



COURSE 2:

Food Production, Nutrition and Health

WHEN FOOD IS THE ENEMY



**food and
nutrition sciences**

PREPARATION FOR TOMORROW





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Project Overview



CONCEPT/DESCRIPTION

- 1 Students differentiate between types of milk. Students identify alternative foods for individuals with food allergies/sensitivities.
- 2 Students identify common food allergies. Students explain why food allergies are a significant issue in schools.
- 3 Students determine the scope and meaning of the project.
- 4 Students define food allergy and food intolerance. Students describe the difference between food allergy and food intolerance. Students identify types of medical testing used to identify food allergies.
- 5-6 Students identify the top 8 allergy-causing foods. Students will define IgE and explain the effects of food allergies caused by IgE. Students will distinguish between IgE-mediated food allergies and non-IgE-mediated food allergies. Students will describe the similarities and differences between peanuts and tree nuts.
- 7 Students identify where food allergy risks are located in the grocery store. Students identify foods that are likely processed in a shared facility with allergenic foods. Students read and interpret allergy information on a food label.



CONCEPT/DESCRIPTION

- 8-9 Students explain how food companies protect the health of allergic consumers. Students describe testing methods to detect the presence of food allergens. Students differentiate between clean and sanitize.
- 10-11 Students describe the treatment methods and accommodations for food allergy sufferers. Students define anaphylaxis and epinephrine. Students assess the social and nutritional implications of food allergies. Students will describe how food allergic reactions can be prevented.
- 12-14 Students determine the prevalence of food allergies within the school. Students analyze statistical data.
- 15-20 Students justify arguments with supporting data and information. Students summarize key information about the topic of food allergies. Students demonstrate knowledge of food allergies through class presentations.

Additional Resources:

Emergency Allergic Reaction Care Plan: www.foodallergy.org/file/emergency-care-plan.pdf

Recipe Database for Allergies: www.kidswithfoodallergies.org

List of Snacks that are Safe for Food Allergies: www.snacksafely.com

Updated list of recalls: www.fda.gov/Safety/Recalls/



Key Question of the Day:

Can you taste the difference?

(Each day the key question should be prominently displayed and used to open the lesson.)



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Differentiate between types of milk.
- Identify alternative foods for individuals with food allergies/sensitivities.
- Analyze nutrition information for different “milk” products.



Required Materials

- Weekly Bell-Work journal – [Appendix 1](#) – One for each student
- Daily Exit Ticket – [Appendix 2](#) – One for each student
- [Appendix 17](#)
- Small plastic cups
- Almond milk
- Soy milk
- Cow’s milk
- Coconut milk
- Lactose free milk
- Rice milk
- Crackers or apples
- Permanent marker
- Index cards
- Computers
- Internet
- Flip chart
- Markers
- ✓ **TEACHER TIP!** Small containers of each product could be purchased because the students will taste a small amount, and they likely won’t even drink the entire sample. Also, feel free to adapt the types of milk on the list and purchase whatever you have access to at your local store. The control is cow’s milk, but for the variables, you can use five types or three types or eight types. Feel free to adjust this to fit your resources.



Bell-Work

(Each day the Bell-Work question should be prominently displayed and used to open the lesson)

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- **“What would life be like if you couldn’t eat the foods you love?”**

OPENING

(Designed to **prepare** students for learning. Students are prepared for learning by activating an **overview** of the **upcoming** learning experience, their **prior knowledge**, and the **necessary vocabulary**.)

- Read the Bell-Work question and solicit responses from the students.
- Possible responses may include:
 - › Hard because food choices would be limited
 - › Not as fun
 - › Difficult to eat in restaurants
- Explain that, **“For people with food allergies and sensitivities, eating can be a challenge. As we prepare to learn more about food allergies, we’re going to learn about some of the options available for people who can’t drink milk.”**

MIDDLE

(Designed to provide a **structure** for learning that actively promotes the **comprehension and retention** of knowledge through the use of **engaging strategies** that acknowledge the brain’s limitations of **capacity and processing**.)

- Students will work independently for this lab.
- Teacher prep:
 - › Assign each type of milk a number.
 - › Number the cups to correspond with the numbers of the milk samples.
 - › Pour a small amount of each milk into the corresponding cups.
 - › Align the cups for each type of milk in a row so they are easy to distribute to the students.

- › Provide students with crackers or apples. They should take a bite between tasting each sample to cleanse the palate.
- Students will take one cup of each type of milk.
- The cow's milk will be the control and the other types of milk will be the variables.
 - › Make a list of the milk samples on the board, but they should not be in the correct answer order.
- Students should create a hypothesis to determine which milk product would be a good alternative to cow's milk.
- Students will conduct a sensory evaluation of each type of milk using [Appendix 17](#).
 - › They should examine the following:
 - › Color
 - › Aroma
 - › Texture/consistency
 - › Flavor
- Once the sensory evaluation is complete and students have completed their table, create a numbered list on the board or other writing surface and have students raise their hands for each sample. For example, "Raise your hand if you think number 1 was ____." Tally the number of votes next to each sample.
- After the students share their responses for each sample, fill in the blank with the correct sample.
- Be sure to emphasize that despite the difference in flavor (if any) there are plenty of milk substitutes available for individuals who can't have milk.
 - › Ask the following reflection questions:
 - › Which milk did they like the most? The least?
 - › What were the distinguishing characteristics between each sample?
 - › Would they drink any of them just because?
 - › How would they feel if they were always limited to those products (other than cow's milk)?
- Transition by assigning each team different milk products to research. For example, if you have six samples for the sensory evaluation, then each team should be assigned two milk products.
 - › Be sure to give each team the packages including the nutrition label for each milk product.
 - › Also, give each team the price of the milk products they are assigned.
- Each team will create a poster comparing the price and nutrition information for their milk products.
 - › The poster should include the name, price, serving size for the package, expiration date (shelf-life), and nutritional information for each product.
- Once they class is finished making the posters, each team should hang the posters around the room and have a gallery walk where students will rotate to each poster to see the information about each product.
- Bring the class back together and have a discussion about what life would be like if students had to use these products. Ask the following questions:
 - › Which product is the most nutritious?
 - › How would being limited to these products due to a milk allergy or sensitivity affect your overall health?
 - › How would using these products impact food preparation for recipes that use milk?

CLOSING

(Designed to promote the **retention of knowledge** through the use of engaging strategies designed to **rehearse and practice skills** for the purpose of **moving knowledge into long-term memory**.)

- Provide each student with the weekly Exit Ticket handout [Appendix 2](#).
- Students will turn in their Exit Ticket for that day. They will respond to the following prompt: **"What did you learn today?"**
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

What foods are you allergic to?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Identify common food allergies.
- Explain why food allergies are a significant issue in schools.



Required Materials

- Flip charts for the students
- Markers
- Post-it notes
- Writing surface for the teacher (white board, flip chart, PowerPoint slide, etc.)
- News articles – [Appendix 4](#) - One copy divided into articles
- Weekly Bell-Work journal – [Appendix 1](#) – One for each student
- Daily Exit Ticket – [Appendix 2](#) – One for each student



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- **“Do you or does someone you know have a food allergy? If so, what is the cause of the allergy?”**

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
 - › Take note of student responses for discussion and to reference during this lesson.
- The point to be made, **“Food allergies are a growing issue among America’s youth. Let’s explore a few issues related to food allergies that have been in the news as we start to think about the implications of food allergies in schools.”**

MIDDLE

40 minutes

- Divide the class into three groups.
- Distribute a copy of the [Appendix 4](#) news article to each team. Each team should have a different article. (Each article focuses on a different scenario related to food allergies in schools.)
 - › Note: Feel free to use different articles that might be more current at the time you deliver this lesson.
- Within their teams, students should read the article and on a sheet of flip chart paper, summarize at least 4 key points from the article.
 - › The article summary should be created as images, where the students will draw pictures to represent key points and terms instead of using words.
- While reading the article, students should identify at least 5 key vocabulary terms related to food allergies and list them on a Post-It note.
 - › Each word should be written on a separate Post-It.

- When the students are finished, ask them to share their article summaries with the class and explain the images to the class.
 - › Have students stick their vocabulary terms on a wall somewhere in the room. The idea is that this will be the start of a word wall, and throughout the key terms will be revisited and defined.
 - › Make a list of common themes on the board or other writing surface.
- Follow the article sharing with a discussion about the common themes of the articles and how they might relate to what students previously shared about personal experiences with food allergies.

CLOSING

5 minutes

- Provide each student with the weekly Exit Ticket handout [Appendix 2](#).
- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“What are your reactions to the scenarios you read about today?”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

(Project Roll-out)

Do you understand the project?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Describe the purpose of the project.
- List the tasks and products related to the project.
- Describe the project in one sentence.



Required Materials

- Computer with access to YouTube
- Videos:
 - <http://www.nbcnews.com/video/nightly-news/51755274#51755274>;
 - <http://www.youtube.com/watch?v=olwQKqQVy7s>
 (Study – Food Allergies are Becoming More Common)
- Guest speaker: School Principal (or other administrator), if possible
- Project Management Log – [Appendix 3](#)—One per team (every 2-3 students)
- Engagement Scenario – [Appendix 5](#) – One per student



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- “Why should we educate the school community about food allergies?”

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Possible answers may include:
 - › To prevent tragedies like the ones we read about yesterday
 - › To inform people who may not know about them
- The point to be made: **“As food scientists, we have a responsibility to create food that is safe for consumers, no matter what. The same is true for our school. It’s our job to create a safe environment for students, not just in the cafeteria, but all across our campus.”**

MIDDLE

40 minutes

- ✓ **TEACHER TIP!** Use a workbook for students to compile content on each topic throughout this project. Students can either create the workbook themselves or the teacher can create the workbook for the students.
- Show each video clip: <http://www.nbcnews.com/video/nightly-news/51755274#51755274>; <http://www.youtube.com/watch?v=olwQKqQVy7s>
- The point to be made: **“As we saw in these news clips, food allergies are on the rise yet scientists still don’t have an explanation for this trend. Food allergies affect people of all ages, but it seems to be a significant problem for people under the age of 18. Due to recent issues with food allergies in schools, we have to make sure that people understand the dangers of food allergies and how to keep individuals with food allergies safe.”**

- Give students a copy of the engagement scenario and project description ([Appendix 5](#)).
 - › Give the class about 5-10 minutes to read through the scenario and project description.
 - › Ask students to circle parts of the scenario and project description that they have questions about.
- If possible, invite the principal (or other administrator if the principal is not available) to speak to the class to introduce the project and request that the students create a public service announcement (based on the engagement scenario).
- After the guest speaker (if you have one) discuss the project details and address any questions that the students identified when they were reading over the document.
- For this project, students should work in teams of two or three. They will work with these same teams for the duration of the project.
 - › The teacher can decide how students will form their teams.
 - › Give the class time to get into their groups and determine a team name.
 - › Distribute the project management log ([Appendix 3](#)) and have each team fill out the top so that it is ready for the remainder of the project.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt: ***“Summarize the goal of the project in one sentence.”***
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

What are food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Define food allergy.
- Define food intolerance.
- Describe the difference between food allergy and food intolerance.
- Identify types of medical testing used to identify food allergies.



Required Materials

- Computer with access to YouTube:
<http://www.youtube.com/watch?v=KT8E61ANgfY>
(Dr. Keri Peterson Discusses Food Allergies)
- Defining Food Allergies – [Appendix 6](#) – One per student
- Rubric – [Appendix 6.1](#) – One per team
- White board/chalk board/open wall space
- Poster paper
- Markers
- Tape
- Any other accessible art supplies that could be used for creating a poster
- Computers
- Internet



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- **“Think about the following quote: ‘The food of one may be poison for another’ – Lucretius De Rerum Natura. What does this mean to you?”**

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students. Discuss the quote with students.
- The point to be made, **“We have all been sick at one time from something we came in contact with either from breathing the air, touching our skin, or something we ingested. Either way, these allergic reactions may occur frequently or on rare occasion due to your tolerance for the allergen and how often you come in contact with the allergen. What one person can eat may make someone else very sick or even pose the risk of death. Today we are going to learn the difference between food allergies and food intolerance.”**

MIDDLE

40 minutes

- Remind students about how to use the Internet to find credible sources of information.
- Give each student a copy of [Appendix 6](#).
- Students should research the Internet to find the definition of food allergy and food intolerance.
 - › They will fill in this information on their handouts and include examples of each.
- Since there is a difference between food allergies and intolerances, students should also identify the types of medical testing used to determine if a patient has food allergies.
 - › This information should also be noted on their handouts.
 - › Possible answers could include skin prick test, blood test, oral food challenge, or trial elimination diet.

- When the class is finished, bring the class back together for a quick discussion about the difference between food allergies and food intolerances.
- Ask the class to share their examples of food allergies and intolerances.
 - › Record their responses on a surface at the front of the room.
 - › The list should include a mix of food allergies and food intolerances.
- Ask each team to select one food allergy or intolerance for further investigation. Allow the students to identify the key information on their own. However, they may find content such as:
 - › The food that causes the allergy or intolerance
 - › How the body reacts when the food is ingested (For example: Lactose intolerance is the body's inability to metabolize lactose)
 - › Symptoms
 - › Common foods to avoid
 - › Treatment (if any)
- Each team will create a short informational poster about the food allergy or intolerance.
 - › Display the posters around the classroom.
 - › Have a gallery walk where the students walk around the room to view the posters.
 - › These posters will also serve as a resource of information for the PSAs the students will be creating.
- As a class, discuss what they learned about food allergies and intolerances.
 - › Show the video: <http://www.youtube.com/watch?v=KT8E61ANgfY>

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“Describe the difference between food allergies and food intolerance.”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

What are IgE-mediated allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Identify the top 8 allergy-causing foods.
- Define IgE.
- Explain the effects of food allergies caused by IgE.



Required Materials

- Video: <http://www.youtube.com/watch?v=AKVjKC3u9hk> (Understanding Food Allergies)
- Case Studies – [Appendix 7](#) – One case study per team



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- *“Yesterday we learned about the difference between food allergies and food intolerances. As you researched these terms, what foods did you discover as possible allergens?”*

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Possible answers may include (be sure to capture student responses on a flip chart or writing surface so that they can be referenced later in the lesson):
 - › Peanuts
 - › Eggs
 - › Dairy
 - › Soy
 - › Wheat
 - › Shellfish
 - › Fish
 - › Tree nuts
- *“There are 8 foods that most commonly cause IgE-mediated food allergies: dairy (cow’s milk), eggs, shellfish, fish, peanuts, tree nuts, soybeans, and wheat. According to the statistics on [FoodAllergy.org](#), these foods actually account for 90% of food allergies. Today we are going to explore IgE-mediated food allergies and common allergic reactions.”*

MIDDLE

40 minutes

- Show the video: <http://www.youtube.com/watch?v=AKVjKC3u9hk>
 - › Start by showing only the first 1 minute and 8 seconds of the video (this part focuses on IgE).
 - › Lead a class discussion to help students understand this concept.
 - ✓ **TEACHER TIP!** [Appendix 7.1](#) is optional and is provided as supplemental information for you as you lead the discussion on this topic. It can be used as supplemental student reading material.

