holding.
- For same day service menu items, monitor temperatures at receiving, storing, cooking, and hot holding.
- For complex menu items, monitor temperatures at receiving, storing, cooking, cooling, reheating, and hot holding.

Control time and temperature of food at appropriate steps in the foodservice process.

- For no cook menu items, control temperatures during cold holding.
- For same day service menu items, control temperatures during cooking and hot holding.
- For complex menu items, control temperatures during cooking, cooling, reheating, and hot holding.

Remember, follow state or local health department requirements.

No Cook Process

Introduction

The Process Approach simplifies developing a food safety program by placing menu items into either the no cook, same day service, and complex preparation processes based on the number of times the food passes through the temperature danger zone. School nutrition employees must monitor foods at various steps in the foodservice process and must control temperatures to ensure food safety.

Here Are the Facts

Menu items in the **no cook** process do not make a complete trip through the temperature danger zone. These are items such as deli sandwiches and salads that are prepared and served cold. It is important to follow standardized recipes. If an ingredient is changed—for example cooking eggs on site rather than using precooked eggs—the item can change from a no cook item to a complex food preparation item. The no cook flow chart shows points at which temperature control is very important and points at which monitoring and recordkeeping are needed.

Application

Follow Standard Operating Procedures to control hazards for no cook menu items.

- Purchase foods from approved sources.
- Receive foods properly.
- Store foods properly, including separating food from chemicals.
- Use good personal hygiene.
- Follow proper handwashing practices.
- Prevent cross contamination.
- Follow standardized recipes.
- Limit time food is held in the temperature danger zone.
- Use a sanitized, calibrated thermometer to take food temperatures.
- Verify food temperatures during cold holding.
- Serve food so that there is no bare hand contact. Use appropriate utensils, deli paper, or single-use gloves.
- Restrict ill employees from working with food.

Monitor and record time and temperatures of ingredients and no cook menu items throughout the foodservice process.

- Check and record food temperature when food is received and during storage.
- Check and record time and temperature of food during cold holding.

Control time and temperature of no cook menu items during cold holding.

- Hold no cook menu items at 41 °F or below.
- Limit the time that no cook menu items are in the temperature danger zone.

Remember, follow state or local health department requirements.

Same Day Service Process

Introduction

The Process Approach simplifies developing a food safety program by placing menu items into three broad preparation processes based on the number of times the food passes through the temperature danger zone. These processes are no cook, same day service, and complex. School nutrition employees must monitor foods at various steps in the foodservice process and must control temperatures to ensure food safety.

Here Are the Facts

Menu items in the **same day** service process go through the temperature danger zone one time. These are items such as hamburgers, pizza, chicken nuggets, and scrambled eggs. It is important to note that the same menu items may be grouped into different processes depending on how the item is prepared and the available equipment. For example, chili could be a same day service item in one school nutrition program and a complex process item in another operation. The same day service flow chart shows points at which temperature control is very important and points at which monitoring and recordkeeping are needed.

Application

Follow Standard Operating Procedures to control hazards for same day service menu items.

- Purchase foods from approved sources.
- Receive foods properly.
- Store foods properly, including separating food from chemicals.
- Use good personal hygiene.
- Follow proper handwashing practices.
- Prevent cross contamination.
- Limit time food is held in the temperature danger zone.
- Use sanitized, calibrated thermometer to take food temperatures.
- Verify food temperatures during hot holding.
- Serve food so that there is no bare hand contact (use appropriate utensils, deli paper, or single-use gloves).
- Restrict ill employees from working with food.

Monitor and record time and temperatures of same day service menu items throughout the foodservice process.

- Check and record food temperature when food is received.
- Check and record time and temperature of food in storage.
- Check and record time and internal cooking temperatures.
- Check and record time and temperature of food during hot holding.

Control time and temperature of same day service menu items during cooking and hot holding.

- Cook same day service menu items to the appropriate internal cooking temperatures. For example, chicken should be cooked to 165 °F for 15 seconds and hamburger patties should be cooked to 155 °F for 15 seconds.
- Hold same day service menu items at 135 °F or above.
- Limit the time that same day service menu items are in the temperature danger zone.

Remember, follow state or local health department requirements.

Complex Process

Introduction

The Process Approach simplifies developing a food safety program by placing menu items into three broad preparation processes based on the number of times the food passes through the temperature danger zone. These processes are no cook, same day service, and complex. School nutrition employees must monitor foods at various steps in the foodservice process and must control temperatures to ensure food safety.

Here Are the Facts

Menu items in the **complex** process go through the temperature danger zone, during cooking, cooling, and when foods are reheated. Examples of these items will vary in different schools, but may include turkey roasts, taco meat, chili, and leftovers. It is important to note that the same menu items may be grouped into different processes depending on how the item is prepared and the available equipment. For example, chili could be a complex item in one school nutrition program and a same day service process item in another program.

The complex food preparation process include foods that require time and temperature control and have been cooled. The complex menu item flow chart shows points at which temperature control is very important and points at which monitoring and recordkeeping are needed.

Application

Follow Standard Operating Procedures to control hazards for complex menu items.

- Purchase foods from approved sources.
- Receive foods properly.
- Store foods properly, including separating food from chemicals.
- Use good personal hygiene.
- Follow proper handwashing practices.
- Prevent cross contamination.
- Limit time food is held in the temperature danger zone.
- Use sanitized, calibrated thermometer to take food temperatures.
- Verify food temperatures during cooking, cooling, reheating, and hot holding.
- Serve food so that there is no bare hand contact. Use appropriate utensils, deli paper, or single-use gloves.
- Restrict ill employees from working with food.

Monitor and record time and temperatures of complex menu items throughout the foodservice process.

- Check and record food temperature when food is received.
- Check and record time and temperature of food in storage.
- Check and record time and internal cooking temperatures.
- Check and record time and temperature of food during cooling.
- Check and record time and temperature of food during reheating.
- Check and record time and temperature of food during hot holding.

Control time and temperature of complex menu items during cooking, cooling, reheating, and hot holding.

- Cook complex service menu items to the appropriate internal cooking temperatures. For example, chicken should be cooked to 165 °F for 15 seconds and hamburger patties should be cooked to 155 °F for 15 seconds.
- Cool food properly.
  - Cool food from 135 °F–70 °F in 2 hours.
  - Cool food from 70 °F–41 °F in an additional 4 hours.
  - Use immediate and appropriate corrective actions when cooling guidelines are not met.
- Reheat food to 165 °F for 15 seconds within 2 hours.
- Hold complex menu items at 135 °F or above.
- Limit the time that complex menu items are in the temperature danger zone.

Take corrective action to make sure that cleaning and sanitizing is done properly.

- Wash, rinse, and sanitize dirty food contact surfaces.
- Sanitize food contact surfaces if it cannot be determined if they have been sanitized properly.
- Discard food that comes in contact with food contact surfaces that have not been sanitized properly.

Menu Items by Process Category

Directions: Place a check mark in the appropriate column of the Food Preparation Process for the menu item as it is prepared in your operation. If you have more than one school present, select one school to complete this activity.

