



Food spoilage? Not so fast!

Volume 16 | Gr. 9-12

Time: 4–5 Days



FPP.01.02.

Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.

FPP.03.02.03.c.

Devise and apply strategies to preserve different foods using various methods and techniques.

FPP.01.03.01.c.

Prepare plans that ensure implementation of proper food storage procedures.

Materials list

- 5 apples (1 per group)
- 25 fresh green beans (5 per group)
- 5 hard boiled eggs (1 per group)
- 5 lbs. pork roast (1 lb. per group)
- 15 slices of cheese (3 slices per group)

Need at least 3 of the following:

- NESCO® Gardenmaster® Auto-Shutoff Food Dehydrator ([WA05200](#)) or Aroma® Digital Food Dehydrator ([WA33865](#)) (remove moisture)
- NESCO® Black and Silver Food Vacuum Sealer (remove oxygen) ([WA32130](#))
- Air sealer bags
- Stove (heat)
- 4" x 4" Papier-Mâché Pot, 1 qt. ([9728002](#))
- Mason jars (lower pH)
- Vinegar, 5% Solution, 1 pt. ([K00364](#))
- Freezer (freeze)

Day 1

Introduction

- Who has ever had food poisoning or been food sick?
- What was that experience like?
- Why is food safety important?

Activity

- Go over Basic Food Safety Slides and have students take notes
- Pay special attention to Slide 7–Ways to Overcome Bacteria Growth

Closure

Answer in notes: Why is food safety important?



Days 2-3 (Allow ample time for plan development and feedback.)

Introduction

- How many of us are good cooks?
- Why is cooking food important?
- Today, we are going to learn some other ways to “cook” food. Although all of these are not really cooking, they have the same function—to extend the shelf life of food.

Activity

1. Split the class into 5 groups (or as many of the methods as you will be able to execute).
2. Assign each group one of the 5 methods
 - a. Remove moisture
 - b. Remove oxygen
 - c. Lower pH
 - d. Heat/pasteurize
 - e. Cool/freeze (would work best for SPED students, might combine with other methods)
3. Give them a list of foods they have to “keep safe” using their assigned methods:
 - a. Apples
 - b. Beans
 - c. Milk
 - d. Pork Roast
 - e. Cheese
4. Ask students to come up with a step-by-step method for how they will apply their Step 2 method to each one of the foods listed in Step 3.
5. Use the internet to help students identify techniques used to execute each method, such as pickling for pH, pasteurize for heating, or the way to cut food for the dehydrator.
6. Make sure to note that not all methods will work for all foods, such as milk cannot be pickled.

Teacher note: Collect and review student plans to determine how well they will work and provide written feedback.

Closure

1. What food will work best for your method?
2. What food will not work for your method?

Days 4-5 (These activities will most likely take two days, depending on any extra time needed for editing plan.)

Introduction

- How confident are you with your plans?
- Last night I reviewed the plans. If there were steps that need clarification, it was noted. Today we are going to spend X number of minutes completing our plans.

Activity

1. Clean/sanitize each station.
2. Distribute supplies (dehydrator, pans, bags, etc.).
3. Distribute foods.
4. Tell them to start walking step-by-step through their plan.
5. Remember, plans must be carried out for each food.

Teacher tips:

- Dehydrator will need to be run for at least 8 hours (plan accordingly).
- If food prep takes more than one day, food will need to be refrigerated—so make sure you have made arrangements.
- Make sure each group has a clear plan.
- Be prepared to help. It might be great to have paraprofessional, second teacher, or school volunteer to help.

Closure

Reflect:

- a. What food is preserved best with our method?
- b. How long do you think each food will last now compared to how long it would have before treatment?
- c. What methods can we conduct in our house to help reduce food waste?



Food Safety

Intro. To AFNR



Food Safety

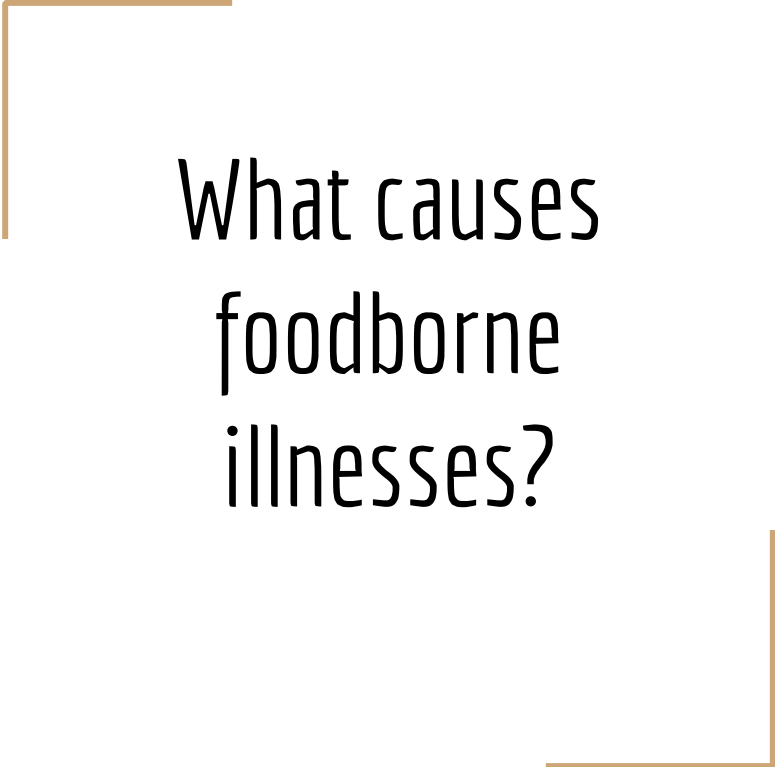
- America does have the safest food supply in the world
- Can anyone think of any famous/recent foodborne illness outbreaks?