- The class will divide into their project teams.
- Give each team a case study ([Appendix 7](#)).
- Give the teams about five minutes to read the case study and try to solve the scenario.
- Students will then pair up with another team and they will share their case studies with each other. The opposite team will have to try and solve the case study.
 - › There are four case studies, so the teams can rotate until they have completed at least two. Depending on class size, they could also rotate until all case studies are completed.
- Bring the class back together.
- Show the remainder of the video.
- Use highlights from the case studies to discuss the content from the video (e.g., information about epinephrine, symptoms, etc.).

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“In one sentence, summarize what you learned today!”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

(Continuation of Day 5)
What are IgE-mediated allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Distinguish between IgE-mediated food allergies and non-IgE-mediated food allergies.
- Describe the similarities and differences between peanuts and tree nuts.



Required Materials

- Article: *Mixed-up nuts: identification of peanuts and tree nuts by children* – [Appendix 8](#) – One copy for the class
 - Construction paper
 - Flip chart paper
 - Markers
 - Tape
 - Samples of tree nuts (any that you have access to): pecan, almond, Brazil nut, cashew, chestnut, coconut, hazelnut, macadamia nut, pinenut, walnut, pistachio, etc.
 - Peanuts
 - Stickers
- ✓ **TEACHER TIP!** Since this lab involves nuts, be sure that no students in the class are allergic prior to bring these materials in. If there is a student with allergies, modify by using images and not actual samples.



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- **“According to FoodAllergy.org, approximately 3 million people in the U.S. have allergies to tree nuts or peanuts. Describe what you know about tree nuts and peanuts.”**

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
 - ✓ **TEACHER TIP!** For this particular question, some of the student responses may not be accurate due to misconceptions, so the purpose of the lesson is to educate students and provide clarification for any possible misconceptions.
- Possible answers may include (be sure to capture student responses on a flip chart or writing surface so they can be referenced later in the lesson):
 - › Nuts have a shell
 - › Nuts are seeds
 - › Tree nuts are all the same
- **“There are many differences between tree nuts and peanuts, and even among the nuts within the tree nut category. Let’s think back to the case study about the male who had a tree nut allergy but ate cashews not knowing they were considered tree nuts. Given the high prevalence of peanut and tree nut related allergies, we have to be able to identify and distinguish between the characteristics of the foods within these categories.”**

MIDDLE

40 minutes

- Break the article ([Appendix 8](#)) up into chunks by section of the article. Give each team a copy of one of the sections to read.
 - › Have each team share a summary of their section with the class, going in order from the start to the end of the article.
- Create a display somewhere in the room including a variety of tree nuts and peanuts in various forms (with the shell, without the shell, chopped, whole, etc.).

- › Number each sample. On a sheet of paper, students can create a numbered list where they will identify each sample.
 - › To really test student knowledge, start by allowing students one opportunity to respond without sharing a bank of potential answers. After the students have the opportunity to at one attempt without clues, then provide a list of the samples and allow them another chance to identify the samples.
- Hang a sheet of flip chart paper on a wall somewhere in the room that has a chart with a space for each sample. When students finish identifying the samples, they will go the flip chart and mark which ones they got correct with a sticker.
 - Come together as a class and review the results. This should lead to a brief discussion about the importance of being able to identify the samples.
 - › Ask the class, ***“How are tree nut/peanut allergies different from non-IgE-mediated food allergies?”***
- Ask each team to identify a key term from the last two days to add to the word wall using the construction paper.

CLOSING

5 minutes

- For homework, students should visit the local grocery store and investigate the following question, ***“Where in the store are potential food allergy risks located?”*** Students should bring a list of their ideas with them to class the next day.
- Students will turn in their Exit Ticket for that day. They will respond to the following prompt: ***“What can you do to be more aware of the potential allergens in your foods?”***
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

How are potentially allergenic foods labeled?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Identify where food allergy risks are located in the grocery store.
- Identify foods that are likely processed in a shared facility with allergenic foods.
- Read and interpret allergy information on a food label.



Required Materials

- Food packages (collect the packages of any products that have a food allergy warning printed on the label; keep in mind that foods from the bakery may also have warning labels and this is not limited to packaged processed foods)
- Pictures of your local grocery store
- Computer, projector and screen (if you would like to show the images using the computer)
- Food Label Allergen List – [Appendix 9](#) – One per student
- Computers with Internet
- Index cards



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- *“How do you know if the food you are about to eat contains one of the ‘Big 8’ food allergens?”*

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Possible responses may include:
 - › By reading the ingredients
 - › Look for warnings on the package
- *“Today we are going to find out exactly how to determine if foods contain one of the eight major food allergens.”*

MIDDLE

40 minutes

- Begin by reviewing the homework assignment. Set out a variety of product packages that contain food allergens and food allergy warnings. Discuss the characteristics of the foods.
 - › If students were able to complete the homework and visit the grocery store, ask them to share any photos they took and discuss what they saw and where they think the most risks are in the grocery store.
 - › Give each student a copy of [Appendix 9](#). Explain how to read and interpret the different food allergy warnings that may appear on various packages.
- Next, the students will conduct background research about food labeling for food allergies.
 - › The first topic to research is the history of food labeling. This is a fairly new practice, so students should research why and when food labeling for food allergies first started. Next, they should select a product to research if the product is processed in a facility with potential allergens. For example, a student might choose to research M&M candy, which is processed in a facility with peanuts. They should try to discover what happens during processing to prevent the food from becoming cross contaminated.



- › Using an index card, students should write a few facts about the product as it relates to food allergies.
- Ask students to find a partner and in 30 seconds or less, take turns reporting their findings to each other.
- After the class had the opportunity to share their findings with their peers, come back together and have a brief discussion about the history of food labeling for food allergies and how products are processed.

CLOSING

5 minutes

- Ask the students to share a summary of what they learned today.
- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“What should people who suffer from food allergies look for when buying food at the grocery store?”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

How are food allergens controlled and detected during processing?



Estimated Time

Two 50-minute class periods



Learning Objectives

As a result of this lesson, students will be able to:

- Explain how food companies protect the health of allergic consumers.
- Describe testing methods to detect the presence of food allergens.
- Differentiate between clean and sanitize.



Required Materials

- Computers
- Internet
- Construction paper
- Tape
- FDA Allergy Inspection Guide – [Appendix 10](#) – One copy for the class
<http://www.fda.gov/ICECI/Inspections/InspectionGuides/ucm074944.htm>



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- *“Can food allergy risks be controlled during food processing? Explain your response.”*

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Possible responses may include:
 - › Yes, they can clean the equipment
 - › No, once the food touches a surface it is considered contaminated
- Explain to students, *“The risk of food allergies can be controlled through a variety of different procedures. Most importantly, in food processing it is most important to clean every surface that comes in contact with foods. Let’s explore this a bit deeper.”*

MIDDLE

40 minutes

- First, give students about five minutes to search for the definition of clean and the definition of sanitize. Ask students to respond to the following questions:
 - › Why are they different?
 - › Which method plays a more significant role in the prevention of contamination due to food allergies?
- Discuss that cleaning is ultimately what plays the more significant role of preventing contamination due to food allergies. While sanitizing is beneficial in the prevention of other foodborne illness, cleaning is what removes allergens from surfaces. Transition by mentioning that once a surface has been cleaned and sanitized, there are additional tests that can be done to determine if an allergen is still present.
- Post the acronym “ELISA” somewhere in the room. Direct student attention to the term and give them about five to ten minutes to research what the acronym stands for and determine how it is used to test for the presence of allergens in the food industry.

- › Once they have the results, quickly discuss their findings and explain how ELISA tests can help detect the presence of allergens in processing facilities and products.
- Next, break the class up into teams based on the sections included in the allergy inspection guide ([Appendix 10](#)). Each team will summarize the key points that should be considered during each stage of food processing.
 - › Each team should have the option to search for additional information as needed. The class will stand in a circle and each team will hold a sign indicating their stage of the process and describe the function.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“How can we ensure food allergens are no longer present on a food prep surface?”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

(Continuation of Day 8) How are food allergens controlled and detected during processing?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Explain how food companies protect the health of allergic consumers.
- Describe testing methods to detect the presence of food allergens.
- Differentiate between clean and sanitize.



Required Materials

- Computers
- Internet
- Construction paper
- Tape
- Guest speaker: school cafeteria employee or district food service staff member
- Resource (See [Appendix 10](#) or website): <http://www.fda.gov/ICECI/Inspections/InspectionGuides/ucm074944.htm>



Bell-Work

- Provide students with the weekly Bell-Work sheet – [Appendix 1](#)
- **“What steps are taken here at school to reduce the potential risk of food allergies?”**

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Students may respond with comments based on what they learned the previous day.
- Explain to students, **“Today we have a guest speaker from ___ to speak with us about how the food prepared in our school lunch room is regulated to reduce the risk of food allergies.”**
- Ask students to prepare at least two potential questions to ask the guest speaker.

MIDDLE

40 minutes

- If possible, invite the school cafeteria manager or district food service manager to speak with the class about the regulations and procedures that are implemented at the school level.
- An alternative to the school-related speaker would be to invite a local restaurant chef or other food-processing leader (e.g., hospital cafeteria manager, grocery store bakery manager, etc.)
- Students should be prepared to ask questions following the presentation as this is another means of collecting content for the public service announcement they will be creating later in the project.
- Based on what they have learned over the past few days, each team should identify one word to add to the word wall. Students can use the construction paper to write their word and hang it on the wall.

CLOSING*5 minutes*

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“What questions remain from the presentation today?”
- Collect the Exit Ticket for the day as students leave the classroom



Key Question of the Day:

What accommodations are available for people with food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Describe the treatment methods and accommodations for food allergy sufferers.
- Define anaphylaxis.
- Define epinephrine.
- Assess the social and nutritional implications of food allergies.



Required Materials

- Computer
- Internet access
- EpiPen trainer (or similar auto-injector) – One for the teacher
- Anaphylaxis Emergency Plan – [Appendix 11](#) – One per student
- Articles – [Appendix 11.1](#) and [Appendix 11.2](#)
- Magazines



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- ***“Put yourself in the shoes of someone who suffers from food allergies (if you don’t). How would that make you feel?”***

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Explain to students, ***“People with food allergies are affected in many ways aside from being limited as to what they can eat. Before we can identify a target audience or theme for the PSAs, we have to fully understand how food allergies affect individuals and the accommodations that are available. Today we are going to take a look at these implications.”***

MIDDLE

40 minutes

- Divide the class into two groups. Half of the class will read the article about anaphylaxis ([Appendix 11.1](#)). The other half of the class will read the article about epinephrine and the treatment of food allergies ([Appendix 11.2](#)).
 - › The anaphylaxis team will identify the definition and additional key points the opposite team should know about the topic. The epinephrine team should do the same with their article.
- When the teams are finished reading and summarizing, they will come together and discuss what they read. On a sheet of flip chart paper, they will create a tip sheet to share with the other team.
- When the teams are ready, as a class, have one speaker from each team share the information.
 - › Show the class the EpiPen trainer and explain that it is one example of an epinephrine treatment and show how it used to treat individuals suffering from anaphylaxis in an emergency situation.
- Transition by explaining a required daily life task such as eating food can be a stressful experience for people with food allergies.

- Use [Appendix 11](#) to create characters for a role-play activity
 - › Give each student a copy of the plan. Then allow them to use magazines to find a person for the photo section to create the persona (or they can also draw a person if magazines are not available). Given what they have learned about food allergies, allow students to fill out the rest of the plan in order to create the scenario. Students should use the background information from prior lessons to make the story more personal.
 - › Note that the allergy they indicate on the form must be food related (since there are non-food related allergies listed on the plan).
- In pairs, students will take turns being the nurse and the patient. They will explain who they are (name, age, allergy), the epinephrine auto injector they use, symptoms, and challenges they deal with as a person with the particular allergy.
- Each role-play should take about 30-60 seconds.
- After everyone had the opportunity to finish the role-play, bring the class back together to debrief by having a brief discussion.
 - › Ask the class the following questions:
 - » *What did you learn from this exercise?*
 - » *How do you think having a food allergy would impact your life?*
 - » *Has your opinion changed about food allergies? Why or why not?*

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“Explain one new fact you have learned about the symptoms of food allergies.”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

(Continuation of Day 10) *What accommodations are available for people with food allergies?*



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Describe the treatment methods and accommodations for food allergy sufferers.
- Describe how food allergic reactions can be prevented.
- Assess the social and nutritional implications of food allergies.



Required Materials

- Computer
- Internet access
- Projector
- Music
- Music player (can use computer or other device)
- Video: <http://www.youtube.com/watch?v=oel-kh06fM4> (Food Allergies Create Tempting Target for Bullies)



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- *“How would you feel if someone made fun of you because you couldn’t eat a certain food?”*

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Have a brief discussion as the students share their responses. This is a great opportunity to address bullying and ask students to share personal experiences.
- Explain to students, *“People with food allergies, especially kids, face many challenges. Aside from the regular issues that kids face, they also have to worry about what they will eat (or even what people around them are eating) at a birthday party, at the school dance, or even every day in the lunch room.”*

MIDDLE

40 minutes

- Show the news report: <http://www.youtube.com/watch?v=oel-kh06fM4>
- Quickly debrief the video and ask the students to share their reactions to the news report.
- Divide the class into four teams. Assign each team a question:
 - › How can allergic reactions to food be prevented at school?
 - › How can allergic reactions to food be prevented at home?
 - › How can allergic reactions to food be prevented in social settings, such as at a restaurant?
 - › What are the nutritional challenges individuals with food allergies face?
- Using the website www.foodallergy.org, students should research the responses to their assigned question.

- Write each question on a sheet of flip chart paper and hang each sheet somewhere in the room. Once students complete their research, play the music, using it as a tool to cue the students to rotate to each poster after about three minutes.
 - › The purpose of this exercise is to allow students to start by writing the answers they found to their questions on their respective poster, then rotating to review the responses to the other questions.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“Based on everything we have learned to this point, list a few quick ideas for your PSA.”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

How prevalent are food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Determine the prevalence of food allergies within the school.
- Analyze statistical data.