Menu Item	No Cook	Same Day Service	Complex Food Preparation
Egg patty			
Milk			
Nachos with meat and cheese			
Stacked turkey with Swiss on bun			
Seasoned corn			
Baked potato wedges			
Breakfast pizza			
Hot dogs			
Lettuce			
Spaghetti sauce			
Tacos			
Bean burritos			
Cole slaw			
Baked beans			
French toast sticks			
Sliced baked turkey			
Mashed potatoes			
Green garden salad			
Tuna salad sandwiches			
BBQ pork sandwich			
Scrambled eggs			
Fresh apple			
Hot rolls			

Appendix

Appendix C: Answers to Lesson Activities

Chicken Alfredo With a Twist

Meal Components: Meat/Meat Alternate-Grains **Main Dishes D-54r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
Water		6 gal		12 gal	1. Heat water to a rolling boil.
Rotini pasta, whole-grain, dry	4 lb	5 qt 1 ½ cups	8 lb	2 gal 2 ¾ qt	2. Slowly add pasta. Stir constantly, until water boils again. Cook about 8 minutes or until al dente; stir occasionally. DO NOT OVERCOOK. Drain well. 3. Pour into steam table pans (12" x 20" x 4"). For 50 servings, use 2 pans. For 100 servings, use 4 pans. Critical Control Point: Hold pasta at 135 °F or higher.
Low-fat, reduced-sodium cream of chicken soup, condensed	9 lb 6 oz	1 gal ¾ qt (3 No. 3 cans)	18 lb 12 oz	2 gal 1 ½ qt (6 No. 3 cans)	4. Combine soup, half and half, pepper, garlic, Parmesan cheese, and chicken. Cook over medium heat for 5-10 minutes, stirring often. Critical Control Point: Heat to 165 °F or higher for at least 15 seconds.
Fat-free half and half		3 qt		1 gal 2 qt	
Ground white pepper		2 tsp		1 Tbsp 1 tsp	
Garlic powder		1 tsp		2 tsp	
Parmesan cheese, grated	1 lb 1 oz	1 ½ qt	2 lb 2 oz	3 qt	
Frozen, cooked diced chicken, thawed, ½ " pieces	6 lb 8 oz	1 gal 1 ¼ qt	13 lb	2 gal 2 ½ qt	
					5. Combine noodles and sauce immediately before serving.
					6. Critical Control Point: Hold for hot service at 135 °F or higher.
					7. Portion with 8 fl oz spoodle (1 cup).

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Chicken Alfredo With a Twist

Meal Components: Meat/Meat Alternate-Grains

Notes
Keep noodles and sauce separate until serving time to maintain consistency of sauce. Sauce will thicken upon standing.

Serving	Yield	Volume
1 cup (8 fl oz spoodle) provides 2 ¼ oz equivalent meat and 1 ¼ oz equivalent grains.	50 Servings: about 26 lb 8 oz	50 Servings: about 3 gallons 2 steam table pans
	100 Servings: about 51 lb	100 Servings: about 6 gallons 4 steam table pans

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Nutrients Per Serving					
Calories	344.92	Saturated Fat	3.59 g	Iron	2.34 mg
Protein	29.71 g	Cholesterol	68.68 mg	Calcium	173.98 mg
Carbohydrate	40.85 g	Vitamin A	449.55 IU (28.74 RAE)	Sodium	571.55 mg
Total Fat	8.16 g	Vitamin C	0.38 mg	Dietary Fiber	2.67 g

Mediterranean Quinoa Salad

Meal Components: Other Vegetable-Grains **Grains B-25r**

Ingredients	50 Servings		100 Servings		Directions Process #3: Complex Food Preparation
	Weight	Measure	Weight	Measure	
Quinoa, dry	3 lb 6 oz	2 qt ½ cup	6 lb 12 oz	1 gal 1 cup	1. Rinse quinoa in a fine mesh strainer until water runs clear, not cloudy.
Low-sodium chicken broth		1 gal		2 gal	2. Combine quinoa and broth in a covered stockpot and bring to a boil. Reduce heat and simmer until water is completely absorbed, about 10-15 minutes. When done, quinoa will be soft and a white ring will pop out of the kernel. The white ring will appear only when it is fully cooked. Fluff. Cover and refrigerate at 40 °F.
Lemon juice		½ cup		1 cup	3. Dressing: combine lemon juice, vinegar, garlic, oil, salt, and ground pepper. Mix well. Set aside.
Red wine vinegar		½ cup		1 cup	
Fresh garlic, minced		2 Tbsp		¼ cup	
Extra virgin olive oil		½ cup		1 cup	
Salt		1 Tbsp 1 tsp		2 Tbsp 2 tsp	
Ground white pepper		1 tsp		2 tsp	
*Fresh red bell peppers, diced	11 oz	2 cups	1 lb 6 oz	1 qt	4. Combine red peppers, green onions, red onions, tomatoes, and black olives in a large bowl. Add dressing.
*Fresh green onions, diced	4 oz	1 cup	8 oz	2 cups	
*Fresh red onions, diced	6 oz	1 cup	12 oz	2 cups	
*Fresh cherry tomatoes, halved	1 lb 6 ½ oz	1 qt	2 lb 13 oz	2 qt	
Black olives, sliced	5 oz	1 cup	9 ½ oz	2 cups	
Feta cheese, crumbled	6 oz	1 cup	12 oz	2 cups	5. Mix in cooled quinoa. Fold in feta cheese and parsley.
*Fresh parsley, finely chopped		2 cups	2 ½ oz	1 qt	
					6. Transfer to a steam table pan (12" x 20" x 2 ½"). For 50 servings, use 2 pans. For 100 servings, use 4 pans. 7. Critical Control Point: Cool to 41 °F or lower within 4 hours. Cover and refrigerate until service. 8. Portion with 6 fl oz spoodle (¾ cup).

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Mediterranean Quinoa Salad

Meal Components: Other Vegetable-Grains **Grains B-25r**

Notes
*See Marketing Guide for purchasing information on foods that will change during preparation or when a variation of the ingredient is available.

Serving	Yield	Volume
¾ cup (6 fl oz spoodle) provides ⅛ cup other vegetable and 1 oz equivalent grains.	50 Servings: about 9 lb	50 Servings: about 1 gallon 2 cups 2 steam table pans
	100 Servings: about 18 lb	100 Servings: about 2 gallons 1 quart 4 steam table pans

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Marketing Guide		
Food as Purchased for	**50 servings**	**100 servings**
Red bell peppers	14 oz	1 lb 12 oz
Green onions	5 oz	10 oz
Red onions	7 oz	14 oz
Cherry tomatoes	1 lb 7 oz	2 lb 14 oz
Parsley	1 ½ oz	3 oz

Nutrients Per Serving					
Calories	165.87	Saturated Fat	1.21 g	Iron	1.85 mg
Protein	6.66 g	Cholesterol	3.03 mg	Calcium	42.30 mg
Carbohydrate	22.66 g	Vitamin A	414.48 IU (24.27 RAE)	Sodium	278.10 mg
Total Fat	5.62 g	Vitamin C	12.38 mg	Dietary Fiber	2.67 g

