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Safe Food Preparation

The Science of Food: Activity 10

Nancy Moreno, PhD.
Barbara Tharp, MS.

Center for
Educational Outreach

Baylor College of Medicine

BioEd Online

Safe Food Preparation

This activity's objectives are aligned with the National Science Education Standards, specifically those related to Science as Inquiry and Physical Science. In this activity, students will learn about—and practice—safe food preparation by making fruit ice cream in class. They will learn the importance of using clean utensils, washing work surfaces, and washing their hands before beginning any food preparation. Students will measure, plan a step-by-step procedure, and make observations.

The following science concepts are addressed in this activity.

- Simple steps can be taken during food preparation to reduce the risk of food contamination.
- Snacks can be nutritious and fun!

Student Worksheets

Student pages in the teacher's guide are provided in English and in Spanish.

Reference

Moreno N., and B. Tharp. (2011). *The Science of Food: Teacher's Guide.* Fourth edition. Baylor College of Medicine. ISBN: 978-1-888997-76-7. Development of this student activity was supported, in part, by grant numbers R25 ES06932 and R2510698 from the National Institute of Environmental Health Sciences of the National Institutes of Health to Baylor College of Medicine.

Image Reference
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Key Words
food, safe food, food preparation, clean, separate, cook, chill, wash, wash hands, bacteria, undercooked, food poisoning, E. coli,

Materials

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Materials

Have students work in teams of 2 and share materials to freeze the ice cream. Each student should prepare his or her own batch of ice cream.

Per Student Team

- Clean-up supplies
- 6 tbs of rock salt
- 1/2 gal of ice
- Clear, re-sealable plastic bag, freezer weight, 12-in. x 15-in. (gal size)
- Measuring cups
- Measuring spoons

Per Student

- 1/2 cup of whole milk
- 1/2 tsp of unflavored gelatin
- 1/4 cup of orange juice
- Clear, re-sealable plastic bag, freezer weight, 4-in. x 6 in.
- Plastic spoon
- Tablespoon of sugar

- Copy of “Good and Healthy!” student page

Optional (for Extension)

•Chocolate chips

•Sprinkles

•Bananas

•Strawberries

•Blueberries

Setup

Arrange measuring tools and ingredients along a counter, “cafeteria style,” where students can collect their supplies. Students should model safe food preparation practices by using clean utensils, washing all work surfaces and washing their hands before beginning. New re-sealable plastic bags do not need to be washed before use.

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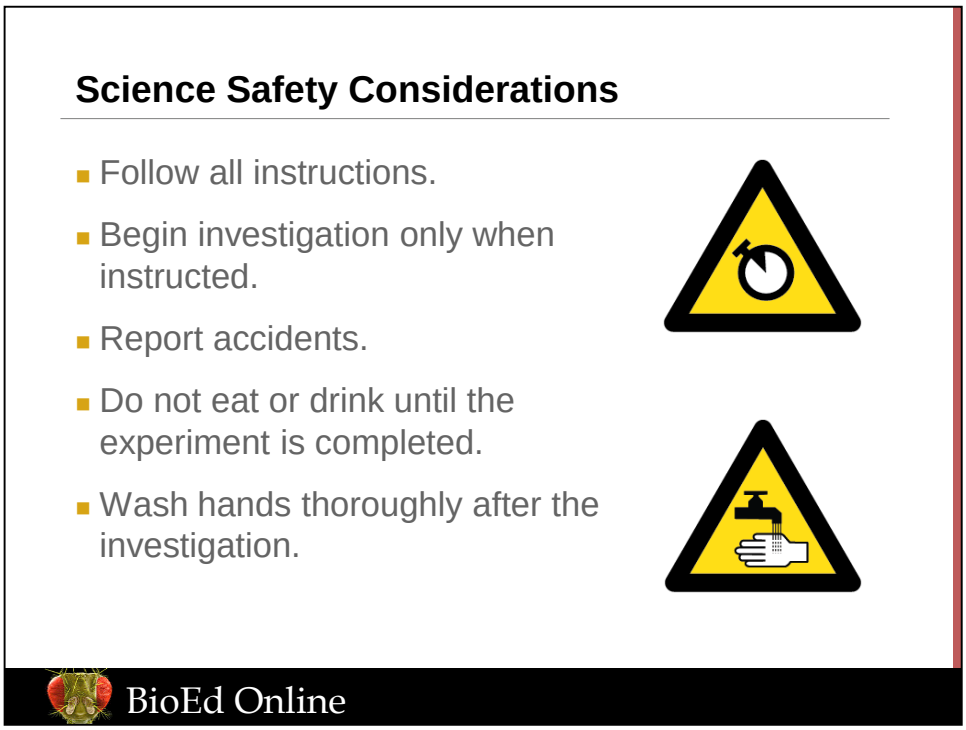
Image Reference