Required Materials

- Computer
- Projector
- Internet
- Microsoft Word or other document software (or Google Docs)



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- ***“How common are food allergies within our school?”***

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- As students share their responses, ask them how many people they think have food allergies on the school campus, what group of individuals will have the most issues with food allergies (teachers, students, etc.), and what the most common type of food allergy is on campus.
- Explain to students, ***“The final step before we create our PSAs is to determine the prevalence of food allergies within our school community.”***

MIDDLE

40 minutes

- The class is going to create a 30-question (maximum) survey instrument to give to everyone who is a student/faculty/staff member of the school.
 - › Note that there can only be one survey instrument in order for the data to be reliable.
- In their project teams, students will create a draft survey with the questions they feel should be used on the final version.
- Questions should include a variety of multiple choice questions and open-ended questions only when necessary.
 - › Note that questions should include demographics (age and gender, could include ethnicity), family history, food allergy, food intolerance/sensitivity, diagnosis, symptoms, treatment, carry an auto-injector, etc. However, do not share this information with the students. Allow the students to take a first attempt at developing the survey with as little guidance as possible.

- Students should be using all of the content and resources they have collected up to this point to help them create the questions. They may also use the Internet for additional research as needed.
- Students can use the computers to create a Word document with their survey questions. They can also use markers and poster paper for brainstorming.
 - ✓ **TEACHER TIP!** An alternative to this method is to have students collaborate using Google Docs, which would allow the teams to actively edit the documents at the same time.
- While the students are working on this, engage in conversations with the teams about their surveys to assess the types of questions they are creating to ensure they are appropriate.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“What questions do you have about the survey you are creating?”
- Collect the Exit Ticket for the day as students leave the class.



Key Question of the Day:

(Continuation of Day 12)

How prevalent are food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Determine the prevalence of food allergies within the school.
- Analyze statistical data.



Required Materials

- Computer (for the teacher and students)
- Projector
- Internet
- Microsoft Word or Excel (optional)
- Poster Paper
- Markers



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- ***“Where are we with our survey development?”***

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- This is an opportunity to assess how much time students will need to complete their survey documents. If they need additional time, allow as much as you feel necessary. When they are finished creating their surveys, proceed with this lesson.

MIDDLE

40 minutes

- Each team should swap surveys with a different team and conduct a critique of the questions. The goal is to start narrowing in on the best questions to include on the final class survey.
- Students should highlight or circle the questions that they feel are the best and should be included, and put an “X” next to the questions they feel should not be included.
- When each team has completed their critique, come back as a class and make a list somewhere in the room (a computer document projected on the screen would be the most time efficient) of the top questions that each team selected. Make a separate list of the questions that each team eliminated. As each team shares their top questions, ask them why they made the decisions they made.
- As each team shares, ask the rest of the class if they agree or disagree. The goal is to come to a consensus as a class on the top questions to include in the survey.
- The survey can be administered through a web tool such as Survey Monkey, Google Docs, or via hard copy.
- Since survey results won’t be in immediately, teams can begin planning for their PSA once the surveys are distributed.

- Try to get the surveys back as soon as possible. If administration is on board with the project, an idea is to suggest a time during the day, even at lunch, where everyone completes the survey.
- When all of the data has been submitted, compile the data in to one document by question. This can be done in a Word document or an Excel spreadsheet.

- If there is extra time between distributing the survey and getting the results back (such as at least a class period or more), give each team time to start brainstorming their PSA. Since this was a prior Exit Ticket question, students should already be thinking about what they want to do. They will receive more instructions at a later time.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“What are you most excited to learn from the survey data?”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Questions of the Day:

(Continuation of Day 13)
How prevalent are food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Determine the prevalence of food allergies within the school.
- Analyze statistical data.



Required Materials

- Computer (for the teacher and students)
- Projector
- Internet
- Microsoft Word or Excel (optional)
- Poster paper
- Markers



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- “What do the results say and what do they mean for us as a school?”

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Quickly discuss possible implications of the survey. This would be a good time for students to form a hypothesis about what they expect from the results.

MIDDLE

40 minutes

- This class period will be spent doing the data analysis. Each team should receive a copy of the data, or post one copy somewhere in the room for each team to access.
- In their teams, students should select the data they would like to analyze.
 - › Ask each team what data they would like to analyze and display. They should be selecting from the questions on the survey. Each team should be reporting on at least two questions.
 - › Post this information somewhere in the room so that teams do not duplicate the analysis (this will help ensure that all of the data is analyzed and accounted for). If class size is small, each team can analyze and display more than one data set.
- Once decisions are made about the data that each team will analyze, teams will then decide how they will display their data. Depending on the results, they must determine the best way to visually represent the findings. (e.g., bar graph, line graph, scatter plot, pie chart, infographic, etc.) Students may even include more than one display method for the same data set.
 - › Students should research different ways to display data and based on their data, select the best method.



- Students may use computers with Word or Excel to create their display, or they can create the display by hand using poster and markers.
- When finished, each team should present their display to the class, which is meant to spur class discussion about the study and the findings.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“What surprised you about the data?”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

How can we create awareness about food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Justify arguments with supporting data and information.
- Summarize key information about the topic of food allergies.
- Demonstrate knowledge of food allergies through class presentations.



Required Materials

- Computers (for the students)
- Internet
- Video recording equipment (cell phone, Flip camera, iPad/tablet, or any other device that is accessible and can record a video)
- ✓ **TEACHER TIP!** The video recording may not occur until Day 17, however depending on the class sizes and how quickly students work, it is listed as a required material in case there are students who are ready to record prior to that day.
- PSA Planning Guide – [Appendix 12](#) – One per team
- PSA Rubric – [Appendix 13](#) – One per team
- PSA Team Progress List – [Appendix 13.1](#) – One per student
- Self-Reflection Form – [Appendix 14](#) – One per student
- Presentation Audience Feedback – [Appendix 15](#) – One per student
- Collaboration Rubric – [Appendix 16](#) – One per student



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- **“What is a public service announcement?”**

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Explain to students that, **“A public service announcement (PSA) is designed to evoke emotion and convince the audience to take some sort of action. PSAs also strive to share important information about the topic. Now that we have learned everything we need to know about food allergies, we can start to create PSAs to educate the rest of the school community about this issue.”**

MIDDLE

40 minutes

- ✓ **TEACHER TIP!** The timing for this part of the project may vary depending on the size of the class, so adjust accordingly. Also, more details about the criteria for the PSA can be found on the rubric ([Appendix 13](#)).
- Give each team a copy of [Appendix 12](#) to complete as a group. This will help them make important decisions and plan their PSA.
 - › Do not show specific examples of PSAs right at first, as showing an example in the beginning may sway the students’ ideas. If you get the sense that showing an example would be helpful to the students, try to wait until they have had time to brainstorm first.
- Students should use their notes and data collected from the previous days to determine how to create their PSA. They may use computers and Internet to find specific images or other helpful resources for their PSA.
- The PSA criteria should include the following:
 - › Length: one minute or less
 - › Include music
 - › Include graphics/images/pictures (can be hand drawn, real pictures taken by the students, or graphics from free sources on the Internet)



- › Include data from the survey
 - › Include facts and content from the previous lessons
- Students should use [Appendix 13.1](#) to fill out their Project Management Logs and the teacher should initial each item as they are completed.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“What questions do you have about your PSA?”
- Collect the Exit Ticket for the day as students leave the classroom



Key Question of the Day:

(Continuation of Day 15)

How can we create awareness about food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Justify arguments with supporting data and information.
- Summarize key information about the topic of food allergies.
- Demonstrate knowledge of food allergies through class presentations.



Required Materials

- Computers (for the students)
- Internet
- Video recording equipment (cell phone, Flip camera, iPad/tablet, or any other device that is accessible and can record a video)
- ✓ **TEACHER TIP!** The video recording may not occur until Day 17, however depending on the class sizes and how quickly students work, it is listed as a required material in case there are students who are ready to record prior to that day.
- PSA Planning Guide – [Appendix 12](#) – One per team
- PSA Rubric – [Appendix 13](#) – One per team
- PSA Team Progress List – [Appendix 13.1](#) – One per student
- Self-Reflection Form – [Appendix 14](#) – One per student
- Presentation Audience Feedback – [Appendix 15](#) – One per student
- Collaboration Rubric – [Appendix 16](#) – One per student



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- ***“Yesterday I reviewed your questions about the project. Let’s take a few moments to answer some of your questions.”***

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Answer any questions since the students have had a day to start working and think through their PSAs. Explain that they will have the rest of the class period to continue planning and working on their projects.

MIDDLE

40 minutes

- Students should spend this class period continuing to plan for their PSA.
- As each team completes their planning document, have them talk through their ideas for the PSA. Provide constructive feedback as needed.
- Once they have teacher approval, they can proceed to create the script. Once the script is complete, they should swap with a different team to peer review the scripts for flow and any grammatical issues.
- Once the scripts have been peer reviewed, students can proceed to the recording/editing phase.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt: ***“How is your team doing with the PSA project?”***
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

(Continuation of Day 16)

How can we create awareness about food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Justify arguments with supporting data and information.
- Summarize key information about the topic of food allergies.
- Demonstrate knowledge of food allergies through class presentations.



Required Materials

- Computers (for the students)
- Internet
- Video recording equipment (cell phone, Flip camera, iPad/tablet, or any other device that is accessible and can record a video)
- ✓ **TEACHER TIP!** The video recording may not occur until Day 17, however depending on the class sizes and how quickly students work, it is listed as a required material in case there are students who are ready to record prior to that day.
- PSA Planning Guide – [Appendix 12](#) – One per team
- PSA Rubric – [Appendix 13](#) – One per team
- PSA Team Progress List – [Appendix 13.1](#) – One per student
- Self-Reflection Form – [Appendix 14](#) – One per student
- Presentation Audience Feedback – [Appendix 15](#) – One per student
- Collaboration Rubric – [Appendix 16](#) – One per student



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- *“Prepare a 30-second summary of your team’s progress on the PSA project.”*

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Allow each team to report on their progress and provide any related feedback or answer questions.

MIDDLE

40 minutes

- Students should spend this class period continuing to work on their PSA.
- At this stage, teams should be finalizing their scripts and starting to record the videos.
- Continue to use the PSA checklist to assess student progress.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt: *“What’s your status? How far is your team in the process?”*
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

(Continuation of Day 17)

How can we create awareness about food allergies?



Estimated Time

Two 50-minute class periods



Learning Objectives

As a result of this lesson, students will be able to:

- Justify arguments with supporting data and information.
- Summarize key information about the topic of food allergies.
- Demonstrate knowledge of food allergies through class presentations.



Required Materials

- Computers (for the students)
- Internet
- Video recording equipment (cell phone, Flip camera, iPad/tablet, or any other device that is accessible and can record a video)
- ✓ **TEACHER TIP!** The video recording may not occur until Day 17, however depending on the class sizes and how quickly students work, it is listed as a required material in case there are students who are ready to record prior to that day.
- PSA Planning Guide – [Appendix 12](#) – One per team
- PSA Rubric – [Appendix 13](#) – One per team
- PSA Team Progress List – [Appendix 13.1](#) – One per student
- Self-Reflection Form – [Appendix 14](#) – One per student
- Presentation Audience Feedback – [Appendix 15](#) – One per student
- Collaboration Rubric – [Appendix 16](#) – One per student



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- **“What questions do you have about recording or editing your videos?”**

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Answer any questions related to recording or editing the videos.

MIDDLE

40 minutes

- At this point, all teams should be at the recording or editing phase.
- Students can use video iMovie or any other video editing software or app to enhance the PSAs.
- There will be one class period left for teams to finish up their PSAs and prepare to present.
- For the presentation, each team will give a brief summary of their PSA, the goal of the PSA, and why they chose to create it.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt: **“Are you ready for your presentation?”**
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

(Continuation of Day 18)

How can we create awareness about food allergies?



Estimated Time

One 50-minute class period



Learning Objectives

As a result of this lesson, students will be able to:

- Justify arguments with supporting data and information.
- Summarize key information about the topic of food allergies.
- Demonstrate knowledge of food allergies through class presentations.



Required Materials

- Computers (for the students)
- Internet
- Video recording equipment (cell phone, Flip camera, iPad/tablet, or any other device that is accessible and can record a video)
- ✓ **TEACHER TIP!** The video recording may not occur until Day 17, however depending on the class sizes and how quickly students work, it is listed as a required material in case there are students who are ready to record prior to that day.
- PSA Planning Guide – [Appendix 12](#) – One per team
- PSA Rubric – [Appendix 13](#) – One per team
- PSA Team Progress List – [Appendix 13.1](#) – One per student
- Self-Reflection Form – [Appendix 14](#) – One per student
- Presentation Audience Feedback – [Appendix 15](#) – One per student
- Collaboration Rubric – [Appendix 16](#) – One per student



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- **“What are characteristics of a good audience? What are characteristics of a good presenter?”**

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Ask students to share their responses and remind them how to be good presenters and audience members as they prepare for their presentations.

MIDDLE

40 minutes

- This is the last day to prepare for the presentations.
- All editing should be wrapping up.
- At this stage, teams should be watching their PSA for the final time, and planning what they will share about their work during the presentation.
- If teams are done early, then presentations can start today.
- Be sure to invite the school principal (or other administrator, whoever was able to come at the start of the project) as well as the school nurse, and/or cafeteria manager for the presentations.
- The guests will determine which PSA(s) will be shown to the school to create awareness of food allergies.
- Use the rubric ([Appendix 13](#)) to evaluate the PSAs.
- Each student should have a copy of [Appendix 15](#) to provide feedback during the presentations.

CLOSING*5 minutes*

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt:
“How do you feel about the way your PSA turned out?”
- Collect the Exit Ticket for the day as students leave the classroom.



Key Question of the Day:

(Continuation of Day 19)

How can we create awareness about food allergies?



Estimated Time

Two 50-minute class periods



Learning Objectives

As a result of this lesson, students will be able to:

- Justify arguments with supporting data and information.
- Summarize key information about the topic of food allergies.
- Demonstrate knowledge of food allergies through class presentations.



Required Materials

- Computers (for the students)
- Internet
- Video recording equipment (cell phone, Flip camera, iPad/tablet, or any other device that is accessible and can record a video)
- ✓ **TEACHER TIP!** The video recording may not occur until Day 17, however depending on the class sizes and how quickly students work, it is listed as a required material in case there are students who are ready to record prior to that day.
- PSA Planning Guide – [Appendix 12](#) – One per team
- PSA Rubric – [Appendix 13](#) – One per team
- PSA Team Progress List – [Appendix 13.1](#) – One per student
- Self-Reflection Form – [Appendix 14](#) – One per student
- Presentation Audience Feedback – [Appendix 15](#) – One per student
- Collaboration Rubric – [Appendix 16](#) – One per student



Bell-Work

- Provide students with the weekly Bell-Work sheet ([Appendix 1](#))
- **“What did you learn from the PSAs?”**

OPENING

5 minutes

- Read the Bell-Work question and solicit responses from the students.
- Ask students to share their responses. Have a brief discussion about what students learned from the PSAs.

