

FOOD SAFETY

Teacher's
Guide



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Introduction

This Teacher's Guide provides information to help you get the most out of *Food Safety*. The contents in this guide will allow you to prepare your students before using the program and present follow-up activities to reinforce the program's key learning points.

With the invisible enemy of bacteria and visible threats like grease fires, the kitchen can be a breeding ground for danger. From painful cuts to cramping guts, poorly maintained equipment and carelessly stored foods can lead to serious health risks. The three-part *Kitchen and Food Safety* series addresses the what's, why's and how's of the hidden health hazards we face with every bite, and the simple steps we can take to preserve our foods—and our well-being.

Learning Objectives

After viewing the program, students will be able to:

- State the importance of washing hands before, during, and after food preparation.
- Prevent cross-contamination in the kitchen/workspace.
- Recognize when food is cooked to its proper cooking temperature.
- Discuss the importance of proper refrigeration.
- Recognize and utilize proper ways to store both cooked and uncooked foods.
- Describe the proper techniques required to thaw frozen foods.
- Recognize the importance of "use by" and "sell by" dates on food labels.

Educational Standards

National Standards

This program correlates with the National Standards for Family and Consumer Sciences Education, the National Health Education Standards, and the National Science Education Standards. The content has been aligned with the following educational standards and benchmarks from these organizations.

National Standards for Family and Consumer Sciences Education

- Demonstrate food safety and sanitation procedures.
- Apply risk management procedures to food safety, food testing, and sanitation.
- Demonstrate ability to acquire, handle, and use foods to meet nutrition and wellness needs of individuals and families across the life span.
- Evaluate factors that affect food safety, from production through consumption.

National Health Education Standards

- Students will demonstrate the ability to access valid health information and health-promoting products and services.
- Students will demonstrate the ability to practice health-enhancing behaviors and reduce health risks.

National Science Education Standards

- Science in Personal and Social Perspectives: As a result of activities in grades 9-12, all students should develop understanding of personal and community health, population growth, natural resources, environmental quality, natural and human-induced hazards, and science and technology in local, national, and global challenges.

Reprinted with permission from National Science Education Standards ©1999 by the National Academy of Sciences, courtesy of the National Academies Press, Washington, D.C.

English Language Arts from National Council of Teachers of English

The activities in this Teacher's Guide were created in compliance with the National Standards for the English Language Arts from the National Council of Teachers of English.

- Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).
- Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
- Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
- Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
- Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries.

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Technology—National Educational Technology Standards from ISTE

The activities in this Teacher's Guide were created in compliance with the following National Education Technology Standards from the National Education Technology Standards Project, the International Society for Technology in Education.

- Students are proficient in the use of technology.
- Students demonstrate a sound understanding of the nature and operation of technology systems.
- Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
- Students use technology to locate, evaluate, and collect information from a variety of sources.
- Students use technology tools to enhance learning, increase productivity, and promote creativity.

"The National Education Technology Standards" reprinted with permission from the International Society of Technology Education.

Curriculum Areas

- Relevant curriculum areas include Health and Home Economics.

Program Overview

This program, *Food Safety*, explains why safe food handling procedures are essential in the kitchen. Viewers are introduced to dangerous food handling practices and learn why the careful handling of food is a must. Demonstrations of proper procedures include avoiding cross-contamination of tools and surfaces, handwashing, use of containers that are suited for food storage, proper methods of handling poultry and other “trouble” foods, safe temperature zones for food storage, and more. This is an informative and essential program for everyone who prepares, stores, or consumes meals, snacks, or leftovers.

Main Topics

Topic 1: Proper Shopping

Food labels can offer valuable information about keeping food safe. In addition, using your head and the rest of your senses can help you make safe food purchases.

Topic 2: Proper Storage

Understanding how and when to refrigerate, freeze, shelve, and label foods can go a long way towards keeping consumers safe. Bottom line: store it the way your grocer does!

Topic 3: Proper Thawing

Frozen foods can safely be thawed in the refrigerator, in cold water, or in the microwave.

Topic 4: Proper Cleaning

Everything that comes into contact with food—including utensils, hands, and counters—requires thorough cleaning to prevent illness.

Topic 5: Proper Cooking

For heat to kill dangerous bacteria, food preparers need to know how to maximize necessary heat exposure without ruining the food.

Topic 6: Proper Leftover Consumption

Leftovers can make a great meal or snack, as long as they are stored, labeled, and reheated using safe techniques.