Porcupine Sliders

Meal Components: Meat/Meat Alternate-Grains **Sandwiches F-10r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
Water		3 ½ cups		1 qt 3 cups	1. Combine water and brown rice in a stockpot and bring to a boil. Cover and cook until water is absorbed, about 30-40 minutes. Fluff. Cover and refrigerate at 40 °F. Critical Control Point: Cool to 41 °F or lower within 4 hours.
Brown rice, long grain, regular, dry	9 ½ oz	1 ½ cups	1 lb 3 oz	3 cups	
Canola oil		2 Tbsp		¼ cup	2. Heat oil. Sauté onions, celery, and garlic for 5-7 minutes or until soft. Cover and refrigerate. Critical Control Point: Cool to 41 °F or lower within 4 hours.
*Fresh onions, diced	6 oz	1 ¼ cups	12 oz	2 ½ cups	
*Fresh celery, diced	14 oz	3 cups	1 lb 12 oz	1 qt 2 cups	
Fresh garlic, minced	2 ½ oz	¼ cup	5 oz	½ cup	
Raw ground turkey, lean	6 lb 15 ½ oz	3 qt 2 cups	13 lb 15 oz	1 gal 3 qt	3. Combine turkey, eggs, cranberries, spinach, Worcestershire sauce, salt, peppers, brown rice, and onion mixture. Mix well.
Liquid, whole egg		2 ½ cups		1 qt 1 cup	
Dried cranberries, chopped	12 oz	2 ½ cups	1 lb 8 oz	1 qt 1 cup	
*Fresh baby spinach, chopped	10 oz	2 qt	1 lb 4 oz	1 gal	
Worcestershire sauce		2 Tbsp		¼ cup	
Salt		1 Tbsp		2 Tbsp	
Ground black pepper		1 Tbsp 1 tsp		2 Tbsp 2 tsp	

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Porcupine Sliders

Meal Components: Meat/Meat Alternate-Grains **Sandwiches F-10r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
Ground white pepper		½ tsp		1 tsp	
					4. Portion into patties using a No. 8 scoop (½ cup) onto a parchment lined sheet pan (18" x 26" x 1") lightly coated with pan release spray. For 50 servings, use 2 pans. For 100 servings, use 4 pans 5. Bake: Conventional oven: 350 °F for 18 minutes Convection oven: 325 °F for 14 minutes DO NOT OVERCOOK. Critical Control Point: Heat to 165 °F or higher for at least 15 seconds. 6. Critical Control Point: Hold for hot service at 135 °F or higher.
Mini whole-grain rolls (1 oz each)		50		100	7. Serve on mini whole-grain rolls 8. If desired serve with lettuce, sliced tomato, red onions, and condiments.
					9. Serve 1 slider.

Notes

*See Marketing Guide for purchasing information on foods that will change during preparation or when a variation of the ingredient is available.

Serving	Yield	Volume
1 slider provides 2 oz equivalent meat/meat alternate and 1 oz equivalent grains.	50 Servings: about 11 lb 8 oz	50 Servings: 50 sliders
	100 Servings: about 23 lb	100 Servings: 100 sliders

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Marketing Guide

Food as Purchased for	50 servings	100 servings
Mature onions	8 oz	1 lb
Celery	1 lb 2 oz	2 lb 4 oz
Baby spinach	1 lb 8 oz	3 lb

Nutrients Per Serving

Calories	247.00	Saturated Fat	2.22 g	Iron	2.06 mg
Protein	16.35 g	Cholesterol	85.29 mg	Calcium	64.79 mg
Carbohydrate	25.53 g	Vitamin A	539.83 IU (40.96 RAE)	Sodium	365.57 mg
Total Fat	9.26 g	Vitamin C	1.56 mg	Dietary Fiber	3.14 g

Tasty Tots

Meal Components: Red/Orange Vegetable-Other Vegetable **Vegetables I-23r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
*Fresh sweet potatoes, peeled, coarsely shredded	12 lb	2 gal 2 qt	24 lb	5 gal	1. Spread shredded sweet potatoes evenly on a sheet pan (18" x 26" x 1") lightly coated with pan release spray. For 50 servings, use 2 pans. For 100 servings, use 4 pans. 2. Bake sweet potatoes until slightly tender. DO NOT OVERCOOK. Conventional oven: 350 °F for 20 minutes Convection oven: 350 °F for 15 minutes
Canned low-sodium garbanzo beans (chickpeas), with liquid	6 lb 14 oz	1 gal 3 cups (1 No. 10 can)	13 lb 12 oz	2 gal 1 ½ qt (2 No. 10 cans)	3. Puree garbanzo beans, including the liquid, in a food processor to a smooth consistency. Yields: For 50 servings, about 3 qt 2 ½ cups (6 lb 12 oz). For 100 servings, about 7 qt 1 cup (13 lb 8 oz).
Vegetable oil		1 cup		2 cups	4. Combine sweet potatoes, pureed garbanzo beans, oil, salt, garlic, onions, pepper, onion powder, cinnamon, and flour. Mix well. Refrigerate at 40 °F for 40-50 minutes to make tots easier to form.
Salt		1 Tbsp 1 tsp		2 Tbsp 2 tsp	
Granulated garlic		1 Tbsp 1 tsp		2 Tbsp 2 tsp	
*Fresh green onions, finely diced	6 oz	1 ¾ cups	12 oz	3 ½ cups	
Ground black pepper		2 tsp		1 Tbsp 1 tsp	
Onion powder		1 Tbsp 1 tsp		2 Tbsp 2 tsp	
Ground cinnamon		1 Tbsp 1 tsp		2 Tbsp 2 tsp	
Enriched all-purpose flour	2 ½ oz	½ cup	5 oz	1 cup	
					5. Using a No. 40 scoop, place mixture 1-inch apart on sheet pan (18" x 26" x 1") lined with parchment paper and lightly coated with pan release spray. For 50 servings, use 4 pans. Make 300 tots. For 100 servings, use 8 pans. Make 600 tots.

Tasty Tots

Meal Components: Red/Orange Vegetable-Other Vegetable **Vegetables I-23r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
					6. Cover tots on sheet pan with layer of parchment paper then use a second sheet pan and lightly press to flatten tots. 7. Bake until light brown: Conventional oven: 400 °F for 12 minutes Convection oven: 400 °F for 9 minutes Critical Control Point: Heat to 135 °F or higher for at least 15 seconds. 8. Critical Control Point: Hold at 135 °F or higher for hot service. 9. Serve 6 tots.

Serving	Yield	Volume
6 tots provides: ⅜ cup red/orange vegetable and W cup other vegetable.† †The legumes in this recipe contribute to the *other vegetable subgroup* and not the *meat/meat alternate component* since the beans are not visibly recognizable as legumes in the Tasty Tots recipe. This vegetable side dish with legumes is limited to the vegetable component because of its function as a vegetable in the meal. FACT: Improving the nutrient content of the foods children eat by disguising nutrient-rich vegetables and fruits in the food is a great idea for people of all ages. However, it is not a menu planning principle that teaches and encourages children to recognize and choose a variety of healthy fruits and vegetables.	50 Servings: about 14 lb 10 oz	50 Servings: 300 tots
	100 Servings: about 29 lb 4 oz	100 Servings: 600 tots

Notes
*See Marketing Guide for purchasing information on foods that will change during preparation or when a variation of the ingredient is available.