MIDDLE

40 minutes

- Finish up any presentations.
 - › If presentations are still going on, be sure the guests are invited and are able to see all of them.
 - › Students should use [Appendix 15](#) to select one presentation to evaluate.
- When the presentations are complete, the guests should speak to the class about their selections and provide feedback about the PSAs.
- Arrange the seats so that everyone is sitting in a circle, or have students stand in a circle.
- Students should complete the self-reflection form ([Appendix 14](#)).
 - › Have a brief reflection discussion about the whole food allergy project.
 - › Have students discuss lessons learned and how they plan to apply their new knowledge.
- ✓ **TEACHER TIP!** Use [Appendix 16](#) as a guide for assessing students based on their contribution to the team.

CLOSING

5 minutes

- Students will turn in their Exit Ticket for that day. They will respond to the following prompt: **“From everything you learned in this project, what meant the most to you? Why?”**
- Collect the Exit Ticket for the day as students leave the classroom.

Daily Bell-Work Journal

MONDAY

DATE _____

TUESDAY

DATE _____

WEDNESDAY

DATE _____

THURSDAY

DATE _____

FRIDAY

DATE _____



Daily Exit Tickets



DAY EXIT TICKET Name: (First, Last) _____
 Date: _____ Period: _____

Topic: _____



Continue your answer on the back if necessary

DAY EXIT TICKET Name: (First, Last) _____
 Date: _____ Period: _____

Topic: _____



Continue your answer on the back if necessary

DAY EXIT TICKET Name: (First, Last) _____
 Date: _____ Period: _____

Topic: _____



Continue your answer on the back if necessary

DAY EXIT TICKET Name: (First, Last) _____
 Date: _____ Period: _____

Topic: _____



Continue your answer on the back if necessary

DAY EXIT TICKET Name: (First, Last) _____
 Date: _____ Period: _____

Topic: _____



Continue your answer on the back if necessary



Project Management Log: Team Tasks

Project Name _____

Team Members _____

TASK	WHO IS RESPONSIBLE	DUE DATE	STATUS	DONE

**Article 1:**

Student's Death Spotlights Food Allergies in Schools

(CBS) The death of a 7-year-old girl at school from a peanut allergy has raised questions about a school's responsibility in treating kids with food allergies.

Two days ago, Ammaria Johnson died after suffering an allergic reaction at Hopkins Elementary School in Chesterfield County, Va., WTVR CBS 6 in Richmond reported. The death is still being investigated, but Johnson's mother told WTVR she learned from the school principal and a doctor that the allergy was to a peanut product.

Emergency crews were called to the school on Monday, but by the time they arrived, the child was in cardiac arrest, according to a Chesterfield Fire Department spokesman Lt. Jason Elmore. Johnson was pronounced dead a short time later at CJW Medical Center in Richmond.

Food allergies affect an estimated 6 to 8 percent of children under age 5, and about 3 to 4 percent of adults, according to the Mayo Clinic. Food allergies can cause a number of symptoms, ranging from digestive problems and hives to a life-threatening reaction called anaphylaxis.

How did the school respond? County school and health officials could not discuss Johnson's death directly, although they said it is the responsibility of the parent to provide medicine and instructions to doctors for kids with allergies.

"For any medication, the school would have to be in possession of that medication to provide it," Shawn Smith, a spokesman for Chesterfield County Public Schools, told ABC News. "The medication we receive, or should receive, has to be specific to that child, whether it's over-the-counter or prescription."

The girl's mom, Laura Pendleton, told WTVR she authorized an allergy action plan to give her daughter Benadryl in case of an allergic reaction, but the school didn't give the girl the medication. Pendleton said she had tried to give an aid an EpiPen for emergencies, but was told to keep it at home. An EpiPen is available with prescription and gives a dose of epinephrine that reverses symptoms of an allergic reaction for enough time to get the person to a hospital.

The girl's tragic case raises the question: Should schools stockpile EpiPens to treat kids in the event of an allergic reaction?

Maria Acebal, head of the Food Allergy and Anaphylaxis Network, told CNN that Ammaria's death "underscores the need for all teachers to have the basics of food allergy safety as part of their orientation and continuing education."

Acebal told ABC she's supporting a bill that would let all schools give EpiPens to any student, regardless of if they have a prescription.

"No one in this country has ever been sued for giving epinephrine, to my knowledge," Acebal told ABC. "All the lawsuits come about because school officials don't give it when it's needed."

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<http://www.cbsnews.com/news/students-death-spotlights-food-allergies-in-school/>

**Article 2:**

Boy Survives Delayed Reaction to Peanut Allergy

ALLERGIC CHILD UNKNOWINGLY TOOK BITE OF CLASSROOM TREAT

OMAHA, Neb. – A Carter Lake, Iowa 7-year-old survived a brush with death after eating a snack that caused a delayed peanut-allergy reaction.

"I was allergic to peanut butter. My tummy hurted, so we went to the hospital," said 7-year-old Max Roseland as he took a break from reading books to his sister, Ruby.

The boy has a known peanut and gluten allergy as well as asthma. Just before Christmas, his mother went to his school to approve the snacks that were going to be served as part of a special movie day. Just hours later, Amy received a startling phone call from the school.

"I'd gotten a phone call that he'd taken a bite of a peanut butter granola bar," said Amy Roseland, Max's mother.

Roseland said the peanut butter bar was not on the approved list of snacks in her son's peanut-free classroom. The snack somehow made its way out of another child's lunch box and onto Max's plate. In the darkness of the classroom movie party, the boy took a tiny bite.

Max said he knew there was trouble when after just a penny-sized bite, his tongue started itching. His mother picked him up and took him directly to Children's Hospital and Medical Center. The boy complained of a stomachache but was talking and breathing comfortably.

After 30 minutes in the emergency room, the child broke out in hives and his throat was tightening.

"It happened so fast. It was a nightmare," said Amy.

"I saw him in the ER. When I first walked in, his lungs had failed and they were beginning CPR," said Dr. Rob Chaplin, a critical care specialist at Children's. Dr. Chaplin said typically when a person with a peanut allergy has a reaction, it happens immediately. He said a delayed reaction is extremely rare. According to the Centers for Disease Control, four out of every 100 children have a food allergy. Data from the National Institutes of Health shows more than 3 million Americans are allergic to peanuts, tree nuts, or both.

"A constellation of symptoms happen. You get sweaty. All the vessels in your body dilate. Your lungs can shut down. Your airway can shut down," Chaplin said.

Doctors rushed Max to intensive care where they continued CPR and administered a host of drugs to help Max breathe. His heart rate dropped extremely low.

"They came back and said things were not going well in there. Everything was going south so bad," said Max's dad, Chris Roseland.

As a last resort, doctors put Max on a heart-lung bypass machine called ECMO. They connected the machine so it would simply take over for the boy's failing lungs by adding oxygen to his blood and removing carbon dioxide. A ventilator kept his lungs physically moving.

Using the machine carries significant risk of bleeding because of the anti-clotting drugs that must be administered.

This is the first time Children's Hospital and Medical Center has used the ECMO machine for a peanut allergy case. It's typically used in the cardiac unit with both the heart and lung functions keeping a child alive. Children's is also only one of a handful of medical centers in the country which can use the machine this way.

"They're amazing. We were in the right place at the right time with the right people," said Amy. Chaplin said 12 hours later, after the peanuts cleared from the boy's system, doctors removed all tubes and breathing devices and Max was happy and healthy again.

"When we went in, it was for a tummy ache. And the next thing, he's on life support," said Amy.

Dr. Chaplin took a special interest in Max's case because he is also the parent of a child with a peanut allergy. Chaplin's goal is to pull together a panel of doctors, parents and experts in the community to devise a more uniform plan for dealing with peanut products at home and in school.

**Article 3:**

Amid Protest, Florida School Stands Behind Tough New Peanut Allergy Regulations

By Mary Quinn O'Connor

Published March 15, 2011 | FoxNews.com

Despite protests by angry parents, a school in Florida is standing behind its decision to implement new regulations to protect a first grade student suffering from a severe peanut allergy.

Students at Edgewater Elementary are required to wash their hands and rinse their mouths out before entering the classroom each morning and after lunch. Teachers, who monitor the daily rinsing, must also ensure that desks are being continually wiped down with Clorox wipes. The school has banned all peanut products, eliminated snacks in the classroom and prevented outside food at holiday parties. And last week a peanut-sniffing dog was brought into the school.

District spokeswoman Nancy Wait of Volusia County Schools said the school is legally obligated to take these safety precautions because of the Federal Disabilities Act.

"It would be the same thing as putting a handicap ramp for a student that is physically disabled. The only difference with this is that it affects other students," she told FoxNews.com.

But some parents are saying it is taking away from their children's learning time.

"On average, it's probably taking a good 30 minutes out of the day. That's my child's education. Thirty minutes could be a whole subject," Carrie Starkey told FoxNews.com.

On Thursday she and other parents protested outside the school, picketing with signs that said, "Our Kids Have Rights Too."

Experts say the school may have gone too far and that there are easier ways to protect the child.

"I have never seen anything like this," said allergist Dr. Scott Sicherer with the Food Allergy and Anaphylaxis Network or FAAN, an organization that monitors national food allergy issues. "There are many guidelines on how to manage food allergies in schools... things like no food sharing. There are plenty of relatively simple things the school could put in place that aren't burdensome," said Sicherer.

But David Bailey, the father of girl with life threatening food allergy, says that if his daughter even smells peanuts, her reaction could be fatal. "We've fought very hard to put certain things in place... to keep her alive... in school," he told MyFoxOrlando. "She's already a cast-out. She can't do things that most kids can do."

While the school's actions may seem drastic and invasive the school says it must protect the health of the student.

"It may seem like an inconvenience but this student registered her disability at the beginning of the school year and we have to do these things to give her a safe learning environment," said Wait. Since the protest was held last week, parents will be looking for some sort of compromise from the school administration.

"We understand that they need to protect this girl, but these measures are just extreme. Procedures need to be set in place, but not procedures that will take away from our children's education," said Starkey.

Essential Question:

How common are food allergies?

Engagement Scenario:

Food allergies are on the rise. According to the Food Allergy Research and Education (FARE) Organization, a 2008 study by the Centers for Disease Control and Prevention (CDC) reported an 18% increase in food allergies from 1997 to 2007. They also reported a study from 2013 stating that food allergies among children increased about 50% between 1997 and 2011. Scientists have not yet discovered why food allergies are on the rise, but the issue has taken America's schools by storm. FARE also reported that more than 15% of school-aged children with food allergies have had a reaction in school, and the reactions occurred in locations beyond the cafeteria. In addition, 20-25% of epinephrine administrations in schools involved individuals whose allergy was unknown at the time of the reaction.

After seeing an alarming news report about food allergies and speaking with school district officials, your principal has charged your Food Science class with the task of creating awareness of food allergies within our school community. Over the next few weeks, you will explore the topic of food allergies, conduct research to determine the prevalence of food allergies among our peers, faculty, and staff, and use the information we collect to create a public service announcement to help create awareness of food allergies. The school administration team and cafeteria staff will review the PSAs and identify the best ones to air on the school news.

To accomplish your task, you and your team will conduct research to learn about everything food allergy related, from the top allergy causing foods and how to read food labels to identify allergens, to the symptoms of anaphylaxis, to how to administer an EpiPen. You will also use the information you gather to create a survey for students, faculty, and staff (the entire school population) in order to investigate the prevalence of food allergies in our school community.

Once all of the research is complete and the data have been analyzed, you will use what you have learned to create a public service announcement. Your public service announcement will report some of the findings from the research as well as statistics from the survey

Food Allergy vs. Food Intolerance

FOOD ALLERGY	FOOD INTOLERANCE
Definition:	Definition:
Examples:	Examples:
Testing and Diagnosis:	Testing and Diagnosis:



Rubric: Food Allergy vs. Food Intolerance Poster

Team _____ Total Points Earned _____ /55

POSTER INCLUDES EACH OF THE FOLLOWING (55 POINTS)	
• Food that causes the allergy or intolerance (0-5 points)	
• Description of response of the body when food is ingested (0-10 points)	
• Symptoms (0-10 points)	
• List of common foods to avoid (0-10 points)	
• Treatment (0-5 points)	
Poster is neat and organized (0-10 points)	
Poster is creative (0-5 points)	

Case Studies

Case 1

A 25-year-old male ate dinner at a restaurant with his friends. For dinner, he ordered a burger with a side of French fries. Within minutes of his first bite, symptoms began and he died within two hours, even though he was given 10 doses of epinephrine. He was allergic to fish. What caused his food allergy? What could have been done to prevent the allergy?

Possible answers: The allergy could have been caused by any of his food that came in contact with fish. Another possibility is that the French fries could have been fried in the same oil used to fry fish. Since he was eating in a restaurant, she should have asked if they use the same oil to fry the different foods or if any of the foods in his meal would come in contact with fish.

Case 2

A 16-year-old female with a pecan allergy was at a friend's house for the holidays. She ate a slice of cheesecake from the local bakery for dessert. Within seconds of her first bite, symptoms occurred and she was given a dose of epinephrine about 20 minutes later. Unfortunately, she died 8 days later. What caused her food allergy? What could have been done to prevent death?

Possible answers: Pecans in the crust caused the food allergy. Since it was prepared in the local bakery, she should have asked if there was a food label or if the purchaser of the dessert knew where/how the cheesecake was prepared, if it contained nuts, or was prepared in a facility with nuts. Also, the time between the onset of symptoms and when the epinephrine was administered was too long. The epinephrine should have been administered immediately.

Case 3

A 6-month-old baby was being fed breakfast by his mother. At 9:00AM, he had a bottle of formula (drinking this since birth) and 3 tablespoons of oatmeal cereal (tried for the first time at breakfast). By 11:00AM, a rash broke out on the baby's chin. As the day went on, the rash got increasingly worse. By 4:00PM, the rash was all over his body. A dose of Benadryl was administered and the rash went away. The baby is new to eating solid foods, so there were no known allergies at the time this occurred. What was the cause of the rash? Was this caused by a food sensitivity/allergy, food intoxication, or foodborne illness?

Possible answers: This was a food sensitivity/allergy caused by the oatmeal cereal. Since the baby had been drinking the formula since birth and never had a reaction, it was highly unlikely that he would suddenly become allergic to it. Since nothing else had been introduced that was new to the baby and might cause a similar rash (e.g. detergent, fabric, foods, etc.), the oatmeal cereal was the only possibility.

Case 4

A 14-year-old male with a tree nut allergy ate several cashews while on his way to football practice. He normally does not eat nuts of any kind, since he likes to play it safe due to his allergies. But, he skipped lunch and his friend offered him the cashews as a snack. Symptoms began within minutes. Luckily, one dose from his EpiPen was enough to stop the reaction. What caused the food allergy? What could have been done to prevent the reaction?

Possible answer: This food allergy was caused by the cashews. In this case, the male was unaware that tree nuts include cashews, and he should have avoided them altogether to be safe. Unfortunately, many individuals struggle with identifying types of tree nuts, which puts them at risk for similar situations.

IgE Food Allergies

IgE-mediated food allergies are true food allergies involving an abnormal response of the immune system to one or more specific foods. These reactions are associated with the rapid onset of symptoms – usually within a few minutes to a few hours after the ingestion of the offending food.