Photo by Christopher Burnett and Michael Vu © Baylor College of Medicine.

Key Words
materials list, materials needed,



Science Safety Considerations

Students always must think about safety when conducting science investigations. This slide may be used to review safety with your class prior to beginning the activity.

Safety first!

•Always school district and school science laboratory safety guidelines.

•Have a clear understanding of the investigation in advance.

•Practice any investigation with which you are not familiar before conducting it with the class.

•Make sure appropriate safety equipment, such as safety goggles, is available.

•Continually monitor the area where the investigation is being conducted.

Safety Note

Clean work areas with disinfectant prior to conducting the activity.

References

1.Dean R., M. Dean, and L. Motz. (2003). *Safety in the Elementary Science Classroom*. National Science Teachers Association.

2.Moreno N., and B. Tharp. (2011). *The Science of Food Teacher's Guide.* Fourth edition. Baylor College of Medicine. ISBN: 978-1-888997-76-7. Development of this student activity was supported, in part, by grant numbers R25 ES06932 and R2510698

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Key Words

science, classroom, safety, lab, laboratory, rules, safety signs,

Keeping Food Safe to Eat

Begin the activity by asking, *Can food be spoiled by bacteria?* Tell students that bacteria that cause food-related illnesses can be spread when hands and food preparation areas are not kept clean, or when food is not kept at the proper temperature.

Next, ask students to suggest precautions that can be taken to avoid contaminating food during preparation. List their ideas on the board. Explain that simple actions, such as washing hands before eating or preparing food, help to reduce the possibility of spreading bacteria or other harmful substances to food.

Tell students that they will learn about safe food preparation by making one of their favorite foods—ice cream. Review the steps they will follow to make their ice cream, as listed on the "Good and Healthy!" sheet. Have students identify the steps that will require special care to keep their food clean.

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Image Reference

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http://www.freeimages.com/photo/1007703

Key Words

food, safe food, food preparation, clean, separate, cook, chill, wash, wash hands, food safety,

Let's Get Started

In this activity, students will learn about—and practice—safe food preparation by making fruit ice cream in class. They will learn that safe food preparation procedures include using clean utensils, washing work surfaces, and washing hands.

Have each student measure the following ingredients into a small, freezer-weight, re-sealable plastic bag: 1/4 cup of orange juice, 1/2 teaspoon of gelatin and 1 tablespoon of sugar. Have students seal, and then shake their bags to mix these ingredients together.

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Image Reference

Key Words

lesson, experiment, food, safe food, food preparation, ingredients, clean, separate, cook, chill,