Marketing Guide		
Food as Purchased for	**50 servings**	**100 servings**
Sweet potatoes	19 lb 12 oz	39 lb 8 oz
Green onions	7 ½ oz	15 oz

Nutrients Per Serving					
Calories	186.22	Saturated Fat	0.41 g	Iron	1.52 mg
Protein	4.79 g	Cholesterol	0 mg	Calcium	55.16 mg
Carbohydrate	31.66 g	Vitamin A	15408.01 IU (772.01 RAE)	Sodium	381.06 mg
Total Fat	4.92 g	Vitamin C	18.61 mg	Dietary Fiber	5.54 g

Smokin' Powerhouse Chili

Meal Components: Meat Alternate-Legume Vegetable-Red/Orange Vegetable-Other Vegetable-Additional Vegetable-Grains **Main Dishes D-58r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
*Fresh onions, diced	3 lb	2 qt 1 ⅜ cups	6 lb	1 gal 2 ¾ cups	1. Coat a roasting pan/square head pan (20 Y" x 17 W" x 7") with pan release spray. Sauté onions and garlic for 2 minutes. 2. Add half of the stock and bring to a boil over medium high heat. Reserve remaining vegetable stock for step 4.
Fresh garlic, minced	4 oz	½ cup	8 oz	1 cup	
Low-sodium vegetable stock		1 qt 2 ¼ cups	6 lb 8 oz	3 qt ½ cup	
*Fresh carrots, diced ½"	3 lb 2 oz	3 qt 2 ⅔ cups	6 lb 4 oz	1 gal 3 qt	3. Add carrots, red peppers, and ground chipotle pepper (optional). Simmer uncovered over low-medium heat for 10 minutes.
*Fresh red bell peppers, diced	1 lb 8 oz	1 qt ½ cup	3 lb	2 qt 1 cup	
Dry ground chipotle pepper, (optional)		2 Tbsp		¼ cup	
Canned low-sodium diced tomatoes	5 lb 13 oz	3 qt 2 cups (1 ⅓ No. 10 cans)	11 lb 10 oz	1 gal 3 qt (2 ⅔ No. 10 cans)	4. Add remaining stock, tomatoes, tomato sauce, cilantro, chili powder, cumin, and salt. Stir occasionally. Continue to simmer over low heat, uncovered, for 15 minutes.
Canned low-sodium tomato sauce	3 lb 7 oz	1 qt 3 ½ cups (⅔ No. 10 can)	6 lb 14 oz	3 qt 3 cups (1 ⅓ No. 10 cans)	
Fresh cilantro, chopped	2 ½ oz	2 cups	5 oz	1 qt	
Chili powder	2 oz	½ cup	4 oz	1 cup	
Ground cumin		½ cup	3 ½ oz	1 cup	
Salt		2 tsp		1 Tbsp 1 tsp	
*Fresh sweet potatoes, peeled, diced ½"	2 lb 4 oz	1 qt 2 ½ cups	4 lb 4 oz	3 qt 1 cup	5. Steam sweet potatoes until soft (about 10-15 minutes) in a perforated steam table pan (12" x 20" x 2 ½"). For 50 servings, use 2 pans. For 100 servings, use 4 pans.

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Smokin' Powerhouse Chili

Meal Components: Meat Alternate-Legume Vegetable-Red/Orange Vegetable-Other Vegetable-Additional Vegetable-Grains **Main Dishes D-58r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
Canned low-sodium black beans drained, rinsed OR *Dry black beans, cooked (See Notes Section)	6 lb OR 6 lb	1 gal (2 ½ No. 10 cans) OR 1 gal	12 lb OR 12 lb	2 gal (5 No. 10 cans) OR 2 gal	6. Add beans, corn, and sweet potatoes to vegetable mixture. Simmer uncovered over low heat for 10 minutes. Critical Control Point: Heat to 135 °F or higher for at least 15 seconds.
Frozen corn, thawed, drained	2 lb	1 qt 2 cups	4 lb	3 qt	7. Critical Control Point: Hold for hot service at 135 °F or higher.
Quinoa, dry	2 lb	1 qt 1 cup	4 lb	2 qt 2 cups	8. Rinse quinoa in a fine mesh strainer until water runs clear, not cloudy.
Water		1 qt 3 cups		3 qt 2 cups	9. Combine quinoa and water in a covered stockpot and bring to a boil. Reduce heat to low and simmer until water is completely absorbed, about 15 minutes. When done, quinoa will be soft and a white ring will pop out of the kernel. The white ring will only appear when it is fully cooked. 10. Critical Control Point: Hold for hot service at 135 °F or higher.
					11. Portion 8 fl oz ladle (1 cup) chili. Serve with No. 16 scoop (¼ cup) cooked quinoa. 12. If desired, serve chili with ¼ cup brown rice in place of quinoa.

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Smokin' Powerhouse Chili

Notes

*See Marketing Guide for purchasing information on foods that will change during preparation or when a variation of the ingredient is available.

Special tip for preparing dry beans:
SOAKING BEANS
OVERNIGHT METHOD: Add 1 ¾ qt cold water to every 1 lb of dry beans. Cover and refrigerate overnight. Discard the water. Proceed with recipe.
QUICK-SOAK METHOD: Boil 1 ¾ qt of water for each 1 lb of dry beans. Add beans and boil for 2 minutes. Remove from heat and allow to soak for 1 hour. Discard the water. Proceed with recipe.
COOKING BEANS
Once the beans have been soaked, add 1 ¾ qt water for every lb of dry beans. Boil gently with lid tilted until tender, about 2 hours.
Use hot beans immediately.

Critical Control Point: Hold for hot service at 135 °F or higher.
OR
Chill for later use.
Critical Control Point: Cool to 70 °F within 2 hours and to 40 °F or lower within an additional 4 hours.

1 lb dry black beans = about 2 ¼ cups dry or 4 ½ cups cooked beans.

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Marketing Guide

Food as Purchased for	50 servings	100 servings
Mature onions	3 lb 8 oz	7 lb
Carrots	4 lb 8 oz	9 lb
Red bell peppers	2 lb	4 lb
Sweet potatoes	3 lb	6 lb
Dry black beans	3 lb 8 oz	7 lb

Nutrients Per Serving

Calories	183.60	Saturated Fat	0.18 g	Iron	2.98 mg
Protein	7.45 g	Cholesterol	0 mg	Calcium	62.80 mg
Carbohydrate	37.50 g	Vitamin A	9023.99 IU (434.86 RAE)	Sodium	255.97 mg
Total Fat	1.66 g	Vitamin C	38.82 mg	Dietary Fiber	7.60 g

Serving	Yield	Volume
1 cup (8 fl oz ladle) chili and ¼ cup (No. 16 scoop) quinoa provides: **Legume as Meat Alternate:** ½ oz equivalent meat alternate, ½ cup red/orange vegetable, ⅛ cup other vegetable, ⅛ cup additional vegetable, and ½ oz equivalent grains. OR **Legume as Vegetable:** ⅛ cup legume vegetable, ½ cup red/orange vegetable, ⅛ cup other vegetable, ⅛ cup additional vegetable, and ½ oz equivalent grains. *Legume vegetable can be counted as either a meat alternate or as a legume vegetable but not as both simultaneously.*	50 Servings: about 27 lb 100 Servings: about 56 lb	50 Servings: about 3 gallons 2 quarts 2 steam table pans 100 Servings: about 7 gallons 4 steam table pans