Immediate hypersensitivity reactions are mediated by an allergen-specific immunoglobulin E (IgE) antibody. The food allergens involved in IgE-mediated reactions are typically naturally-occurring proteins in foods. In IgE-mediated food allergies, exposure to the allergen stimulates the production of allergen-specific IgE antibodies by plasma cells in susceptible individuals. The allergen-specific IgE attaches itself to the surface of mast cells in various tissues and basophils in the blood in a process known as sensitization. No symptoms occur during the sensitization phase but, once that phase is completed, the individual is primed to react to the offending allergen.

Upon subsequent exposure to the allergenic food, the allergen cross-links IgE molecules on the surface of the mast cell or basophil membrane causing these cells to release various mediators of the allergic reaction into the bloodstream and tissues.

Histamine is one of the most important mediators of the immediate hypersensitivity reaction. Histamine alone can elicit inflammation, pruritis (itching), and contraction of the smooth muscles in the blood vessels, gastrointestinal tract, and respiratory tract. Several dozen physiologically active mediators of the allergic reaction have been identified.

Other important mediators include various leukotrienes and prostaglandins. The released mediators interact with receptors in various tissues eliciting a wide range of physiologic responses. Because the mediators are released into the bloodstream, systemic reactions involving multiple tissues and organs can ensue.



Other allergies also occur through this same IgE-mediated mechanism including allergies to pollens, mold spores, animal danders, dust mites, certain drugs (e.g. penicillin), and bee venom. Susceptible individuals may form allergen-specific IgE to one or several substances in their environment including food allergens.

<http://food.unl.edu/allergy/ige-mediated>



Mixed-up nuts: identification of peanuts and tree nuts by children

Ronald M. Ferdman, MD, MEd,* and Joseph A. Church, MD†

Background: Peanuts and tree nuts frequently cause severe allergic reactions. Nut avoidance is the key treatment, and accurate identification of nuts is essential for successful avoidance.

Objectives: To determine the age at which nut-allergic and nonallergic children can accurately identify various nuts and whether nut-allergic children can identify nuts they should avoid.

Methods: A “nut box” was constructed containing samples of 11 common nuts and pine nuts. Nut-allergic and nonallergic children were asked to identify the nuts, and their responses were compared and correlated by age. Nut-allergic children were asked to identify the nut(s) that they should not eat.

Results: One hundred children (37 allergic and 63 nonallergic) were enrolled. The mean number of nuts correctly identified was only 2.7 per child and increased with age, but there was large variation. Fifty-nine children identified 2 or fewer nuts. Peanuts in the shell were identified most often (89% of children), followed by peanuts out of the shell (52%). Other nuts were identified less commonly, ranging from 32% for pistachios to 0% for Brazil nuts. Nut-allergic children were not better able to correctly identify tree nuts and were less able in the case of peanuts. Of the nut-allergic children, 10 (27%) could not identify the peanut or tree nut to which they were allergic.

Conclusions: In general, children, including those who are allergic to nuts, can identify few nuts. This lack of recognition could put them at increased risk for unintentional ingestion. As part of an overall educational plan, nut-allergic children should be taught not only to avoid but also to identify the nut to which they are allergic.

Ann Allergy Asthma Immunol. 2006;97:73–77.

INTRODUCTION

Allergies to peanuts and tree nuts are among the most common food allergies in patients of all ages, and they seem to be increasing, particularly in children.¹ Allergic reactions to nuts can be severe, and most fatal food allergy reactions are caused by nuts.² Despite the availability of autoinjectable epinephrine and the promise of future therapies,^{3,4} strict avoidance of the offending nut remains the cornerstone of nut allergy management.

The most basic requirement to avoid unintentional ingestions in food-allergic individuals is the ability to recognize the foods to which they are allergic. Although this may be a challenge even in adults, children may have an especially difficult time identifying foods to which they are allergic and, therefore, may be at increased risk of avoidable allergic reactions. Using a “nut box” containing samples of peanuts and common tree nuts, we determined whether and at what age nut-allergic and nonallergic children reliably identified these foods.

METHODS

A “nut box” was constructed, and samples of several common nuts were fastened to its base (Fig 1). The nuts used were

peanuts in the shell, peanuts out of the shell, cashews, pecans, pistachios (mixed shelled and unshelled), hazelnuts (filberts), almonds and slivered almonds, Brazil nuts, macadamia nuts, and walnuts. Pine nuts were also included. Except for peanuts and pistachios, all the other nuts were unshelled, and the pistachio was in its natural color, not dyed red. The box was covered with a clear acrylic top to allow for easy viewing and to prevent unintentional exposure to the nuts.

A prospective convenience sample of children younger than 21 years with no known neuropsychiatric conditions or developmental delay was tested. Each child was first asked, “Do you see any peanuts in this box?” and was instructed to point to the peanut. They were then asked, “Do you see any other peanuts in this box?” and again were asked to point to the nut. This question was repeated until the child indicated that there were no more peanuts. Then, the child was asked to name each nut in the box. Their responses, as well as demographic data and whether they had a peanut or tree nut allergy and if so to which nut, were recorded. Children with nut allergies were also asked to identify which nuts they could or could not eat. Non-English-speaking children were allowed to identify the nuts in English or their native language. This study was approved by the Childrens Hospital Los Angeles investigational review board.

Data Analysis

The proportion of patients in the nonallergic and nut-allergic groups who correctly identified the different nuts was compared using the χ^2 test. The relationship between age and number of nuts correctly identified was analyzed using the

* Division of Clinical Immunology and Allergy, Childrens Hospital Los Angeles, Los Angeles, California.

† Department of Pediatrics, Keck School of Medicine, University of Southern California, Los Angeles, California.

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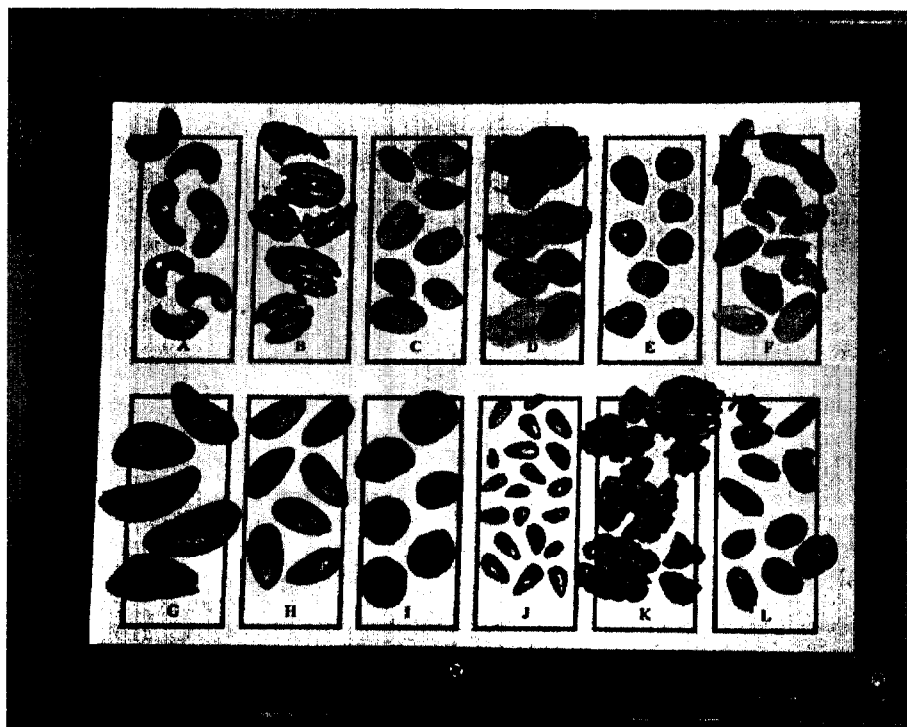


Figure 1. The “nut box” was used to test children’s ability to identify various nuts: cashews (A), pecans (B), pistachios with and without the shell mix (C), peanuts in the shell (D), hazelnuts (filberts) (E), slivered almonds (F), Brazil nuts (G), almonds (H), macadamia nuts (I), pine nuts (J), walnuts (K), and peanuts out of the shell (L).

Pearson correlation coefficient. $P < .05$ was considered statistically significant.

RESULTS

One hundred children were tested (mean age, 9.8 years; age range, 4–19 years; 53 males). Two additional 3-year-old children were tested but could not comprehend the instructions and are not included in the data. Of the 100 patients, 37 (mean age, 8.5 years; age range, 4–18.5 years; 19 males) had peanut or at least 1 tree nut allergy diagnosed by history and radioallergosorbent testing or skin prick testing. The distribution of nut allergies was as follows: peanuts only, 23 patients; peanuts and 1 or more tree nuts, 5; all nuts (peanuts and tree nuts), 5; 2 or fewer tree nuts but no peanuts, 3; and 3 or more tree nuts but no peanuts, 1.

Overall, the mean number of nuts per child that were correctly identified was only 2.7. There was no difference in the mean number between nut-allergic and nonallergic children (2.3 vs 2.9; $P = .61$). However, there was a large variation with age, and, as expected, older children in general identified more nuts correctly, although there were large variations (Fig 2). The nut-allergic and nonallergic groups identified more nuts as they got older, but there was better correlation in the nut-allergic group ($r = 0.82$) than in the nonallergic group ($r = 0.52$) ($P < .001$ for both). Ten

children (9 of whom were 5 years or younger), did not correctly identify peanuts or any tree nuts. An additional 28 children identified only peanuts in the shell correctly. Twenty-one children identified only 2 nuts correctly, including 13 who identified only peanuts with and without the shell and 8 who identified peanuts in the shell plus either cashews or pistachios. There was no difference in any of these results between girls and boys ($P = .75$).

There was marked variation in the ability of children to identify different types of nuts (Table 1). Peanuts in the shell were most recognizable, correctly identified by 89% of the children. Peanuts out of the shell were the next most recognizable (52%). Very few children recognized some of the more uncommon tree nuts (hazelnuts, 2%, and macadamia nuts, 3%), and no child correctly identified Brazil nuts. Although in most cases there was no significant difference between nut-allergic and nonallergic children, nut-allergic children were less likely to correctly identify peanuts out of the shell (29.7% vs 65.1%; $P < .001$) and peanuts in the shell (81.1% vs 93.7%; $P = .052$), although this may in part be explained by the slightly older age of the nonallergic group. Several children incorrectly identified many of the tree nuts as peanuts. The tree nuts that were most commonly incorrectly called peanuts were pistachios ($n = 13$) and cashews ($n = 8$). Of note, 21 children said that “all” were peanuts.

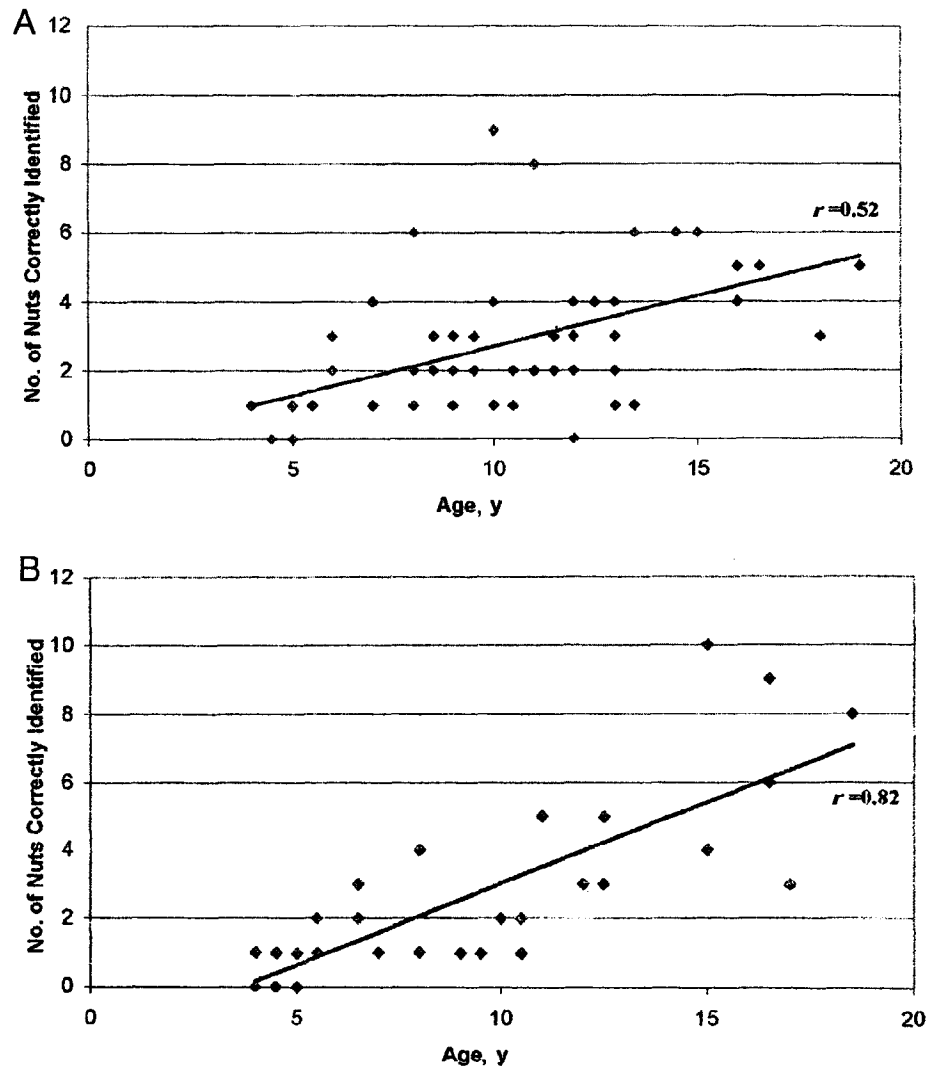


Figure 2. Age vs number of nuts correctly identified in nonallergic (A) and nut-allergic (B) adolescents.

Of the 37 nut-allergic children, 27 (73%) correctly indicated the nut they should avoid by specifically identifying the nut(s) to which they were allergic (12 children) or by stating that they would not eat any of the nuts (15 children). Ten nut-allergic children (27%) indicated that they could eat 1 or more nuts to which they were allergic. Six of these 10 patients identified only peanuts in the shell as the nut to avoid, not recognizing peanuts out of the shell.