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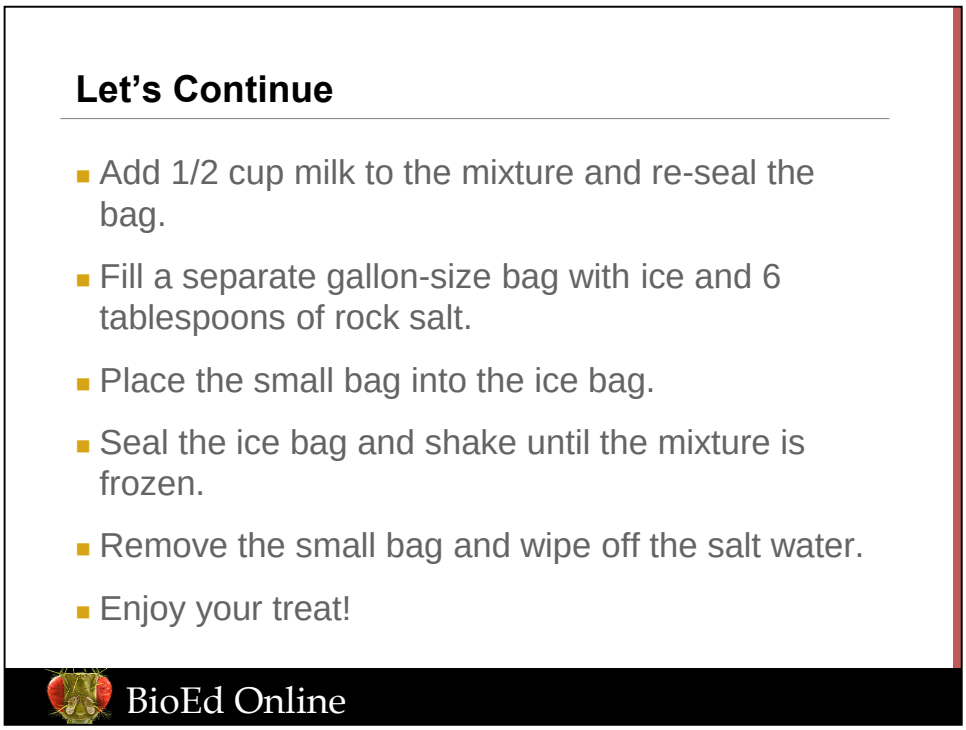

Let's Continue

•Have students open their bags and add 1/2 cup of whole, unflavored milk to their mixtures. Have each team of two students fill a gallon-size, re-sealable plastic bag about halfway with ice, and then add about 6 tablespoons of rock salt.

•Direct both members of each team to place their bags into the larger "ice" bag and seal the large bag carefully. Have students take turns shaking the gallon bags until the mixture in their smaller bags freezes.

•Let students remove their individual smaller bags, wipe or rinse off the salt water and enjoy their ice cream treat.

•Later, have each student write a paragraph describing the steps he or she followed to make ice cream. Have students include descriptions of how they kept their food and work areas clean.

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lesson, experiment, food, food preparation, food safety, cooking, bacteria, ingredients, washing hands, clean surfaces, undercooked food, temperature, spoiled, food-borne illness, E. coli,

Let's Talk About It

This activity teaches students safe food preparation procedures while they make ice cream. Students learn the importance of washing hands and keeping cooking utensils and cooking surfaces clean during food preparation.

Ask students, *Did you create and maintain a clean food preparation area? What precautions did you take to avoid food contamination? Is your ice cream safe to eat? Do you think your ice cream would still be safe to eat if it was left on the table until tomorrow?*

