



Chapter 2

Food Safety

Food safety is handling, storing and preparing food in ways to keep food safe. Poor food safety can make people sick. Any illness caused by food is called foodborne illness. As safety experts, you can keep friends, family and yourself safe by practicing good food safety and sanitation and telling others about food safety.

Enjoy discovering your super safety powers!

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Safe Kitchen Cooks

How can I keep food safe and keep from getting foodborne illness?

Stopping foodborne illness starts with good food safety. First, stop the spread of bad bacteria and other microorganisms. Your hands, food and kitchen tools can all spread bad bacteria. Always wash your hands before you eat. Be sure to wash fruits and vegetables. Use clean cutting boards, knives, spoons, pots and dishtowels. Don't let juices from raw meat or raw eggs drip onto other foods or the kitchen counter.

Secondly, keep bacteria from growing fast. A basic rule is to keep hot foods hot and cold foods cold. Bacteria grow fastest in the temperature danger zone from 41 degrees Fahrenheit to 135 degrees Fahrenheit. Cold foods must be cooler than 41 degrees Fahrenheit and hot food must be hotter than 135 degrees Fahrenheit.

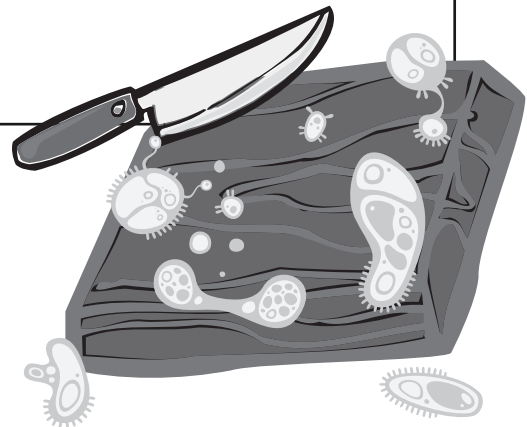
Finally, kill bad bacteria and other microorganisms. Most bad bacteria are killed when food is cooked to 165 degrees Fahrenheit. Use a thermometer to be sure meat is safe to eat. Sanitizing also kills bad bacteria. Use hot water to sanitize dishes and use kitchen cleaning solution or bleach solution to sanitize kitchen counters and sinks.

DOODLE BUGS

Name one thing you can do to stop the spread of bacteria.

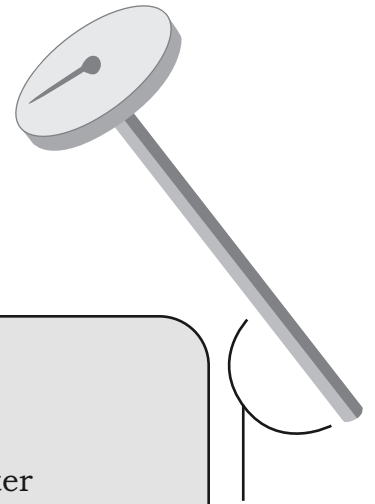
In the reading, underline a basic rule for keeping bacteria from growing fast.

Circle the temperature that kills most bad bacteria.



SCIENTIFIC INQUIRY:

Temperature and Microorganisms



Your group will need:

- | | |
|--|-------------------------------|
| 1 liquid measuring cup | 1 ice cube (optional) |
| 3 small foam cups
(labeled C, W, H) | 1/4 cup lukewarm water |
| 1 bimetallic stemmed thermometer | 1/4 cup boiling water |
| 1/4 cup cold water | 3 packets of active dry yeast |

Sensing
Area

Your teacher will demonstrate how to use a thermometer. Then each group will test how fast yeast grows at different temperatures. Bacteria and other microorganisms usually grow fast at similar temperatures. Read all the directions before you begin.

1. Put 1/4 cup of cold water and one ice cube in cup “C.” Use your thermometer to test the temperature.

Temperature of cold water: _____

2. Put 1/4 cup of lukewarm water (around 95 degrees Fahrenheit) in cup “W.” Use your thermometer to test the temperature.