DISCUSSION

Allergic reactions to peanuts and tree nuts are often serious and even life threatening. In a review of fatalities due to food anaphylaxis, Bock et al² found that nuts (mostly peanuts) were responsible for 30 of 32 fatal food allergy

reactions. Most of these fatalities (26 of 30) were in individuals who knew that they were allergic to the nut but for various reasons ingested that food nonetheless. It is estimated that peanut-allergic patients will, on average, have at least 1 unintentional peanut exposure every 3 years; during a 10-year period, 75% will have had unintentional exposure to peanuts.⁵ New treatment modalities, such as anti-IgE³ and DNA vaccination,⁴ hold promise for the future therapy of food allergies. However, it is likely that patients will continue to be required to actively avoid ingesting the foods to which they are allergic. Children may forget the reaction they experienced in the past, or they may remember the acute reaction but not recognize the causal relationship between the food they ate and the



Table 1. Total, Nonallergic, and Nut-Allergic Patients Who Correctly Identified Various Nuts

Type of nut	Patients correctly identifying nut, %			P value*
	Nonallergic	Nut-allergic	Total	
Peanuts in the shell	93.7	81.1	89.0	.052
Peanuts out of the shell	65.1	29.7	52.0	.006
Pistachios	38.1	21.6	32.0	.09
Cashews	23.8	27.0	25.0	.72
Almonds	25.4	21.6	24.0	.67
Walnuts	17.5	18.9	18.0	.85
Pecans	9.5	10.8	10.0	.84
Slivered almonds	7.9	10.8	9.0	.63
Macadamia nuts	3.2	2.7	3.0	.89
Hazelnuts	1.6	2.7	2.0	.70
Brazil nuts	0	0	0	.99

*Nonallergic vs nut-allergic patients.

allergic reaction. Therefore, most children must be taught to recognize and to avoid the food to which they are allergic.

The results of this study indicate that most children cannot identify most common tree nuts, even when presented to them in their most recognizable form, whole and intact. Nuts are more commonly present in foods in small pieces, and these would be recognized even less often. Peanuts in the shell were the most recognizable nuts, but most of the other nuts were poorly recognized. Nearly 60% of the children in this study identified only 2 or fewer nuts correctly. Many tree nuts were misidentified as peanuts, and it seemed as though *peanut* was used as a generic term for any nut by many children. There was greater recognition of tree nuts in older children, yet there were many older children who could not identify most tree nuts. Children who had nut allergies were not more likely to identify more nuts. In fact, in the case of peanuts, they were less able to identify them. It is possible that the parents of peanut-allergic children did not allow peanuts in their homes and that their children, therefore, never had the opportunity to learn to recognize them. A large proportion of nut-allergic children in this study (27%) could not recognize the nut that they were allergic to or said it would be all right for them to eat the food. Although it is recommended that nut-allergic children live in a nut-free home, many of these parents expressed surprise and dismay that their children could not recognize the critical nuts and, even worse, would eat them.

Most nut-allergic children (73%), however, stated that they would not eat the nut to which they were allergic. Of these, more than half did not necessarily recognize the specific nut to which they were allergic but rather avoided "all nuts." Only 12 of 37 children could specifically identify their allergenic nut and said that they would not eat it. Especially for younger children, teaching them to avoid all nuts may be the best method to prevent future allergic reactions. This may be especially valid for children younger than 5 years because 9 of 10 children who could not identify any nuts were 5 years or younger.

Limitations of this study include the fact that nut recognition testing occurred in a controlled setting. Nuts are rarely presented whole and in such an easily recognizable form as with the nut box. In reality, nuts are present in many foods as small pieces or as unrecognizable contaminants and thus would not be recognized even by those who know what the nut looks like intact.

Much has been written about banning nuts from schools and airplanes in an effort to protect nut-allergic children.⁶⁻⁹ This raises concerns about shifting the responsibility of preventing potentially fatal reactions from the allergic child into the hands of an ever-changing group of "strangers," who often have limited knowledge of the child in particular or of nut allergies in general.¹⁰ This study shows that many nut-allergic children lack the nut recognition skills that could protect them from future reactions. Although adults need to have a large role in protecting children with food allergies, the best strategy would incorporate actively teaching the affected child to recognize nuts so that he or she will be protected in every environment regardless of the skill of adult caretakers. Visual devices, such as the nut box used in this study, may be useful teaching aids for patients with allergies. More emphasis is needed on educating families and children in nut avoidance.

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- Requests for reprints should be addressed to:*
 Ronald M. Ferdman, MD, MEd
 Division of Clinical Immunology and Allergy
 Childrens Hospital Los Angeles
 4650 Sunset Blvd
 Mailstop 75
 Los Angeles, CA 90027
 E-mail: rferdman@chla.usc.edu
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1. d (see Gartner et al⁶)
2. e (no such National Institutes of Health guidelines exist)
3. b (see Fergusson et al,²⁸ Forsyth et al,³⁰ Lucas et al³¹ Saarinen and Kajosaari,³² and Zutavem et al³³)
4. c (<http://www.fda.gov/bbs/topics/NEWS/2005/NEW01281.html>)
5. e (in the present article)
6. d (see Boyano-Martinez et al¹⁴¹)
7. d (see Solensky R¹⁵⁰)



How to Read a Label for a Milk-Free Diet

All FDA-regulated manufactured food products that contain milk as an ingredient are required by U.S. law to list the word “milk” on the product label.

Avoid foods that contain milk or any of these ingredients:

butter, butter fat, butter oil, butter acid, butter ester(s)	lactose
buttermilk	lactulose
casein	milk (<i>in all forms, including condensed, derivative, dry, evaporated, goat's milk and milk from other animals, lowfat, malted, milkfat, nonfat, powder, protein, skimmed, solids, whole</i>)
casein hydrolysate	
caseinates (<i>in all forms</i>)	
cheese	milk protein hydrolysate
cottage cheese	pudding
cream	Recaldent®
curds	rennet casein
custard	sour cream, sour cream solids
diacetyl	sour milk solids
ghee	tagatose
half-and-half	whey (<i>in all forms</i>)
lactalbumin, lactalbumin phosphate	whey protein hydrolysate
lactoferrin	yogurt

Milk is sometimes found in the following:

artificial butter flavor	luncheon meat, hot dogs, sausages
baked goods	margarine
caramel candies	nisin
chocolate	nondairy products
lactic acid starter culture and other bacterial cultures	nougat



FARE

Food Allergy Research & Education (FARE)
7925 Jones Branch Drive, Suite 1100
McLean, VA 22102

800-929-4040

info@foodallergy.org
www.foodallergy.org

How to Read a Label for a Soy-Free Diet

All FDA-regulated manufactured food products that contain soy as an ingredient are required by U.S. law to list the word “soy” on the product label.

Avoid foods that contain soy or any of these ingredients:

edamame	soybean (<i>curd, granules</i>)
miso	soy protein (<i>concentrate, hydrolyzed, isolate</i>)
natto	soy sauce
shoyu	tamari
soy (<i>soy albumin, soy cheese, soy fiber, soy flour, soy grits, soy ice cream, soy milk, soy nuts, soy sprouts, soy yogurt</i>)	tempeh
soya	textured vegetable protein (<i>TVP</i>)
	tofu

Soy is sometimes found in the following:

Asian cuisine	vegetable gum
vegetable broth	vegetable starch

Keep the following in mind:

- The FDA exempts highly refined soybean oil from being labeled as an allergen. Studies show most allergic individuals can safely eat soy oil that has been highly refined (**not** cold pressed, expeller pressed, or extruded soybean oil).
- Most individuals allergic to soy can safely eat soy lecithin.
- Follow your doctor's advice regarding these ingredients.

How to Read a Label for a Peanut-Free Diet

All FDA-regulated manufactured food products that contain peanut as an ingredient are required by U.S. law to list the word “peanut” on the product label.

Avoid foods that contain peanuts or any of these ingredients:

artificial nuts	monkey nuts
beer nuts	nut pieces
cold pressed, expeller pressed, or extruded peanut oil	nut meat
goobers	peanut butter
ground nuts	peanut flour
mixed nuts	peanut protein hydrolysate

Peanut is sometimes found in the following:

African, Asian (<i>especially Chinese, Indian, Indonesian, Thai, and Vietnamese</i>), and Mexican dishes	egg rolls
baked goods (<i>e.g., pastries, cookies</i>)	enchilada sauce
candy (<i>including chocolate candy</i>)	marzipan
chili	mole sauce
	nougat

Keep the following in mind:

- Mandelonas are peanuts soaked in almond flavoring.
- A study showed that unlike other legumes, there is a strong possibility of cross-reaction between peanuts and lupine.
- **The FDA exempts highly refined peanut oil from being labeled as an allergen.** Studies show that most allergic individuals can safely eat peanut oil that has been highly refined (not cold pressed, expeller pressed, or extruded peanut oil). Follow your doctor's advice.
- Arachis oil is peanut oil.
- Many experts advise patients allergic to peanuts to avoid tree nuts as well.
- Sunflower seeds are often produced on equipment shared with peanuts.



How to Read a Label for a Wheat-Free Diet

All FDA-regulated manufactured food products that contain wheat as an ingredient are required by U.S. law to list the word “wheat” on the product label. The law defines any species in the genus *Triticum* as wheat.

Avoid foods that contain wheat or any of these ingredients:

bread crumbs	<i>protein, instant, pastry,</i>	sprouted wheat
bulgur	<i>self-rising, soft wheat, steel</i>	triticale
cereal extract	<i>ground, stone ground, whole</i>	vital wheat gluten
club wheat	<i>wheat)</i>	wheat (<i>bran, durum, germ,</i>
couscous	hydrolyzed wheat protein	<i>gluten, grass, malt, sprouts,</i>
cracker meal	Kamut®	<i>starch)</i>
durum	matzoh, matzoh meal	wheat bran hydrolysate
einkorn	<i>(also spelled as matzo,</i>	wheat germ oil
emmer	<i>matzab, or matza)</i>	wheat grass
farina	pasta	wheat protein isolate
flour (<i>all purpose, bread,</i>	seitan	whole wheat berries
<i>cake, durum, enriched,</i>	semolina	
<i>graham, high gluten, high</i>	spelt	

Wheat is sometimes found in the following:

glucose syrup	starch (<i>gelatinized starch,</i>	surimi
soy sauce	<i>modified starch, modified</i>	
	<i>food starch, vegetable</i>	
	<i>starch)</i>	

How to Read a Label for a Shellfish-Free Diet

All FDA-regulated manufactured food products that contain a crustacean shellfish as an ingredient are required by U.S. law to list the specific crustacean shellfish on the product label.

Avoid foods that contain shellfish or any of these ingredients:

barnacle	lobster (<i>langouste, langoustine,</i>
crab	<i>Moreton bay bugs, scampi,</i>
crawfish (<i>crawdad, crayfish,</i>	<i>tomalley)</i>
<i>ecrevisse)</i>	prawns
krill	shrimp (<i>crevette, scampi)</i>

Mollusks are not considered major allergens under food labeling laws and may not be fully disclosed on a product label.

Your doctor may advise you to avoid mollusks or these ingredients:

abalone	oysters
clams (<i>cherrystone, geoduck,</i>	periwinkle
<i>littleneck, pismo, quabog)</i>	scallops
cockle	sea cucumber
cuttlefish	sea urchin
limpet (<i>lapas, apilhi)</i>	snails (<i>escargot)</i>
mussels	squid (<i>calamari)</i>
octopus	whelk (<i>Turban shell)</i>

Shellfish is sometimes found in the following:

bouillabaisse	seafood flavoring (<i>e.g., crab or</i>
cuttlefish ink	<i>clam extract)</i>
fish stock	surimi
glucosamine	

Keep the following in mind:

- Any food served in a seafood restaurant may contain shellfish protein due to cross-contact.
- For some individuals, a reaction may occur from inhaling cooking vapors or from handling fish or shellfish.

How to Read a Label for a Egg-Free Diet

All FDA-regulated manufactured food products that contain egg as an ingredient are required by U.S. law to list the word “egg” on the product label.

Avoid foods that contain eggs or Egg is sometimes found in the any of these ingredients: following:

albumin (<i>also spelled albumen)</i>	baked goods	marzipan
egg (<i>dried, powdered, solids, white, yolk)</i>	egg substitutes	marshmallows
eggnog	lecithin	nougat
lysozyme	macaroni	pasta

Keep the following in mind:

- Individuals with egg allergy should also avoid eggs from duck, turkey, goose, quail, etc., as these are known to be cross-reactive with chicken egg.

How to Read a Label for a Tree Nut-Free Diet

All FDA-regulated manufactured food products that contain a tree nut as an ingredient are required by U.S. law to list the specific tree nut on the product label.

Avoid foods that contain nuts or any of these ingredients:

almond	natural nut extract (<i>e.g., almond, walnut)</i>
artificial nuts	nut butters (<i>e.g., cashew butter)</i>
beechnut	nut meal
Brazil nut	nut meat
butternut	nut paste (<i>e.g., almond paste)</i>
cashew	nut pieces
chestnut	pecan
chinquapin nut	pesto
coconut	pili nut
filbert/hazelnut	pine nut (<i>also referred to as Indian,</i>
gianduja (<i>a chocolate-nut mixture)</i>	<i>pignoli, pignolia, pignon, piñon, and</i>
ginkgo nut	<i>pinoyon nut)</i>
hickory nut	pistachio
litchi/lychee/lychee nut	praline
macadamia nut	shea nut
marzipan/almond paste	walnut
Nangai nut	

Tree nuts are sometimes found in the following:

black walnut hull extract (<i>flavoring)</i>	nut oils (<i>e.g., walnut oil, almond oil)</i>
natural nut extract	walnut hull extract (<i>flavoring)</i>
nut distillates/alcoholic extracts	

Keep the following in mind:

- Mortadella may contain pistachios.
- There is no evidence that coconut oil and shea nut oil/butter are allergenic.
- Many experts advise patients allergic to tree nuts to avoid peanuts as well.
- Coconut, the seed of a drupaceous fruit, has typically not been restricted in the diets of people with tree nut allergy. However, in October of 2006, the FDA began identifying coconut as a tree nut. Medical literature documents a small number of allergic reactions to coconut; most occurred in people who were not allergic to other tree nuts. Ask your doctor if you need to avoid coconut.
- Talk to your doctor if you find other nuts not listed here.



Allergy Inspection Guide (4/01)

GUIDANCE ON INSPECTIONS OF FIRMS PRODUCING FOOD PRODUCTS SUSCEPTIBLE TO CONTAMINATION WITH ALLERGENIC INGREDIENTS

This guidance is reference material for investigators and other FDA personnel. The guidance does not bind FDA and does not confer any rights, privileges, benefits or immunities for or on any person(s). An alternative approach may be used if such an approach satisfies the applicable statutes, regulations or both.

August 2001 (Editorial Changes Only)

INTRODUCTION

Prior to conducting inspections involving any manufacturer using ingredients that are considered allergens, review the general inspectional instructions in the Investigations Operations Manual (IOM) Chapter 5 -Establishment Inspections, particularly those in IOM 530 -Food Inspections; and review Compliance Program 7321.005 -Domestic NLEA, Nutrient Sample Analysis and General Food Labeling Program and Compliance Policy Guide Section 555.250, titled "Statement of Policy for Labeling and Preventing Cross-contact of Common Food Allergens".