Lentils of the Southwest

Meal Components: Meat Alternate-Legume Vegetable **Vegetables I-24r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
*Lentils, brown or green, dry	1 lb 14 oz	1 qt ½ cup	3 lb 12 oz	2 qt 1 cup	1. Rinse lentils and sort out any unwanted materials. Drain well.
Water		2 qt ½ cup		1 gal 1 cup	2. Combine lentils and water in a stock pot. Bring to a boil. Reduce heat and simmer, uncovered, until lentils are tender, about 30-40 minutes.
*Fresh onions, diced	8 oz	1 ¾ cups	1 lb	3 ½ cups	3. Sauté onions and garlic in oil for 5 minutes or until tender. Stir in cumin, red chili pepper, and chili powder. Cook for 2-3 minutes over low heat.
Fresh garlic, minced		2 Tbsp		¼ cup	4. Combine onions and garlic with cooked lentils. Add water. For 50 servings, add 3 cups water. For 100 servings, add 1 qt 2 cups water. 5. Stir in tomatoes and salt. Bring to a boil. Reduce heat and simmer uncovered for 20 minutes. Critical Control Point: Heat to 135 °F or higher for at least 15 seconds.
Extra virgin olive oil		2 Tbsp		¼ cup	
Ground cumin		2 Tbsp 2 tsp		⅓ cup	
Ground red chili pepper		2 Tbsp		¼ cup	
Chili powder		1 Tbsp		2 Tbsp	
Canned low-sodium diced tomatoes OR *Fresh tomatoes, diced	1 lb 8 oz OR 1 lb 8 oz	3 cups (¼ No. 10 can) OR 3 cups	3 lb OR 3 lb	1 qt 2 cups (½ No. 10 can) OR 1 qt 2 cups	
Salt		1 Tbsp		2 Tbsp	
Fresh cilantro, finely chopped	2 oz	3 cups	4 oz	1 qt 2 cups	6. Stir in cilantro before serving.
					7. Critical Control Point: Hold for hot service at 135 °F or higher. 8. Portion with 2 fl oz ladle (¼ cup).

Lentils of the Southwest

Meal Components: Meat Alternate-Legume Vegetable **Vegetables I-24r**

Notes
*See Marketing Guide for purchasing information on foods that will change during preparation or when a variation of the ingredient is available.

Serving	Yield	Volume
¼ cup (2 fl oz ladle) provides: **Legume as meat alternate:** 1 oz equivalent meat alternate. OR **Legume as vegetable:** ¼ cup legume vegetable. *Legume vegetable can be counted as either a meat alternate or as a legume vegetable but not both simultaneously.*	50 Servings: about 9 lb	50 Servings: about 1 gallon 1 quart
	100 Servings: about 17 lb	100 Servings: about 2 gallons I quart

Marketing Guide		
Food as Purchased for	**50 Servings**	**100 Servings**
Dry lentils, brown or green	1 lb 14 oz	3 lb 12 oz
Mature onions	12 oz	1 lb 6 oz
Tomatoes	1 lb 12 oz	3 lb 8 oz

Nutrients Per Serving					
Calories	68.66	Saturated Fat	0.11 g	Iron	1.84 mg
Protein	4.56 g	Cholesterol	0 mg	Calcium	15.21 mg
Carbohydrate	10.96 g	Vitamin A	251.11 IU (10.38 RAE)	Sodium	141.83 mg
Total Fat	0.92 g	Vitamin C	2.80 mg	Dietary Fiber	4.16 g

Chic' Penne

Meal Components: Meat/Meat Alternate-Dark Green Vegetable-Grains **Main Dishes D-53r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
Water		3 gal		6 gal	1. Heat water to a rolling boil.
Penne pasta, multi-grain, dry	6 lb	1 gal 3 ½ qt	12 lb	3 gal 3 qt	2. Slowly add pasta. Stir constantly, until water boils again. Cook about 8 minutes or until al dente; stir occasionally. DO NOT OVERCOOK. Drain well.
Granulated garlic		2 Tbsp 2 tsp	3 ½ oz	¼ cup 1 ⅓ Tbsp	3. Toss cooked pasta with garlic. For 50 servings, add 1 Tbsp 1 tsp (reserve remaining garlic for step 5). For 100 servings, add 2 Tbsp 2 tsp garlic (reserve remaining garlic for step 5). 4. Transfer pasta to steam table pan (12" x 20" x 2 K"). For 50 servings, use 2 pans. For 100 servings, use 4 pans.
*Fresh broccoli florets, chopped 1"	3 lb 2 oz	1 gal 1 ½ qt	6 lb 4 oz	2 gal 3 qt	5. Cook broccoli for 5 minutes in boiling water. Drain broccoli and toss with remaining garlic.
Frozen, cooked diced chicken, thawed, ½" pieces	2 lb	1 qt 2 ½ cups	4 lb	3 qt 1 cup	6. Add broccoli and chicken to pasta. Mix well.
Low-sodium chicken broth		1 cup		2 cups	7. Sauce: Combine broth, salt, pepper, and milk. Bring to a boil, stir constantly. For 50 servings, use 2 qt milk (reserve remaining milk for step 8). For 100 servings, use 1 gal 2 cups milk (reserve remaining milk for step 8).
Salt		2 Tbsp		¼ cup	
Ground black pepper		1 Tbsp 1 tsp		2 Tbsp 2 tsp	
Nonfat milk		2 qt 3 cups		1 gal 1 ½ qt	
Enriched all-purpose flour		½ cup	2 ½ oz	1 cup	8. Combine remaining milk with flour and add to broth mixture. Reduce heat to low. Stir constantly for 5 minutes until sauce thickens.
Reduced-fat cheddar cheese, shredded	1 lb	1 qt	2 lb	2 qt	9. Add cheese. Continue to stir until cheese melts.

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Chic' Penne

Meal Components: Meat/Meat Alternate-Dark Green Vegetable-Grains **Main Dishes D-53r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
Low-fat mozzarella cheese, low moisture, part-skim, shredded	1 lb	1 qt	2 lb	2 qt	
					10. Divide cheese sauce evenly and pour over pasta mixture. 11. Cover with foil and bake: Conventional oven: 350 °F for 8 minutes Convection oven: 350 °F for 4 minutes Critical Control Point: Heat to 165 °F or higher for at least 15 seconds.
					12. Critical Control Point: Hold for hot service at 135 °F or higher.
					13. Portion two 6 fl oz spoodles (1 ½ cups).

Notes

*See Marketing Guide for purchasing information on foods that will change during preparation or when a variation of the ingredient is available.

For a creamier sauce, use an equal quantity of fat-free half and half in place of milk.

Serving	Yield	Volume
1 ½ cups (two 6 fl oz spoodles) provides 1 oz equivalent meat/meat alternate, ⅛ cup dark green vegetable, and 1 ¾ oz equivalent grains.	50 Servings: about 27 lb 8 oz	50 Servings: 2 steam table pans
	100 Servings: about 55 lb	100 Servings: 4 steam table pans

The grain ingredients used in this recipe must meet the Food and Nutrition Service whole grain-rich criteria.