Temperature of lukewarm water: _____

3. Ask your teacher to place 1/4 cup of hot water into cup “H.” Be careful with the hot water. Use your thermometer to test the temperature.

Temperature of hot water: _____

4. Pour 1 packet of yeast into each cup.
5. Wait 5 minutes and then answer the questions.
6. Look at all three cups. The yeast that bubbled the most grew the most. Order the cups from most to least yeast growth. Record the size, shape, color and foaminess of the yeast in the table on the next page.

SCIENTIFIC INQUIRY:

Temperature and Microorganisms (continued)

Yeast Growth

Water Type	Growth (circle one)	Show and Tell Draw or write how the yeast looks (size, shape, color and foaminess).
Cold water: Cup "C"	Most Medium Least	
Lukewarm water: Cup "W"	Most Medium Least	
Hot water: Cup "H"	Most Medium Least	

Circle your answer:

What temperature is more likely to kill the yeast? Hot Cold

Where do microorganisms, like bacteria, grow faster?

The freezer (0 degrees Fahrenheit) The counter (70 degrees Fahrenheit)

The cold refrigerator (39 degrees Fahrenheit)

What else do you wish you could find out?

WHILE YOU WAIT:
Kitchen Clean Up

Your group will need:

Colored pencils

The kitchen below is a food safety disaster! Find and circle 5 poor food safety practices in this kitchen.



Draw a super safe kitchen in the box below.



TRY THIS AT HOME: Clean Kitchen Test

How safe is your kitchen?

Check Always or Never for each statement.

	Always	Never
1. My family buys dented cans.		
2. We throw away all dented, rusted and bulging cans.		
3. We leave the refrigerator door open.		
4. We wash our hands with warm soapy water for 20 seconds before preparing or eating food.		
5. Pets are allowed on our kitchen counter or table.		
6. We clean the kitchen counter before preparing food.		
7. We thaw foods in the refrigerator or microwave (not on the counter or in the sink).		
8. We wash fruits and vegetables before eating them.		
9. We use a thermometer to check the temperature of our meat.		
10. We leave dirty dishes out on the counter or in the sink.		
11. We leave food on the counter (in the temperature danger zone) for more than 2-4 hours.		
12. We refrigerate or freeze leftovers right away.		

Fun Fact

Practicing good food safety at home can help keep you and your family safe from foodborne illness. If you answered always to questions 1, 3, 5, 10 or 11, or never to questions 2, 4, 6, 7, 8, 9 or 12, take corrective action to improve your food safety practices.

Sanitizing

- Sanitize counters and sinks regularly to kill harmful microorganisms.
- Your family can buy kitchen sanitizing solution or make a bleach solution by mixing 1 teaspoon of bleach with one gallon of water.

Healthy Hands



Did you know people spread microorganisms when they don't wash their hands?

Your hands are the biggest movers of bacteria to food. Your first job as a safe kitchen cook is to stop the spread of bacteria and other microorganisms. Always wash your hands before touching, cooking and eating food. Be sure to wash your hands after touching raw meat, poultry, fish and eggs. To stay healthy, always wash your hands after blowing your nose, coughing, sneezing, using the restroom, caring for pets and taking out the trash. There are seven steps for properly washing your hands. Follow these steps to stop the spread of bad bacteria to food.

Seven steps for proper hand washing:

1. Wet your hands with warm running water.
2. Use enough soap to make lots of bubbles.
3. Rub your hands together for 20 seconds or as long as it takes to sing "Happy Birthday to You."
4. Scrub under your fingernails and between your fingers.
5. Rinse off all soap under running water.
6. Use a clean paper towel to turn off the water.
7. Dry your hands with another clean paper towel.



DOODLE BUGS

In the reading, circle the biggest mover of bacteria to food.

Underline the song that you should sing while washing your hands.