Fast Facts

- More than 250 different diseases can be linked to contaminated food or drinks.
- 85% of reported cases of food poisoning could have been prevented with proper food selection and storage.
- Chemical, physical, and biological contaminants often find their way into food.
- The most common pathogens which cause food-borne illnesses are *Campylobacter*, *Salmonella*, *E. coli*, and *calicivirus*.
- The US imports over 40% of its fresh foods from Mexico, Chile, Guatemala, Costa Rica, Canada, and other countries. Seasonality, climate, and low cost necessitate these imports.
- In the US the United States Department of Agriculture (USDA) is in charge of controlling all meat, poultry, and all foods containing frozen eggs; the Food and Drug Administration (FDA) is in charge of all other foods.

- The Centers for Disease Control and Prevention (CDC) estimates that about 70% of all food-borne illness outbreaks occur in foodservice operations, compared to 20% traceable to homes.
- In the United States, around 7 million people will suffer from food-borne illnesses this year.
- 36% of Americans admit to eating pizza left over from the night before...even if it hasn't been refrigerated!
- More than a third of people typically keep their refrigerator set at 40° Fahrenheit or higher, and 41% admit they don't know the proper temperature at which their refrigerator should be set.
- Bacteria can be used to make cheese, yogurt, and medicine, and it also helps us to digest food.

Vocabulary Terms

antibiotics: Medicines created using microbes or fungi that are weakened and taken into the body to destroy harmful bacteria.

bacteria: Tiny living things that live on food, plants, animals, and soil. Under the right conditions, bacteria can double in number every 10 to 30 minutes.

Calicivirus: Pathogen found in raw shellfish, water, ice, and salads, that can spread from one affected person to another. Often known as Norwalk virus.

Campylobacter: The most commonly identified bacterial cause of diarrhea in the world, it lives in the intestines of healthy birds. Found in raw milk, eggs, poultry, raw beef, and water.

CDC: The Centers for Disease Control and Prevention. The CDC is one of the 13 major operating components of the Department of Health and Human Services.

contamination: The presence of harmful substances in food.

cross-contamination: The transfer of harmful bacteria from one food or utensil to another.

Cryptosporidium parvum: Pathogen found in contaminated water or milk; can be transmitted person-to-person.

danger zone: The range of temperatures, between 41° F and 140° F, at which most bacteria multiply rapidly.

E. coli: Species of bacteria that lives in the intestines of people and other vertebrates. Naturally occurring *E. coli* are helpful in digestion, while ingesting some types of *E. coli* can cause severe food poisoning or even death. Found in ground beef, raw milk, alfalfa sprouts, unpasteurized fruit juices, lettuce, and game meat.

HHS: The Department of Health and Human Services. The HHS is the principal agency in the United States government for protecting the health and safety of all Americans and for providing essential human services.

perishable: Likely to spoil or expire if not handled properly.

Salmonella: Used to refer to several types of bacteria, many of which cause illness in humans and animals. Found in meat, poultry, egg, or milk products.

Pre-Program Discussion Questions

1. How do you think early civilizations handled issues of food safety in their storage and preparation of foods?
2. What modern inventions do you think had the greatest impact on our ability to recognize issues of concern regarding food safety? What inventions do you think had the greatest impact on our ability to respond to those concerns?
3. Have you ever suffered from a food-borne illness? How did you determine the cause?
4. How prevalent do you think food-borne illnesses are in the United States?
5. What food safety do you currently practice? How or where did you learn it?

Post-Program Discussion Questions

1. How do you think food safety is affected by socioeconomic status?
2. What special concerns regarding food safety do restaurants face?
3. Why do you think people ignore common food safety tips, such as proper defrosting techniques?
4. What food safety techniques were you not already practicing that you will begin using?
5. What new technologies do you believe will improve food safety?

Group Activities

Food Safety Around the World

Ask students to divide into groups, with each group representing a continent other than North America (and Antarctica!). Each group should report on how different cultures within that continent's population safely (or unsafely) prepare and store their foods. Students should address similarities to and differences from how this is done in North America.

Class Picnic

Divide students into groups, and have each group prepare a picnic menu—or an actual picnic—for their own group. Ask groups to assume that there will be no refrigeration or cooking facilities at their picnic site. Have students detail the issues of food safety involved in proper selection, preparation, consumption, labeling, and storage of the food they have selected.

It Cooks! It Cools! It Does Windows!

A few years ago, an American manufacturer launched a new refrigerator with technology to provide consumers with speed chilling and speed thawing capabilities. Divide students into groups and have each group “invent” a new technology that will improve food safety in the future.

Individual Student Projects

Personal Growth

Ask students to design and conduct a scientific experiment or sociological study about one particular aspect of food safety. Examples include a comparison of mold growth on foods with or without preservatives, or an intergenerational survey of food safety behaviors.