Marketing Guide

Food as Purchased for	50 servings	100 servings
Broccoli	3 lb 2 oz	6 lb 4 oz

Nutrients Per Serving

Calories	299.26	Saturated Fat	2.16 g	Iron	2.32 mg
Protein	18.64 g	Cholesterol	25.88 mg	Calcium	230.49 mg
Carbohydrate	44.43 g	Vitamin A	618.36 IU (77.54 RAE)	Sodium	417.56 mg
Total Fat	5.50 g	Vitamin C	17.23 mg	Dietary Fiber	5.53 g

Harvest Stew

Meal Components: Meat/Meat Alternate-Legume Vegetable-Red/Orange Vegetable-Additional Vegetable **Soups H-10r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
Vegetable oil		¼ cup 1 Tbsp		¾ cup	1. Heat oil in a roasting pan/square head pan (20 Y" x 17 W" x 7") on top of stove. Sauté onions, carrots, and celery for 5 minutes until slightly browned.
*Fresh onions, diced	1 lb 4 oz	3 cups	2 lb 8 oz	1 ½ qt	
*Fresh carrots, diced	12 oz	2 cups	1 lb 8 oz	1 qt	
*Fresh celery, diced	1 lb 1 oz	3 ⅓ cups	2 lb 2 oz	1 qt 2 ⅔ cups	
Enriched all-purpose flour	3 oz	½ cup 1 Tbsp	6 oz	1 cup 2 Tbsp	2. Sprinkle flour over vegetables and mix well. Add water and base. Mix well. Bring to a boil uncovered.
Water		2 qt 2 cups		1 gal 1 qt	
Low-sodium chicken base		1 Tbsp		2 Tbsp	
Salt-free seasoning		1 tsp		2 tsp	3. Add seasoning and garlic powder. Cook uncovered over medium heat for 2 minutes.
Garlic powder		1 Tbsp		2 Tbsp	
Canned low-sodium diced tomatoes	3 lb 4 oz	1 qt 2 ½ cups (½ No. 10 can)	6 lb 8 oz	3 qt 1 cup (1 No. 10 can)	4. Add tomatoes, sweet potatoes, and red potatoes. Simmer uncovered over low heat for 15 minutes or until potatoes are tender.
*Fresh sweet potatoes, peeled, cubed 1"	1 lb 8 oz	1 qt 3 cups	3 lb	3 qt 2 cups	
*Fresh red potatoes, unpeeled, cubed 1"	1 lb 8 oz	1 qt	3 lb	2 qt	
Frozen, cooked diced chicken, thawed, ½" pieces	1 lb 10 oz	1 qt 1 ⅓ cups	3 lb 4 oz	2 qt 2 ⅔ cups	5. Add chicken, beans, and spinach. Simmer uncovered for an additional 10 minutes. Critical Control Point: Heat to 165 °F or higher for at least 15 seconds.
Canned low-sodium great northern beans, drained, rinsed OR *Dry great northern beans, cooked (See Notes Section)	7 lb OR 7 lb	3 qt 1 ⅓ cups (1 ¾ No. 10 cans) OR 3 qt 1 ⅓ cups	14 lb OR 14 lb	1 gal 2 ⅔ qt (3 ½ No. 10 cans) OR 1 gal 2 ⅔ qt	

Harvest Stew

Meal Components: Meat/Meat Alternate-Legume Vegetable-Red/Orange Vegetable-Additional Vegetable **Soups H-10r**

Ingredients	50 Servings		100 Servings		Directions Process #2: Same Day Service
	Weight	Measure	Weight	Measure	
*Fresh baby spinach, chopped	5 oz	2 cups	10 oz	1 qt	
					6. Critical Control Point: Hold for hot service at 135 °F or higher. 7. Portion with 6 fl oz ladle (¾ cup).

Notes

*See Marketing Guide for purchasing information on foods that will change during preparation or when a variation of the ingredient is available.

Special tip for preparing dry beans:
SOAKING BEANS
OVERNIGHT METHOD: Add 1 ¾ qt cold water to every 1 lb of dry beans. Cover and refrigerate overnight. Discard the water. Proceed with recipe.
QUICK-SOAK METHOD: Boil 1 ¾ qt of water for each 1 lb of dry beans. Add beans and boil for 2 minutes. Remove from heat and allow to soak for 1 hour. Discard the water. Proceed with recipe.
COOKING BEANS
Once the beans have been soaked, add 1 ¾ qt water for every lb of dry beans. Boil gently with lid tilted until tender, about 2 hours.

Use hot beans immediately.

Critical Control Point: Hold for hot service at 135 °F or higher.
OR
Chill for later use.
Critical Control Point: Cool to 70 °F within 2 hours and to 40 °F or lower within an additional 4 hours.
1 lb dry great northern beans = about 2 ½ cups dry or 6 ¼ cups cooked beans.

Nutrients Per Serving

Calories	123.71	Saturated Fat	0.27 g	Iron	1.88 mg
Protein	7.95 g	Cholesterol	13.14 mg	Calcium	50.22 mg
Carbohydrate	18.19 g	Vitamin A	3426.42 IU (162.53 RAE)	Sodium	57.37 mg
Total Fat	2.24 g			Dietary Fiber	5.03 g
		Vitamin C	8.83 mg		

Marketing Guide

Food as Purchased for	50 Servings	100 Servings
Mature onions	1 lb 8 oz	3 lb
Carrots	15 oz	1 lb 14 oz
Celery	1 lb 4 ½ oz	2 lb 9 oz
Sweet potatoes	2 lb	4 lb
Red potatoes	1 lb 8 ¾ oz	3 lb 1 ½ oz
Dry great northern beans	2 lb 8 oz	5 lb
Baby spinach	6 oz	12 oz

Serving	Yield	Volume
¾ cup (6 fl oz ladle) provides: **Legume as Meat Alternate:** 1 ½ oz equivalent meat/meat alternate, ⅛ cup red/orange vegetable, and ¼ cup additional vegetable. OR **Legume as Vegetable:** ½ oz equivalent meat, ¼ cup legume vegetable, ⅛ cup red/orange vegetable, and ¼ cup additional vegetable. *Legume vegetable can be counted as either a meat alternate or as a legume vegetable but not as both simultaneously.*	50 Servings: about 19 lb	50 Servings: about 2 gallons 2 quarts
	100 Servings: about 37 lb 8 oz	100 Servings: about 4 gallons 3 quarts

Lesson 1 Optional Self-Check

To further test your knowledge of food safety, you may complete the following self-checks. Answers are provided after each set of questions.

1. Why is food safety a top priority in school nutrition programs? Write your reason below.

   _____

   _____

   _____

2. Define a foodborne illness. _____

   _____

3. A foodborne illness must be confirmed with a _____

   _____.

4. Define a foodborne illness outbreak. _____

   _____

   _____

5. How many people must have the same symptoms for a foodborne illness outbreak to be suspected and reported? _____

   _____

6. The three main categories of hazards or contaminates are

   a. _____

   b. _____

   c. _____

7. To help prevent and minimize potential hazards, it is important to read the _____ _____ and follow them on a daily basis.