SCIENTIFIC INQUIRY:

Hand Washing

Your group will need:

1 piece of paper	Sink
Pencil	Soap
Glo Germ™ gel	Paper towels
UV light	1 red marker
1 yellow marker	1 green marker (optional)

You will use Glo Germ™ gel and a UV light to learn more about proper handwashing. Only turn the UV light on when needed! Never point the UV light at anyone's eyes!

1. Choose a reader, recorder, a hand washer and a prop person.

Reader's name: _____

Recorder's name: _____

Washer's name: _____

Prop person's name: _____

2. Prop person: Gather needed supplies.

Reader: Read the proper hand washing instructions out loud to the group.

Recorder: Trace an outline of a hand on a piece of paper.

Washer: Rub a small amount of Glo Germ™ gel on your hands.

3. Prop person: Hold the UV light above the washer's hands.

Everyone: Look at the glowing germs!

Recorder: Use a yellow marker to color the glowing areas on the traced hand.

4. Washer: Properly wash your hands at the sink.

Prop person: Hold the UV light above the washer's hands.

Everyone: Look at the glowing germs!

Recorder: Draw red dots on the traced hand for any remaining glowing areas.



5. (Optional)

Washer: Properly wash your hands at the sink.

Prop person: Hold the UV light above the washer's hands.

Everyone: Look for glowing germs!

Recorder: On the traced hand circle any remaining glowing areas with a green marker.

6. Reader: Read the following questions.

a. What surprised you the most during this experiment?

b. Do you think bacteria will stay on your hands if you don't wash them? (Circle one.)

Certainly

Most likely

Unlikely

c. Do you think you can get all the bad bacteria off your hands if you properly wash them? (Circle one.)

Certainly

Most likely

Unlikely

d. What could you do at school to teach other kids about hand washing?

TRY THIS AT HOME:

Wash Away Germs

You will need:

2-3 teaspoons of cooking oil
1 teaspoon cinnamon

ACTIVITY TIME: 10 minutes

A helper
(parent, sister/brother or friend)

How clean are your hands?

1. With hands over the sink, pour 2-3 teaspoons of cooking oil into your helper's hands.
2. Then sprinkle the cinnamon onto their hands. Pretend that the cinnamon is bacteria.
3. Have your helper rub their hands together.
4. Then tell you helper to wash their hands but without using soap. Sing "Happy Birthday to You," while they wash their hands.
5. Look at their hands. Can you still see any cinnamon (bacteria)?
6. Have your helper wash their hands properly. (See instructions below.)

Was more bacteria (cinnamon) washed off when they washed their hands without soap or with soap?

Fun Fact

Washing your hands helps stop germs from spreading and causing foodborne illness. Always wash your hands:

- Before you eat, cook or set the table
- After touching raw meat, poultry or eggs
- After going to the restroom
- After coughing, sneezing or blowing your nose
- After touching cuts, scrapes, burns or scabs

Proper Hand Washing Instructions

1. Wet your hands with warm running water
2. Add soap
3. Rub hands together while singing "Happy Birthday to You"
4. Scrub under fingernails and between every finger
5. Rinse soap off with running water
6. Use a clean paper towel to turn off the water
7. Dry hands on a clean paper towel

Proficiency Questions

Circle the best answer:

1. Where do bacteria grow fastest?

- a. in the freezer (0 degrees Fahrenheit)
- b. in the refrigerator (39 degrees Fahrenheit)
- c. on the counter (70 degrees Fahrenheit)
- d. on the hot stove (200 degrees Fahrenheit)

2. Why should you sanitize the kitchen counter?

- a. to make the kitchen smell good
- b. to make the kitchen smell bad
- c. to cover up microorganism
- d. to kill microorganisms

3. What are the biggest movers of bacteria?

- a. hands
- b. feet
- c. noses
- d. lips

4. How long should you wash your hands?

- a. 10 seconds
- b. 60 seconds
- c. the time it takes to sing the “Star Spangled Banner”
- d. the time it takes to sing “Happy Birthday to You”