Each year the Food & Drug Administration (FDA) receives reports of consumers who experienced adverse reactions following exposure to an allergenic substance in foods. Food allergies are abnormal responses of the immune system, especially the production of allergen-specific IgE antibodies to naturally occurring proteins in certain foods that most individuals can eat safely. Frequently such reactions occur because the presence of the allergenic substance in the food is not declared on the food label. Current regulations require that all added ingredients be declared on the label, yet there are a number of issues that have arisen in connection with undeclared allergens that are not clearly covered by label regulations. This guidance covers the following problem areas:

1. Products that contain one or more allergenic ingredients, but the label does not declare the ingredient in the ingredient statement;
2. Products that become contaminated with an allergenic ingredient due to the firm's failure to exercise adequate control procedures, e.g. improper rework practices, allergen carry-over due to use of common equipment and production sequencing, inadequate cleaning;
3. Products that are contaminated with an allergenic ingredient due to the nature of the product or the process; i.e., use of common equipment in chocolate manufacturing where interim wet cleaning is not practical and only dry cleaning and product flushing is used;
4. A product containing a flavor ingredient that has an allergenic component, but the label of the product only declares the flavor, e.g., natural flavor. Under current regulations, firms are not required to declare the individual components of flavors, certain colors, and spices. However, firms are encouraged to specifically label allergenic components/ingredients that are in spices, flavors, and colors;
5. Products that contain a processing aid that have an allergenic component, but the label does not declare it. Processing aids that contain allergenic ingredients are not exempt from ingredient declaration under the incidental additives regulation (21 CFR 101.100(a)(3)), and therefore, must be declared.



FDA believes there is scientific consensus that the following foods can cause serious allergic reactions in some individuals and account for more than 90% of all food allergies:

Peanuts Soybeans Milk Eggs Fish Crustacea Tree nuts
Wheat

If you are requested to do a follow-up investigation involving an allergic reaction which appears to be caused by an undeclared food other than the eight foods listed above, then contact the CFSAN / Office of Field Programs regulatory contact listed in the compliance program for guidance.

PRODUCT DEVELOPMENT

Determine whether the firm identifies potential sources of allergens starting in the product development stage. For example, do they identify for each product all ingredients, ingredient components, processing aids, rework, processing steps, environmental conditions, and product carry over due to use of common equipment? Are potential sources of allergen contamination identified at each step?

Determine whether the products contain allergenic ingredients. For the most frequently produced products, request formulas. If formula information is refused, construct formulations by observing production.

Determine if the firm has assessed whether the packaging material used in direct contact with the product contains an allergen; e.g., foil coated with wheat ingredient as releasing agent. Does the firm use processing aids in the manufacture of the food? If so, do the processing aids contain allergenic ingredients? If so, what are the allergenic ingredients?

Does the firm use spices, flavors, or colors that contain allergenic components? If so, do these spices, flavors or colors contain allergenic ingredients? If so, what are the allergenic ingredients?

RECEIVING

Determine whether the firm uses allergenic ingredients.

Determine how these allergenic ingredients are handled at receiving and how they are identified and/or segregated in raw material storage.

Determine if the firm stores any of these allergenic ingredients in bulk tanks. If yes, how are the contents of the bulk tanks identified?

Determine what the firm's procedure is for receiving ingredients into the bulk tank and what controls are in place to ensure proper product identity at all times.

Determine if the firm receives any raw materials that are labeled with a statement, such as "this product was processed on machinery that was used to process products containing (allergen)" or "may contain (allergen)". If so what ingredients? How are such statements reflected on the label of the firm's finished product?

Determine whether a label from each incoming lot of finished product labels is visually checked, either upon receipt or during production, to ensure the ingredient statement is correct for the intended product and that it is not a carton of mixed labels.

EQUIPMENT

Try to inspect the equipment before processing begins and document the adequacy of clean up. For example, is there a build up of residual materials or pockets of residue in corners that may contain an allergen from previous runs? What is the condition of the conveyor belts? Is there any product build-up above processing zones? Also observe whether the firm checks the processing lines for cleanliness prior to production and whether they maintain a record of the check. Is this simply a visual check or does the firm use another method?

Determine whether the firm uses a Clean-In-Place system for cleaning fixed lines, e.g. pipelines and tanks. If so, how do they ensure that the interior



surfaces of the welds in the lines are smooth and will not entrap material during operation? Are the pipes free from dents?

Determine if equipment is cleanable, e.g. stainless steel, accessible for cleaning.

Determine if the firm has a written procedure for cleaning. Does the cleaning procedure include how to clean and at what frequency the equipment is cleaned? Describe procedure.

Determine if equipment and production lines are shared to process different products.

Determine if shared equipment is cleaned in between production of a product that contains allergens and one that does not, e.g. full clean-up with detergent and water.

PROCESSING

Determine what control measures, if any, are used by the firm to prevent the contamination of products that do not contain allergens? What control measures does the firm employ? At what steps in production are the control measures instituted?

Determine how the firm separates the production of those products that contain allergens from those that do not contain such ingredients. Is cross-contact likely to occur, e.g., airborne food particles, dust, allergen product residues from equipment, etc.?

Determine if unpackaged, exposed product on the processing line is handled in a way that protects it against contamination.

Determine if shared processing lines (equipment) are used. If yes, is allergen-containing product processed first or last?

Determine what is done with the portion of the product that is a mixture of the non-allergen product and allergen product, e.g., is it sent to waste or for animal feed or reworked?

Determine whether the firm reworks product, and if they only rework like products. How is rework controlled? Is rework inventory reconciled at the end of the day?

Determine how product to be reworked is stored and identified. Are rework containers clearly labeled? Determine how such rework holding vessels and containers are cleaned and stored.

FINAL PRODUCT TESTING

Determine if the firm performs final product testing for the presence of allergens in products not intended to contain allergens. If so, for which allergens, and how is the testing documented?

Determine what method of analysis is used and the sensitivity of that method.

Determine if the testing is routine or periodic.

Note: You should use these questions solely for information gathering purposes. If the firm asks if FDA has methods for detecting allergens, your response should be that FDA has not yet designated any method of allergen testing for regulatory purposes. There are several commercial enzyme-linked immunosorbent assays (ELISA) kits for food allergens available in the marketplace. Currently, FDA is evaluating some of these kits and is also cooperating with kit manufacturers to conduct international collaborative studies to evaluate the performance of some of the ELISA-based methods.

LABELING

Determine if finished product label controls are employed, e.g., how are labels delivered to the filling and/or packaging area?

Determine if product labels with similar appearances but different ingredients are controlled to ensure that the correct label is applied to correct product.

Determine if finished product packages are inspected prior to distribution to ensure that an allergen containing product is labeled properly, or that labels



are inspected during production. Is that inspection documented?

Determine if secondary ingredients are incorporated in the final product ingredient statement, e.g. the raw material mayonnaise, which contains eggs, oil and vinegar.

Determine if the firm uses a statement such as "this product was processed on machinery that was used to process products containing (allergen)" or a statement such as "may contain (allergen)" if the firm uses shared equipment for products that contain and products that do not contain allergens. Any other such statement? Ask the firm why they believe they have to use the advisory statement.

Determine if the finished product label reflects any advisory statements that were on the raw material labels, e.g., "this product was processed on machinery that was used to process products containing (allergen)".

Determine if the firm has a system to identify finished products made with rework containing allergenic ingredients. Does the final product label identify the allergens that may have been in the reworked product?

INSPECTION/DOCUMENTATION/ ESTABLISHMENT INSPECTION REPORT

It is extremely important that each Establishment Inspection Report (EIR) contain complete, precise, and detailed descriptions of the entire operation. The investigator must attempt to fully identify or demonstrate the likely sources of and possible routes of contamination of the product with undeclared allergen ingredients.

The critical points in the food manufacturing operation should be identified and special attention given to these areas.

From: <http://www.fda.gov/ICECI/Inspections/InspectionGuides/ucm074944.htm>



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FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN

Name: _____ D.O.B.: _____

Allergy to: _____

Weight: _____ lbs.

Asthma: Yes (higher risk for a severe reaction) No

For a suspected or active food allergy reaction:

PLACE
STUDENT'S
PICTURE
HERE

FOR ANY OF THE FOLLOWING

SEVERE SYMPTOMS

If checked, give epinephrine immediately if the allergen was definitely eaten, even if there are no symptoms.



LUNG

Short of breath, wheezing, repetitive cough



HEART

Pale, blue, faint, weak pulse, dizzy



THROAT

Tight, hoarse, trouble breathing/ swallowing



MOUTH

Significant swelling of the tongue and/or lips



SKIN

Many hives over body, widespread redness



GUT

Repetitive vomiting or severe diarrhea



OTHER

Feeling something bad is about to happen, anxiety, confusion

OR A COMBINATION
of mild or severe symptoms from different body areas.

NOTE: Do not depend on antihistamines or inhalers (bronchodilators) to treat a severe reaction. **Use Epinephrine.**



- INJECT EPINEPHRINE IMMEDIATELY.**
- Call 911.** Request ambulance with epinephrine.
 - Consider giving additional medications (following or with the epinephrine):
 - » Antihistamine
 - » Inhaler (bronchodilator) if asthma
 - Lay the student flat and raise legs. If breathing is difficult or they are vomiting, let them sit up or lie on their side.
 - If symptoms do not improve, or symptoms return, more doses of epinephrine can be given about 5 minutes or more after the last dose.
 - Alert emergency contacts.
 - Transport student to ER even if symptoms resolve. Student should remain in ER for 4+ hours because symptoms may return.

NOTE: WHEN IN DOUBT, GIVE EPINEPHRINE.

MILD SYMPTOMS

If checked, give epinephrine immediately for ANY symptoms if the allergen was likely eaten.



NOSE

Itchy/runny nose, sneezing



MOUTH

Itchy mouth



SKIN

A few hives, mild itch



GUT

Mild nausea/discomfort



- GIVE ANTIHISTAMINES, IF ORDERED BY PHYSICIAN**
- Stay with student; alert emergency contacts.
- Watch student closely for changes. If symptoms worsen, **GIVE EPINEPHRINE.**

MEDICATIONS/DOSES

Epinephrine Brand: _____

Epinephrine Dose: 0.15 mg IM 0.3 mg IM

Antihistamine Brand or Generic: _____

Antihistamine Dose: _____

Other (e.g., inhaler-bronchodilator if asthmatic): _____

PARENT/GUARDIAN AUTHORIZATION SIGNATURE

DATE

PHYSICIAN/HCP AUTHORIZATION SIGNATURE

DATE

FORM PROVIDED COURTESY OF FOOD ALLERGY RESEARCH & EDUCATION (FARE) (WWW.FOODALLERGY.ORG) 8/2013

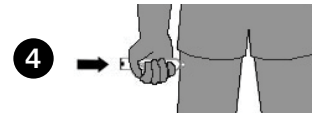
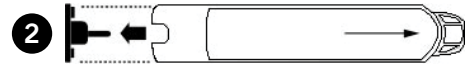


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FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN

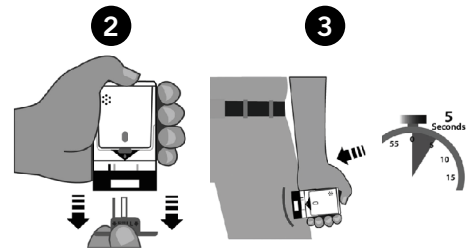
EPIPEN® (EPINEPHRINE) AUTO-INJECTOR DIRECTIONS

1. Remove the EpiPen Auto-Injector from the plastic carrying case.
2. Pull off the blue safety release cap.
3. Swing and firmly push orange tip against mid-outer thigh.
4. Hold for approximately 10 seconds.
5. Remove and massage the area for 10 seconds.



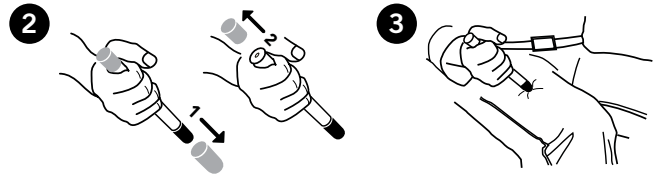
AUVI-Q™ (EPINEPHRINE INJECTION, USP) DIRECTIONS

1. Remove the outer case of Auvi-Q. This will automatically activate the voice instructions.
2. Pull off red safety guard.
3. Place black end against mid-outer thigh.
4. Press firmly and hold for 5 seconds.
5. Remove from thigh.



ADRENACLICK®/ADRENACLICK® GENERIC DIRECTIONS

1. Remove the outer case.
2. Remove grey caps labeled "1" and "2".
3. Place red rounded tip against mid-outer thigh.
4. Press down hard until needle penetrates.
5. Hold for 10 seconds. Remove from thigh.



OTHER DIRECTIONS/INFORMATION (may self-carry epinephrine, may self-administer epinephrine, etc.):

Treat student before calling Emergency Contacts. The first signs of a reaction can be mild, but symptoms can get worse quickly.

EMERGENCY CONTACTS — CALL 911

RESCUE SQUAD: _____

DOCTOR: _____ PHONE: _____

PARENT/GUARDIAN: _____ PHONE: _____

OTHER EMERGENCY CONTACTS

NAME/RELATIONSHIP: _____

PHONE: _____

NAME/RELATIONSHIP: _____

PHONE: _____

PARENT/GUARDIAN AUTHORIZATION SIGNATURE

DATE

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About Anaphylaxis

If you believe that you or your family member may be experiencing anaphylaxis – a severe, potentially fatal allergic reaction – administer the epinephrine auto-injector prescribed to the individual immediately and call 911.

This page provides information on the causes of anaphylaxis (pronounced an-uh-fil-LAX-is), its symptoms, and how it is treated. For additional information, please contact your allergist or physician.

During anaphylaxis, allergic symptoms can affect several areas of the body and may threaten breathing and blood circulation. Food allergy is the most common cause of anaphylaxis, although several [other allergens](#) – insect stings, medications, or latex – are other potential triggers. Rarely, anaphylaxis is triggered by exercise. Another uncommon form of anaphylaxis can occur when a person exercises soon after eating a problem food. Very rarely, anaphylaxis can occur without an identifiable trigger.

Although anyone who has a food allergy can experience anaphylaxis, the foods most likely to cause a severe reaction are [peanuts](#), [tree nuts](#), [fish](#) and [shellfish](#). People who have both asthma and a food allergy are at greater risk for anaphylaxis.

At present, strict avoidance of problem foods is the only way to prevent anaphylaxis, although researchers are working on preventive therapies. ([Learn about Food Allergy Research](#))

[Epinephrine](#) (adrenaline) is a medication that can reverse the severe symptoms of anaphylaxis. It is given as a “shot” and is available as a self-injector, also known as an epinephrine auto-injector, that can be carried and used if needed. Epinephrine is a highly effective medication, but it must be administered promptly during anaphylaxis to be most effective. Delays can result in death in as little as 30 minutes. ***Even if epinephrine is administered promptly and symptoms seem to subside completely, the individual***

who was treated with epinephrine should always be taken to the emergency room for further evaluation and treatment.