8. We can control biological hazards by controlling _____ _____.

9. The _____ is the temperature range in which bacteria grow quickly. This zone is _____ _____.

Lesson 1 Optional Self-Check Answers

1. To prevent foodborne illnesses.
2. A foodborne illness is a disease transmitted to people by food or water.
3. Laboratory analysis
4. A foodborne illness outbreak is an incident when two or more people experience the same symptoms after eating a common food.
5. 2
6. Biological; Chemical; Physical
7. Standard Operating Procedures
8. Time and temperature
9. Temperature Danger Zone; 41 °F to 135 °F

Lesson 2 Optional Self-Check

1. The three key areas in school nutrition programs that need to be improved in order to minimize hazards and prevent foodborne illness are _____, _____, and _____.

2. Harmful microorganisms can contaminate food during _____ of the steps of the school nutrition process.

3. _____ has been identified in many research projects as one of the food safety practices that is most needed but often is not followed.

4. Hands should be washed for at least _____ seconds with _____ and _____, _____ water.

5. Disposable gloves provide a second line of defense against _____.

6. Change gloves _____ and _____.

7. Never _____ gloves.

8. Thermometers have _____ uses and should be used _____.

9. Thermometers should be calibrated _____, ideally on a _____ basis.

10. The definition of cross contamination is _____ _____ _____.

11. The three ways that cross contamination occurs are
    a. _____
    b. _____
    c. _____

12. A _____ _____ is defined as an immune-mediated adverse reaction to a food protein. _____ _____ is when an allergen is accidentally transferred from a food containing an allergen to a food or surface that does not contain the allergen.

Lesson 2 Optional Self-Check Answers

1. Employee personal hygiene; prevention of contamination; time and temperature control
2. Any
3. Personal hygiene
4. 20; soap; warm, running
5. Cross contamination
6. Frequently; between tasks
7. Reuse
8. Specific; appropriately
9. Frequently; daily
10. The transfer of bacteria or viruses from one surface to another surface.
11. Hand-to-food; food-to-food; equipment-to-food
12. Food allergy; cross contact

Lesson 3 Optional Self-Check

1. Microorganisms are _____ in our environment.

2. While some microorganisms are _____, others are _____ and will cause foodborne illness.

3. _____ are the most common cause of foodborne illness.

4. _____ are harmful microorganisms that cause illness.

5. The two groups of pathogens are _____ and _____.

6. Spoilage microorganisms include two groups of fungi: _____ and _____.

7. Child nutrition professionals are not responsible for identifying the cause of a foodborne illness, however they can _____ or _____ a potential foodborne illness outbreak by gaining knowledge about _____.

8. The school nutrition _____ is responsible for implementing a strong food safety program.

9. When a complaint is received of a possible foodborne illness, the school nutrition manager must respond _____ and demonstrate _____.

Lesson 3 Optional Self-Check Answers

1. Everywhere
2. Useful; harmful
3. Viruses
4. Pathogens
5. Bacteria; viruses
6. Molds; yeast
7. Prevent; eliminate; how they are caused
8. Manager
9. Correctly; leadership

Lesson 4 Optional Self-Check

1. A food-safe school nutrition program is one that is _____ and in good _____.

2. The facility and the equipment must be designed for easy _____ and _____.

3. Maintain _____ and use _____ to promote cleanliness.

4. The following areas should be cleaned on a routine basis.
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____

5. Common pests in school nutrition facilities are: _____, _____, and _____.

6. It is important to have a _____ pest control program to ensure that pests do not contaminate food.

7. What are some ways we can control pests? Write your answers below.

   _____

   _____

   _____

8. The three approved sanitizers for school nutrition facilities are _____, _____, and _____.

9. Food contact surfaces need to be washed, rinsed, and sanitized
   a. _____
   b. _____
   c. _____
   d. _____

10. A _____ is used for manual dish washing.

11. The first compartment is used for _____.

12. The second compartment is used for _____.

13. The third compartment is used for _____.

14. After sanitizing, items should be allowed to _____ to prevent the possibility of recontamination.

15. The two types of dish machines are _____ and _____.

16. Sometimes a secondary check of temperatures is needed for dish machines. The three methods you can use to check temperatures are
   a. _____
   b. _____
   c. _____

17. _____ must be cleaned and sanitized to keep it free from harmful levels of bacteria or other contaminants.

18. While some equipment can be cleaned and sanitized in a three-compartment sink, other equipment has to be cleaned and sanitized _____.

Lesson 4 Optional Self-Check Answers

1. clean; repair
2. cleaning; maintenance
3. cleaning schedules; Standard Operating Procedures
4. floors; walls; ceilings; ventilation systems; restrooms
5. cockroaches; flies; rodents
6. proactive
7. • Use a licensed pest control operator.
   • Fill any openings or cracks in walls and floors.
   • Inspect all food for signs of infestation before storing.
   • Discard empty cardboard boxes.
8. chlorine; quaternary ammonium; iodine
9. after each use; when changing tasks; when there is a possibility of contamination; at 4-hour intervals if items are in constant use
10. three-compartment sink
11. washing
12. rinsing
13. sanitizing
14. air dry
15. high temperature; chemical
16. irreversible registering temperature indicators; self-adhering temperature-sensitive label; T-stick®
17. equipment
18. in place

Lesson 5 Optional Self-Check

1. What are the steps of the school nutrition process? (hint: 8 steps, plus 1 optional step)

   _____

   _____

   _____

   _____

2. The goal of purchasing is to obtain _____ and _____ food to meet the menu requirements of a school nutrition program.

3. In purchasing, both the _____ and the _____ share responsibility for food safety.

4. The goals of receiving are to make sure that foods are _____ and _____ when they are delivered to the operation and to transfer foods to the _____ as quickly as possible upon delivery.

5. The receiving area should be _____ and appropriate for receiving.

6. The delivery truck should be at the _____.

7. List some criteria for quality of foods when they are delivered.

   _____

   _____

   _____

8. The goal of storing is to maintain food and supplies in conditions that will ensure their _____, _____, and _____.

9. What are the four types of storage areas in all school nutrition facility?
   a. _____
   b. _____
   c. _____
   d. _____

10. What does FIFO stand for? _____

11. The goal of preparing is to prevent _____ of food, control the _____ that food is in the _____. and use safe _____.

12. _____ is closely related to preparing.

13. Describe the four acceptable methods for thawing foods.
   a. _____
   b. _____
   c. _____
   d. _____

14. The goal of cooking is to cook to the correct internal temperature in order to destroy existing _____.

15. Food must be heated to its final cooking temperature for at least _____ seconds.

16. The goal of holding is to keep cold food _____ and hot food _____.

17. Cold food should be held at or below _____ °F.

18. Hot food should be held at or above _____ °F.

19. Name the two main safety concerns at the serving step.
    a. _____
    b. _____

20. Cooling is a two-step process.
    a. Hot food must be cooled from 135 °F to 70 °F within _____ hours.
    b. After step one is achieved, it must be cooled within a total of _____ hours from 135 °F to 41 °F.

21. If the proper temperatures are not reached within the cooling guidelines, food must be reheated to 165 °F for _____ seconds or discarded.

22. Reheating must be done _____. The rule for reheating is that food must be heated to 165 °F for 15 seconds within _____ hours.

23. _____ is done when food is prepared at a central kitchen for service at another site.