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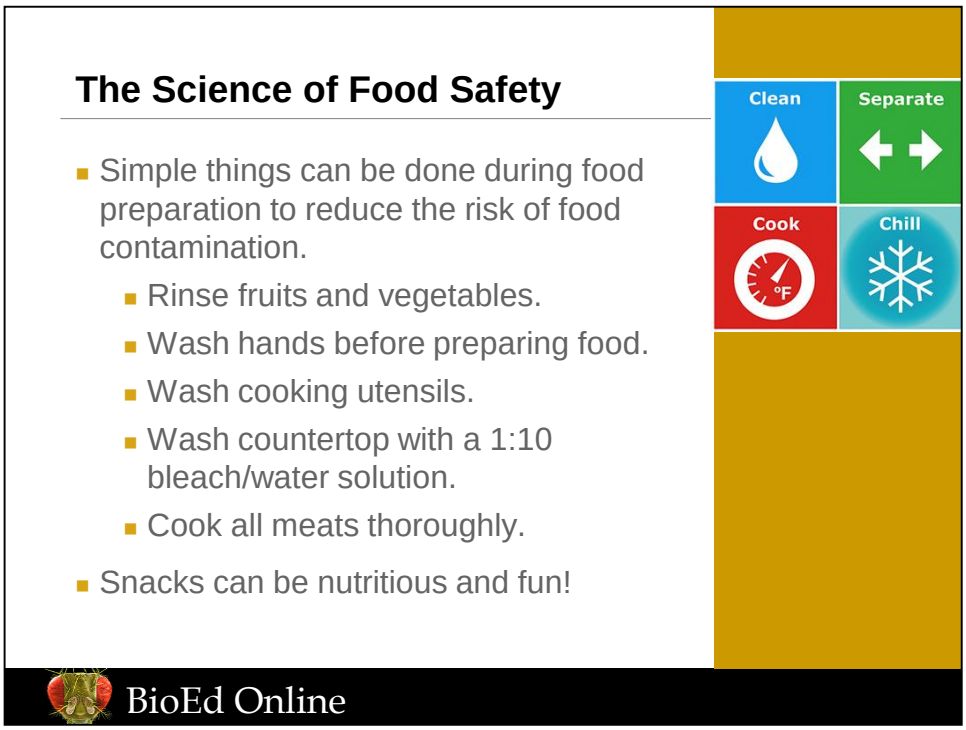

The Science of Food Safety

In this activity, students observed the following properties of food.

- **Simple things can be done during food preparation to reduce the risk of food contamination.** Some important food preparation tips include the following: always rinse fruits and vegetables (but not meat, poultry or eggs); wash hands before preparing any food; wash cooking utensils, such as knives and cutting boards, in hot, soapy water; clean cutting boards and work surfaces with a 1:10 bleach and cold water solution to kill bacteria; always wash cutting boards between preparing different food items; cook all meats, fish, eggs and poultry at the right temperature; use ground meats within 24 hours of purchase (or freeze them) and cook thoroughly; in home gardens, use pesticides as sparingly as possible; avoid eating fish and seafood from polluted water.

- **Snacks can be nutritious and fun!** A diet that includes a lot of "junk" foods is harmful in two ways. First, it does not provide all of the vitamins, minerals and other substances needed for growth and health. Second, most diets with many sweets and fatty foods deliver too many calories. The fruit ice cream in this activity provides a cold, sweet, nutritious treat!

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Image Reference

Illustration courtesy of the U.S. Department of Health & Human Services. 4 Simple Steps to Food Safety. http://www.foodsafety.gov/keep/basics/index.html

Key Words

food, food preparation, food safety, cooking, cooking temperature, bacteria, washing hands, clean surfaces, undercooked food, temperature, spoiled, food-borne illness, wash,

Extensions

•Have students bring different kinds of fruit from home to add to their ice cream. A quarter-cup of mashed bananas or strawberries, raisins, or another kind of juice can be substituted for the orange juice used in the original activity.

•Students also could bring chocolate chips, sprinkles, etc. to add to their ice cream.

•Invite students to share the ice cream recipe—and the safe food preparation procedures learned in the activity—with their friends and family members.

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Image Reference

1.Photo of blueberries courtesy of vanora. Getty Images: Free Images\666889. http://www.freeimages.com/photo/666889

2.Photo of chocolate courtesy of C. Spaulding. Getty Images: Free Images\263729. http://www.freeimages.com/photo/263729

3. Photo of plantains courtesy of L. Brito. Getty Images: Free Images\572150. http://www.freeimages.com/photo/572150

4.Photo of sprinkles courtesy of M. Lastre. Getty Images: Free Images\1210695. http://www.freeimages.com/photo/1210695

5.Photo of strawberries by B. Prechtel, courtesy of the U.S. Department of Agriculture, Agricultural Research Service. http://www.ars.usda.gov/is/graphics/photos/jan01/k9189-1.htm

Key Words
lesson, experiment, extensions, food, food preparation, food safety, cooking, bacteria, washing hands, clean surfaces, undercooked food, temperature, spoiled, food-borne illness, E. coli,