Foodborne Illness

- Symptoms:
 - 24-hour flu
 - Diarrhea
 - Upset stomach
 - Vomiting
- By the Numbers
 - 120,000 Hospitalizations a year
 - 3,000 deaths
 - 48 Million Cases per year
 - Estimated most do not get reported
 - Possibly 200 million cases/year

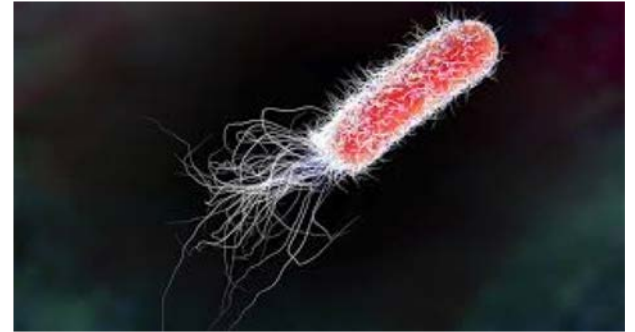


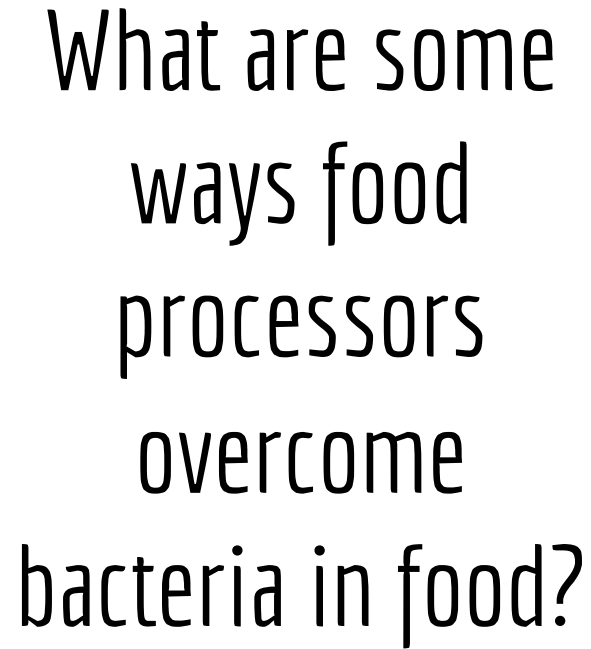


What causes
foodborne
illnesses?

Bacteria

- Even a few number can cause illness
- E. coli and salmonella are two popular strains
- Standard Plate Count (SPC) is a measurement of all living microorganisms and serves as a way to measure cleanliness and sanitation
 - Most foods have standard limits





What are some
ways food
processors
overcome
bacteria in food?

5 Ways to Overcome Bacteria Growth

- Cool
- Heat
- Lower pH
- Remove Oxygen
- Remove Moisture

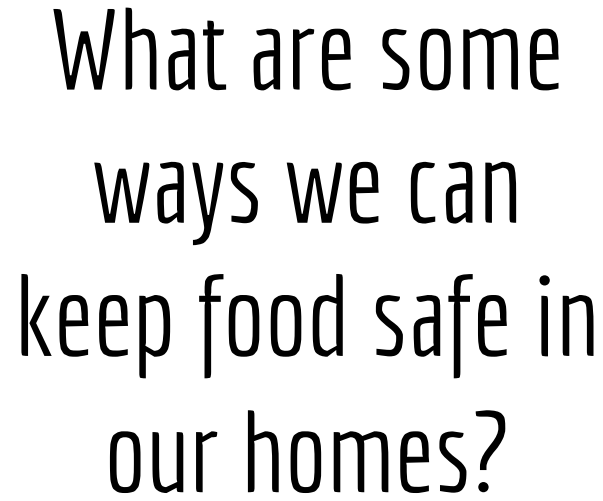


Controlling Microorganisms in Meat-in processing

Hazard Analysis and Critical Control Points

1. Analyze hazards
2. Identify critical control points
3. Establish preventative measures
4. Set procedures to measure critical control points
5. Establish corrective actions
6. Verify system is working properly
7. Establish an effective record keeping system





What are some
ways we can
keep food safe in
our homes?

Keeping food safe in our homes

- Keep food refrigerated or frozen until it is needed
- Wash ALL fruits and vegetables before eating
- Cook food/meat properly
- Wash hands before cooking
- Keep counter, pots, pans, utensils clean



Controlling Microorganisms in Meat-in our home

- Cook meat to proper temperature
 - Beef- 145
 - Ground beef- 160
 - Poultry- 165
 - Pork- 145
 - Fish- 145
- Keep refrigerated (7 days max) or frozen
- Ensure juices do not get on other food
- Wash hands after handling and before touching anything else