Government Around the World

The USDA and the CDC are the two primary United States governmental bodies that deal with issues regarding food safety. Ask each student to pick a country to research and report back on how its government is involved in similar issues of public health and food safety.

If I Were a Rich Man

According to researchers at the North Carolina Agricultural and Technical State University, “not only do economically disadvantaged people have a more difficult time purchasing food, they are also more prone to food-borne illnesses.” Ask students to reflect on what some of the primary socioeconomic barriers to practicing proper food safety techniques might be. Then ask students to design a plan for remedying one of those barriers identified.

Internet Activities

Genetic Engineering

Have students use the Internet to research current issues in genetic engineering, or “modification” of foods, such as the development of foods that have prolonged shelf-lives. Students should address the health-related, economic, and ethical issues surrounding the genetic engineering debate.

Online Quiz

Have students go to www.funtrivia.com and take the quiz on Food Safety and Sanitation. Ask students to do additional Internet research on the questions they answered incorrectly, and report back to the class.

Big Brother in our Food

The two primary United States governmental bodies responsible for food safety are the United States Department of Agriculture (www.usda.gov/wps/portal/usdahome) and the Centers for Disease Control and Prevention (www.cdc.gov). Have students go to each of those sites and report back on the roles, responsibilities, and activities in which these two bodies are engaged for promoting food safety.

Assessment Questions

Q1: How many different diseases can be linked to contaminated foods or drinks?

A: More than 250.

Feedback: Most of these diseases are infections caused by a variety of bacteria, viruses, and parasites, while other diseases are caused by harmful toxins or chemicals.

Q2: In what kind of environments do bacteria thrive?

- a) Cool and dry
- b) Cool and moist
- c) Warm and moist
- d) Warm and dry

A: c) Warm and moist

Feedback: While there are some exceptions, most bacteria thrive in warm, moist, protein-rich and/or low-acid places, which is why these foods need to be refrigerated.

Q3: Who is at highest risk for food-borne illness?

A: The elderly, infants, fetuses, children, pregnant women, and those with weakened immune systems.

Feedback: Anyone, including those listed above, who may not have strong enough body systems to ward off food-borne illness is at high risk.

Q4: Where is *Salmonella* not frequently found?

- a) Raw meat
- b) Raw eggs
- c) Raw chicken
- d) Raw vegetables

A: d) Raw vegetables

Feedback: While raw vegetables, like any food, might become cross-contaminated with bacteria, *Salmonella* is most often found in uncooked poultry, eggs, and meat.

Q5: True or False: One day after the “sell by” date, a grocer is required to remove the product from the shelf.

A: False

Feedback: The “sell by” date is a *recommended* time for a grocer to sell a product, not a required date.

Q6: True or False: Peeled fruits and vegetables (like bananas and oranges) are less risky to consume than fruits and vegetables which are not peeled before eating.

A: True

Feedback: By removing the peel of the fruit, consumers reduce their risk of exposure to chemical, physical, and biological hazards. Everyone should wash or peel their fruits and vegetables before eating.

Q7: What is the proper temperature for a freezer?

- a) 40° F
- b) 32° F
- c) 0° F
- d) -32° F

A: c) 0° F

Feedback: While many foods might be safe at a slightly warmer temperature, the quality and storage time of the food is affected.

Q8: True or False: Canned goods are not affected by storage temperature.

A: False

Feedback: Canned goods should be kept in a dry, cool spot to maximize shelf life and quality.

Q9: Which is not a safe way to thaw frozen foods?

- a) In cold water
- b) In warm water
- c) In the microwave
- d) In the refrigerator

A: b) In warm water

Feedback: Bacteria thrive in warm, moist places, so warm water and countertops are to be avoided for safe thawing.

Q10: True or False: Rare meats are safe to eat if they come from a reliable butcher.

A: False

Feedback: Rare meats whose core temperature is less than 145° F run the risk of food-borne illness, regardless of how reliable the source.

WEB RESOURCES

Home Food Safety

<http://www.homefoodsafety.org/index.jsp>

Food Safety First

<http://www.foodsafetyfirst.org>

The Food Network

<http://www.foodnetwork.com>

Food Safety

<http://foodsafety.cas.psu.edu>

Gateway to Government Food Safety Information

<http://www.foodsafety.gov/~fsg/vlibrary.html>

FDA Foodborne Illness Education Information Center

<http://www.nal.usda.gov/foodborne>

Centers for Disease Control and Prevention

<http://www.cdc.gov/ncidod/op/index.htm>

National Ag Safety Database

<http://www.cdc.gov/nasd>

Additional Resources at www.filmsmediagroup.com

Available from Films Media Group • www.filmsmediagroup.com • 1-800-257-5126

Early Childhood: Food Safety

- VHS
- Includes supplement with quizzes and answer keys
- Item # 32576

This video delivers key information on serving safe food to infants, toddlers, and preschoolers, covering common bacteria, food-borne illnesses, symptoms of food poisoning, sanitizing and disinfecting, and how to be a safe shopper. Make your food safety motto “When in doubt, toss it out!” A supplement, containing the video’s goal and objectives as well as multiple-choice quizzes and answer keys, is included. Filmed in collaboration with Dr. LuAnn Soliah, a registered dietician and director of nutrition sciences at Baylor University. © 2000. (31 minutes)