24. When transporting food, it is important to _____ the time and temperature of the food when it leaves the production kitchen and again when it arrives at the receiving kitchen.

Lesson 5 Optional Self-Check Answers

1. purchasing; receiving; storing; preparing; cooking; serving and holding; cooling; reheating; transporting
2. safe; wholesome
3. vendors; purchasers
4. fresh; safe; proper storage areas
5. organized
6. proper temperature
7. See the Lesson 5 Handout–*Evaluation Criteria for Foods During Receiving* for a full list of the criteria.
8. safety; quality; shelf life
9. dry storage; chemical storage; refrigerated storage; freezer storage
10. First In, First Out
11. contamination; time; temperature danger zone; food handling practices
12. thawing
13. as part of the cooking process; in the refrigerator; under clean, drinkable, running water at a temperature of 70 °F or less; in a microwave oven
14. bacteria
15. 15
16. cold; hot
17. 41 °F
18. 135 °F
19. cross contamination; temperature control
20. 2; 6
21. 15
22. quickly; 2
23. transporting
24. document

Lesson 6 Optional Self-Check

1. What are the three key food safety practices that are stressed at each step in the food service process? _____, _____, and _____.

2. The USDA recommends the food safety program known as the _____.

3. The two components of a food safety program are
   a. _____, and
   b. _____.

4. Written standard operating procedures guide _____ and _____ for producing safe food.

5. Standard operating procedures provide the _____ for the food safety program.

6. List the five key sections of a standard operating procedure.
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____

7. The purpose statement indicates _____ the standard operating procedure is important.

8. The instructions provide a _____ of procedures that should be followed.

9. Monitoring makes sure that important _____ and _____ are being met.

10. Corrective actions are _____, _____ actions that must be taken if a SOP is not followed or if a time and temperature is not met.

11. Verification confirms that a food safety program is _____ according to plan.

12. Record keeping is needed to document _____ and _____. Records should be retained for _____.

13. The Process Approach uses what three categories in which to group foods?
    a. _____
    b. _____
    c. _____

14. These categories are based on _____ the food passes through the temperature danger zone.

15. List the five steps for the no cook process.
    a. _____
    b. _____
    c. _____
    d. _____
    e. _____

16. List the six steps for the same day service process.
    a. _____
    b. _____
    c. _____
    d. _____
    e. _____
    f. _____

17. List the eight steps for the complex food preparation process.
    a. _____
    b. _____
    c. _____
    d. _____
    e. _____
    f. _____
    g. _____
    h. _____

18. What are some foods that would fit into the no cook process?
    _____
    _____

19. What are some foods that would fit into the same day service process? _____
    _____
    _____
    _____

20. What are some foods that would fit into the complex food preparation process?
    _____
    _____
    _____

Lesson 6 Optional Self-Check Answers

1. time and temperature control; personal hygiene; and prevention of contamination
2. Process Approach
3. written Standard Operating Procedures; a written food safety program for each school
4. practices; procedures
5. foundation
6. purpose; instructions; monitoring; corrective actions; verification and record keeping
7. why
8. step-by-step description
9. times; temperatures
10. specific; pre-planned
11. working
12. monitoring; corrective actions; 1 year
13. no cook; same day service; complex food preparation
14. how many times
15. receive; store; prepare; cold hold; serve
16. receive; store; prepare; cook; hot hold; serve
17. receive; store; prepare; cook; cool; reheat; hot hold; serve
18. deli sandwiches; salads
19. hamburgers; pizza; chicken nuggets
20. chili; taco meat; leftovers

Identify Hazards and Practices to Prevent Them

Biological	Chemical	Physical
Examples of 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	Sanitizers Pesticides Whitening agents Detergents Polishes Glass cleaners Caustics Cleaning and drying agents	Glass Staples Metal shavings Toothpicks Nail polish Artificial nails Hair Jewelry Bones Stones Equipment parts
How to Prevent 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 6-8 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.	• 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. • 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.	• 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 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.

Wash Your Hands: Educating the School Community Video Viewing Guide

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

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?
   a. time of recording
   b. temperature of food
   c. initials
   d. 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.**

Responding to a Foodborne Illness

1. Be calm and _cooperate_ with the health department.

2. Talk with your _supervisor_ immediately to communicate the situation and seek additional guidance.

3. Stop serving the suspected _food_.

4. Keep _samples_ of suspect foods.

5. Cooperate with the _health department_ to gather information.

6. Report the _information_ you were asked to assemble.

7. Do not give _medical_ advice—that should be left to the _professionals._

8. Direct all _media_ inquiries to the designated _school district_ representative.

Case Study–Pest Problems at Red Oak High School

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.*

Thawing and Cooking Foods Activity

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

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.

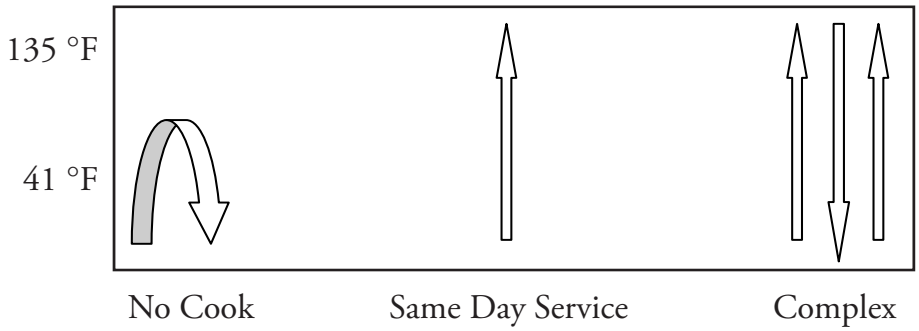
Key Points for Cooling Foods

- 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.

Process Approach Overview
Video Viewing 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.

Menu Items by Process Category

Menu Item	No Cook	Same Day Service	Complex Food Preparation
Egg patty		X	
Milk	X		
Nachos with meat and cheese		X	X
Stacked turkey with Swiss on bun	X		X
Seasoned corn		X	
Baked potato wedges		X	
Breakfast pizza		X	
Hot dogs		X	
Lettuce	X		
Spaghetti sauce		X	X
Tacos		X	X
Bean burritos		X	
Cole slaw	X		
Baked beans		X	
French toast sticks		X	
Sliced baked turkey	X		X
Mashed potatoes		X	
Green garden salad	X		
Tuna salad sandwiches	X		
BBQ pork sandwich		X	X
Scrambled eggs		X	
Fresh apple*			
Hot rolls*			

* Time and temperature controls are not needed for these food items.

The following food items may fall under more than one category depending on the specific preparation process.

Nachos with meat and cheese—same day or complex, depending on practices followed in specific foodservice operation

Stacked turkey with Swiss on bun—could be same day or complex if turkey was cooked and cooled and sliced in the operation

Spaghetti sauce—could be same day or complex, depending when the meat is cooked

Tacos—could be same day or complex, depending when the meat is cooked

Bean burritos—same day if it is a frozen product

Tuna salad sandwiches—no cook (if eggs are purchased precooked); complex if eggs are cooked and cooled prior to service

BBQ pork sandwich—same day or complex if pork roasts are cooked on site, cooled, and then made into BBQ

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