

Food Safety 101

Science, Health

Materials

- Glo Germ™ powder
(available from <http://www.glogerm.com/>)
- Black light
- Disposable cutting boards
- Paring knives or plastic knives (one for each student)
- 1 plastic bowl for each group of 2-3 students
- Fruit: strawberries, cantaloupe, apple

Grade Level: 3-4

Time: 45 minutes

Standards:
Science

Overview

The World Health Organization recognizes that food safety is an increasingly important public health issue, and as a result, governments all over the world are increasing their efforts to improve food safety in their countries. The food supply in our country is one of the safest in the world, and although our government and the food industry are continually working to ensure a safe food supply at the national level, food safety begins in the home. Consumers must take responsibility and implement good food safety practices when preparing, serving and storing foods. These consumers include children and young adults, who are frequently shopping for and preparing their own food with minimal parental supervision.

Objectives

1. Students will understand the importance of smart preparation and handling of food.
2. Students will learn the four steps for promoting a clean and safe environment when preparing, handling and storing food.

Instant Expert

Exploring Kansas Crops Educator's Guide. Plants for food. Kansas Foundation for Agriculture in the Classroom. Newly revised version available spring 2010. *To order, visit www.ksagclassroom.org.*

Background Information

Good personal hygiene is the key to staying healthy and preventing food borne illness. Thorough hand-washing is important, and hands should be washed for at least 20 seconds with hot, soapy water. According to the Partnership for Food Safety Education, hands should always be washed after using the bathroom, changing a diaper, cleaning a litter box, or handling a pet. In addition, cooking surfaces should be cleaned well before and after food preparation to prevent cross-contamination. Extra precaution should be taken when a person is experiencing symptom related to the common cold or seasonal flu: sneezes should be directed towards the inside of

Food Safety 101

the elbow, hands should be washed often, and touched surfaces should be disinfected frequently.

Practices related to food safety are extremely important in the home, especially in the kitchen where food is prepared and served. Promoting a clean and safe environment is easy, especially if four simple steps are followed: clean, separate, cook and chill.

Clean

Bacteria can be easily spread, getting onto hands, cooking surfaces, utensils and gadgets and food. Washing hands thoroughly is extremely important; hands should be washed before food is touched and after, especially raw meat is being handled. Cooking surfaces, utensils and gadgets should also be cleaned with hot, soapy water after preparing each food item and before the preparing the next food item. Using a vegetable brush if necessary, fruits and vegetables should be rinsed well with tap water before consuming or serving to prevent food borne illness. Fruits and vegetables with skins or rinds that are not eaten should also be rinsed well with tap water.

Separate

Keeping raw meats, poultry, seafood and eggs separate from other foods is essential to avoiding cross-contamination, which is contamination of a food from another source. Raw meats, poultry and seafood should be stored properly in sealed containers so their juices do not drip in the refrigerator or on other foods. Before preparing food, hands, cooking surfaces and utensils should be washed well with hot, soapy water. It is recommended to never place cooked or prepared foods on a plate or surface that previously held raw meat, poultry, seafood or eggs. In addition, two cutting boards should be used if produce and raw meat are simultaneously being prepared.

Cook

To kill bacteria, meat, poultry, seafood and eggs must reach a critical temperature. A food thermometer is used to measure the internal temperature of foods, and these should be inserted into the center of the food, where it takes the longest for heat to reach. It is extremely important to remember that the color of a cooked food is not an indicator of doneness; a food thermometer is only way to truly tell if a food has reached a safe internal temperature. Also, avoid cold spots in food, especially if a microwave oven is used to prepare the food. Rotating the food and stirring it often is the best way to ensure even cooking.

Chill

Cold temperatures slow the growth of bacteria. Refrigerating or freezing foods as quickly as possible is necessary, whether it is right after a trip to the grocery store or within two hours after a food is cooked or served. It is important that a refrigerator's temperature is below 40°F and a freezer's temperature is below 0°F. Defrosting frozen foods should never be done at room temperature; instead, defrosting should be done in a refrigerator, cold water or in the microwave. However, if food is defrosted in cold water or the microwave, it should be cooked right away. To avoid food borne illness, it is also recommended that refrigerated foods should be used or discarded on a regular basis.

Food Safety 101

Each year millions of illnesses in this country can be traced to food borne bacteria, and these unwanted pathogens can cause minor distress to severe symptoms in persons they affect. Symptoms of such an illness are specific to each pathogen, and some of the biggest contributors of food borne illness include *Escherichia coli* O157:H7, *Salmonella*, *Listeria monocytogenes*, and *Norovirus*. While food businesses and processing companies do their best to keep these microorganisms out of the food supply, it is possible for foods tainted with these pathogens to reach the consumer; therefore, smart sanitation should always be practiced in the home to prevent sickness.

Information from Exploring Kansas Crops Educator's Guide. Plants for food. Kansas Foundation for Agriculture in the Classroom. Newly revised version available spring 2010. To order, visit www.ksagclassroom.org.

Preparation

1. Wash all fruit and clean cutting boards and knives prior to starting this lesson.
2. Prepare a place on each cutting board for 3 large strawberries and ½ cantaloupe or apple.
3. Sprinkle some Glo Germ™ powder on the cutting board and/or plastic knife blade.
4. *Optional: prepare a fruit salad with fruit that does not contain Glo Germ™ for students to enjoy during the discussion.*

Instructional Format

1. Students will perform this activity in groups of 2-3 students.
2. Upon completing the lesson, share background information with the students.
3. Students will answer conclusion questions and discuss the activity.

Procedures

1. Have students enter brightly lit lab area.
2. Instruct groups of 2-3 students to go to a cutting board and begin to cut the fruit for a fruit salad.
3. Tell students to place the cut fruit into the bowl.
4. Turn off the lights and use a black light to show the “contamination” of microorganisms on the fruit. This could happen if the cutting board were contaminated by use and not cleaning afterward or by the knife that could be unclean or by unclean hands.
5. Explain to the students that this activity is for demonstration purposes: fruit, cutting boards, and knives were all washed prior to the exercise.
6. Students may eat fruit that does not contain Glo Germ™ while the class engages in a discussion about food safety practices.
7. Discussion points to focus on include: what happened during the exercise; in what ways could this have been prevented, etc.

Conclusion Questions (Assessments)

1. What are the four steps for promoting a clean and safe environment when preparing, handling and storing food?

Clean, separate, cook and chill.

Food Safety 101

2. What is a food borne illness?

A food borne illness is caused by unwanted pathogens present in food that cause minor distress to severe symptoms in persons they affect. Symptoms of such an illness are specific to each pathogen, but common symptoms include diarrhea and vomiting.

3. How can food borne illnesses be prevented in most homes and restaurants?

The four steps for promoting a clean and safe environment when preparing, handling and storing food should be followed: clean, separate, cook and chill. Also, handwashing is key – when in doubt, always wash your hands.

Resources

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