Food Safety and Sanitation

- VHS
- Includes supplement with quizzes and answer keys
- Item # 32584

Food safety and sanitation go together like a hand in a glove. That’s why your students need to see this video. It addresses personal hygiene, kitchen and equipment cleanliness and sanitation, and proper cooking temperatures while offering tips on how to avoid food-related illness and injury, both at home and when dining out. Interactive scenes identify common food safety problems and encourage classroom discussion. An information-packed supplement, complete with quizzes and answer keys, is included. © 2000. (32 minutes)

Food Safety: From Market to Plate

- VHS/DVD-R
- Closed captioned
- Viewable/printable teacher’s guide online
- Item # 32554

What’s the best way to avoid *Salmonella*, *E. coli*, and other dangerous food-borne bugs? Information! Use this fact-filled video to show your students how to buy, store, and prepare delicious food with their health—and the health of anyone who eats with them—firmly in mind. At the supermarket, in the kitchen, and at the dinner table, knowledge is the key to safety. A Meridian Production. © 2000. (17 minutes)

Food Safety: What You Don’t Know Can Hurt You

- VHS/DVD-R/Digital On Demand
- Also available on CD-ROM (Windows only; Item # 11102)
- Correlates to educational standards
- Item # 11103

Can defrosted leftovers be refrozen? What is trichinosis? And if a pan catches fire, what is the best way to put it out? This concise program explains the importance of proper food handling, storage, and cooking in order to prevent spoilage, waste, and potential food poisoning. Good kitchen safety habits are detailed as well, which can help in avoiding common accidents. A Meridian Production. © 1996. (12 minutes)

Kitchen Safety Posters

- Ten 17"x22" laminated posters
- Correlates to National Standards for Family and Consumer Sciences Education
- Item # 27612

This handsomely designed poster series uses attention-grabbing phrases, informative text, and beautiful illustrations and photographs to teach important aspects of kitchen safety. Perfect for reminding and teaching students how to play it safe, whether they are preparing for a career in an industrial kitchen or learning to manage a home kitchen.

Poster topics: "Away" to Keep Safe; Kitchen Fires (Smoke Detectors); Unplug to Scrub; Microwave Safety; Cut and Burn Treatment; Stove & Range Safety; Work Area; Extinguishers; Bubble, Bubble; Food Safety. A Cambridge Educational Product. © 1996.

Safety in the Kitchen

- VHS/DVD-R
- Item # 26240

Safety and sanitation in the kitchen are areas of vital importance and must be strictly maintained in order to save yourself and your family from dangerous accidents and potentially fatal illnesses. This thorough program covers all the basics of keeping a safe and sanitary kitchen, and is divided into the following topics: burns and scalds; cuts and wounds; slips and falls; kitchen sanitation; and caustic poisons. The section on kitchen sanitation gives special attention to food-borne illnesses and their prevention. Vital information for anyone working in or around a kitchen is presented in a straightforward way, using a visually interesting approach. A Meridian Production. © 1996. (23 minutes)

Irradiation—Promise or Threat?

- VHS/DVD-R/Digital On Demand
- Preview clip online
- Closed captioned
- Correlates to the Health National Standards from the Joint Committee for National School Health Education and the American Cancer Society and the National Content Standards for Health according to the American School Health Association
- Item # 32141

The U.S. government has given its stamp of approval to irradiation as a way of killing food-borne bacteria, germs, and parasites. If irradiated food is considered safe enough to give to immune-compromised patients in hospitals and astronauts in space, why is the practice of food irradiation so controversial? This program offers a balanced look at this important method of food purification as it explains how X-rays, electron beams, and gamma radiation are used to sterilize food; identifies watchdog groups—the World Health Organization, the Centers for Disease Control and Prevention, the American Medical Association, and others—that keep an eye on the effectiveness and safety of irradiation technology; and presents the concerns of opponents. Which side of the debate are your students on? This video will definitely help them decide. A Cambridge Educational Production. © 2004. (19 minutes)

For information on other programs visit our website at

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