Symptoms of Anaphylaxis

Anaphylaxis often begins within minutes after a person eats a problem food. Less commonly, symptoms may begin hours later. About 25 percent of patients have a second wave of symptoms one to several hours after their initial symptoms have subsided. This is called biphasic anaphylaxis.

Anaphylaxis is highly likely to be occurring when any ONE of the following happens within minutes to hours after ingestion of the food allergen:

1. A person has symptoms that involve the skin, nose, mouth or gastrointestinal tract and either:
 - › Difficulty breathing, or
 - › Reduced blood pressure (e.g., pale, weak pulse, confusion, loss of consciousness)
2. A person was exposed to a suspected allergen, and two or more of the following occur:
 - › Skin symptoms or swollen lips
 - › Difficulty breathing
 - › Reduced blood pressure
 - › Gastrointestinal symptoms (e.g., vomiting, diarrhea, or cramping)
3. A person was exposed to a known allergen, and experiences:
 - › Reduced blood pressure, leading to weakness or fainting

Treating Anaphylaxis

Patients and their families should know how to respond to a severe reaction. If your allergist prescribes epinephrine, it is normal to be nervous about learning how to properly use the auto-injector. Keep in mind that thousands of people have successfully learned to use these devices, and with practice, you will, too. Be sure to read the



instructions carefully and practice using the training device provided by the manufacturer. Check out the manufacturer's website to see if a training video is available. By making sure you have all of the information you need and practicing with the training device, you will be well-prepared to use the auto-injector when anaphylaxis occurs. Knowing that you are prepared for an emergency will give you peace of mind. Depending on which type of auto-injector your doctor prescribes, you can find detailed instructions and resources online ([Auvi-Q](#), [EpiPen](#) or [AdrenaClick](#)).

Keep in mind that epinephrine expires after a certain period (usually around one year), so be sure to check the expiration date and renew your prescription in time. Although you may never need to take your medication, it's important to have it available and ready for use at all times. (Allergists generally recommend that if you have an anaphylactic reaction and your epinephrine has expired, you should use the auto-injector anyway and, as always, call 911 for help immediately.)

Coping with Anaphylaxis

The unpredictability of anaphylaxis is one of the most difficult aspects of living with a food allergy. A person who previously had only mild reactions can have a life-threatening reaction, while someone with a history of anaphylaxis may have a mild reaction. If you have a food allergy or experience an anaphylactic reaction, it is important that you consult with an allergist. The allergist will review your medical history and discuss allergen avoidance and appropriate treatments for both anaphylaxis and milder allergic reactions. (For tips on avoiding problem foods, please check out the section on [allergens](#).) If you are taking medications for other conditions, your allergist will determine whether or not they could interfere with the activity of epinephrine and discuss your options.

Fortunately, thanks to the effectiveness of epinephrine and a growing awareness of the seriousness of food allergies, deaths from anaphylaxis are not common. Those at highest risk for fatal reactions appear to be teenagers or young adults who also have asthma and who delay in receiving

epinephrine. Research has shown that many fatalities could have been prevented if this life-saving medication had been administered immediately. It cannot be stressed too often that anaphylaxis should always be handled as a medical emergency.

To recap, be sure to:

Learn all you can about avoiding [allergens](#). Read [food labels](#) carefully and don't hesitate to ask questions when eating away from home. Vigilance is your first line of defense against anaphylaxis.

- Have your medication with you wherever you go.
- Talk to your allergist about when and how to use emergency medications.
- Make sure prescriptions are up-to-date.
- Wear [medical identification](#) (e.g., bracelets, other jewelry) at all times.
- ***Don't delay using your epinephrine while waiting to see if your symptoms improve!*** Use your emergency medications as prescribed.
- ***Get to an emergency room for evaluation and further treatment right away*** – even if your medication has stopped the reaction.
- ***Epinephrine is not a "foolproof" treatment.*** Don't take chances by eating a problem food.

<http://www.foodallergy.org/anaphylaxis>



Treatment & Managing Reactions

Currently, the only way to prevent a food-allergic reaction is to avoid the problem food.

Once you have been diagnosed with a food allergy, talk to your doctor about how allergic reactions should be treated. Have your doctor create a written Food Allergy & Anaphylaxis Emergency Care Plan so that you and others will know what to do in the event of a reaction.

Mild to moderate **symptoms** (e.g., itching, sneezing, hives and rashes) are often treated with antihistamines and oral or topical steroids.

For patients at risk of experiencing a severe reaction (**anaphylaxis**), epinephrine is prescribed. **Epinephrine** is the only medication that can reverse the symptoms of anaphylaxis. It is available in an auto-injector (Auvi-Q™, EpiPen® or Adrenaclick®). If prescribed, use epinephrine at the first sign of an allergic reaction and call 911. Request an ambulance and tell the dispatchers that you have just used epinephrine for a suspected food-induced anaphylactic reaction. Patients should always go to the emergency room for further treatment, even if symptoms appear to resolve after epinephrine is administered.

Epinephrine is a safe drug, with the risks of anaphylaxis outweighing any risks of administering the medication. Extra caution is only needed for elderly patients or those with known heart disease where an increased heart rate could be problematic. Nonetheless, epinephrine should be used to treat anaphylaxis in these individuals. Patients should proceed to the emergency room after epinephrine is administered in case additional medication or treatment is needed to manage the reaction, not because epinephrine is a dangerous drug.

Once epinephrine is administered, other medications also may be used to control the reaction:

Steroids (e.g., cortisone) may be given, typically in the emergency room, to help reduce inflammation after an anaphylactic attack. Although steroids do not work fast enough for emergency treatment, they may help prevent a recurrence after the initial reaction has been treated.

Antihistamines, known as H1 blockers, are prescribed to relieve mild allergy symptoms, although they cannot control a severe reaction. Medications in this class include diphenhydramine (Benadryl®) and cetirizine (Zyrtec®). An antihistamine can help symptoms subside during anaphylaxis, but it should never be given as a substitute for epinephrine.

Asthma Medications. Short-acting bronchodilators (known as “rescue” inhalers), such as albuterol (Alupent®, Proventil®, Ventolin®), may be used to help relieve breathing problems once epinephrine has been given, particularly if you are experiencing asthma symptoms. They should not be depended upon to treat the breathing problems that can occur during anaphylaxis—use the epinephrine.

Be Prepared...Be Safe

An effective food allergy treatment plan includes all of the following:

- Strict avoidance of problem foods
- Working with your doctor to develop a Food Allergy & Anaphylaxis Emergency Care Plan
- Wearing emergency medical identification (e.g., bracelet, other jewelry) at all times
- Carrying your medication wherever you go
- Taking your medication at the first sign of a reaction
- Getting to an emergency room for follow-up treatment if you have a severe reaction

<http://www.foodallergy.org/treating-an-allergic-reaction>

Public Service Announcement Scripting Template

You can use this scripting template to plan a public service announcement (PSA) similar to the Poverty Matters presentation posted online at <http://bit.ly/smskivavideo>.

Creating an Outline

Title of your PSA:

Consider giving your PSA a clever title that will make it memorable to viewers. Like the titles of books or movies, PSA titles are important for engaging viewers. An engaging title can even bring viewers to your presentation by itself!

Topic of your PSA:

Subcategories of your topic:

- 1.
- 2.
- 3.
- 4.

When planning your PSA, organizing the categories of facts, statistics, statements, and opinions that you collect on your primary issue into subcategories lends structure to your final piece. For example, if your primary issue is poverty, the content you collect might be organized into categories related to poverty in Asia, Africa, South America, and the United States. Your content might also be organized into categories by different indicators of poverty such as average salaries, levels of education, access to technology, or number of hours worked.

In one sentence, summarize the main idea you're hoping to communicate in your PSA:

Thinking through the primary purpose for your PSA early will help you make important decisions about the facts, fonts, images, and music to include in your final product. Examples: *"After watching my PSA, I want my audience to know that life is very different in developed countries than it is in developing countries."*

Emotion you're trying to communicate:

Why this emotion makes sense for your PSA:

Every PSA is designed to persuade viewers to take action on an issue of importance. As a result, every PSA must attempt to make viewers feel specific emotions. Thinking through how you want your viewers to feel early in the planning process will help you make better choices as you develop your final product.

Gathering Content

The most critical elements in any public service announcement are the facts, statistics, opinions, and quotations that you choose to share with viewers. Without convincing content, you'll never be able to convince viewers to feel the same way that you do about your topic.

Use the following table to begin collecting content for your public service announcement. Remember to find content from each of the subcategories that you identified earlier.

TYPES OF CONTENT	YOUR CONTENT
<p>When collecting facts and statistics, consider crafting comparisons or cause-and-effect statements. Remember to record the source for all statistics that you gather so your viewers can check your presentation for accuracy. Facts and statistics will make up the majority of good persuasive presentations.</p> <p><i>Example: While 95 percent of the people in the United States can read and write, 21 percent of the people in Burkina Faso can read and write. (comparison)</i></p>	<p>Sources used:</p>
<p>All public service announcements are designed to be persuasive. Persuasion requires content creators to share their opinion. Be sure to use words and phrases connected to the emotion that you're hoping to communicate!</p> <p><i>Example: Poverty is devastating countries, destroying families, and leaving children to fail.</i></p>	<p>Sources used:</p>
<p>Quotations from recognized experts, international superstars, or the people closest to your issue can be particularly persuasive.</p> <p><i>Example: "My greatest wish is just to have a chance." –Maresh, age 5</i></p>	<p>Sources used:</p>

Planning Your Catchphrase

One of the ways that producers of persuasive videos influence readers is by repeating short, memorable catchphrases throughout their presentations. Influential catchphrases will reinforce the main idea and the emotion that the video is hoping to convey. Catchphrases can also be used to provide structure and organization for the video by separating sections related to different subtopics. Finally, catchphrases can be used to convince viewers to take action. Be sure to draft a few catchphrase options and then select the best.

Use the following table to craft a catchphrase for your presentation.

MAIN IDEA	EMOTIONS TO CONVEY	CATCHPHRASE OPTIONS
Poverty is an issue we should all care about.	Sadness, shock, amazement	Are you okay with that? Poverty's real. You can help. Someone's starving.
Your main idea:	Your emotions:	Your catchphrase planning:

Selecting Images

Because public service announcements share a ton of information in a short period of time (two to three minutes), you should include images that communicate powerful emotions and ideas. Quality images can catch a viewer's attention and tell a story all at once.

Selecting images is *not*, however, a quick and easy process. Just like music files and written text, photos are often protected by copyright. To ensure that you are not breaking copyright laws, you must select images from Creative Commons photo libraries and include links back to the original images found online. The most popular Creative Commons photo libraries are:

- Flickr Creative Commons—www.flickr.com/creativecommons
- Wikimedia Commons—http://commons.wikimedia.org/wiki/Main_Page
- MorgueFile—www.morguefile.com

Use the following table to select four to five images to use in your presentation; copy and paste the image's URL into the final column.

TITLE	SHORT DESCRIPTION	URL
A lady with an umbrella	A picture of a very old Japanese homeless woman with a grooved face	www.flickr.com/photos/sukanto_debnath/508956163/

Organizing Content

Now that you've collected the source material for your public service announcement, you are ready to begin organizing your content and your images into an influential final product. Remember that persuasive videos often include short groupings of similar facts or images followed by catchphrases that are repeated throughout the video.

Use the following table to begin organizing the content for your video. In the first column, list the facts, statistics, opinions, quotations, or images that you plan to use in your presentation. In the second column, list any special effects you'd like to use, such as transitions between slides, different font colors, or capitalization for emphasis. Be aware that a two-minute video will require about twenty total scenes.



SCENE	SPECIAL ACTIONS AND EFFECTS
The average American makes \$42,000 per year.	Make \$42,000 larger than other fonts. Use yellow for \$42,000 and white for all other words. Use "fade out" transition at the end of slide.
The average Zimbabwean makes \$200 per year.	Make \$200 larger than other fonts. Use yellow for \$200 and white for all other words. Use "fade out" transition at the end of slide.
Are you okay with that?	Use catchphrase to end the section on salaries. Capitalize <i>you</i> . Use yellow for <i>you</i> and white for all other words. Use "fade out" transition at the end of slide.

Selecting Background Music

Like images, the music that you choose to include in your public service announcement can communicate powerful emotions and ideas to your viewers. If you carefully select a quality background track, you can reinforce the main idea of your presentation and engage your audience at the same time.

Just like photographs and written text, though, music is often protected by copyright. To ensure that you are not breaking copyright laws, you must select audio files from Creative Commons audio libraries and include links back to the original files found online.

The easiest way to ensure that you are using Creative Commons music in your videos is to create your final products with Animoto (<http://animoto.com>), an easy-to-use online moviemaking tool that has an extensive library of Creative Commons music tracks that can be added to videos.

While regular Animoto users can only create thirty-second videos for free, teachers and students can visit <http://animoto.com/education> to sign up for educator accounts with access to additional features.

Now that you've finished planning your public service announcement, it's time to begin assembling your final copy. To do so, follow the directions on the tip sheet "Assembling Your Public Service Announcement" (see go.solution-tree.com/technology).



Public Service Announcement Rubric

CATEGORY	4	3	2	1
MAIN IDEA/ CONTENT	Original, accurate, states a clear main idea, interesting PSA that adequately addresses food allergies.	Accurate PSA, states a main idea, adequately addresses food allergies.	Missing two project components and content is somewhat unorganized.	Missing three or more project components and content is unorganized.
FAIR USE OF TECHNOLOGY/ GRAPHICS	PSA follows fair use for all music, sound effects, and graphics/images. All text is from an approved script, and is the original work of the team or includes proper citations.	PSA follows fair use for most music, sound effects, and graphics/images. All text is from an approved script, and is mostly the original work of the team or includes most proper citations.	Most PSA is the original work of the team from an approved script, but some material was used without permission or proper citation.	Missing information regarding the description of the fundamentals of the topic, and unable to support the findings with background information.
TECHNICAL PRODUCTION	Tone and voice convey emotion and/or enthusiasm. The audio is clear, easy to understand, and the graphics and music support the message.	Tone and voice frequently convey emotions and/or enthusiasm. The audio is clear, easy to understand, and the graphics and music mostly support the message.	Tone and voice mostly convey some emotion and/or enthusiasm. Most of the audio is clear, somewhat difficult to understand at times. Graphics and music are distracting at times.	Tone and voice do not convey emotion or enthusiasm. The audio is not clear and is difficult to understand. The graphics and music are absent from the PSA.
USE OF DATA	At least three facts learned in class and three statistics from the class survey are included in the PSA to support the main idea.	At least two facts learned in class and two statistics from the class survey are included in the PSA to support the main idea.	At least one fact learned in class and one statistic from the class survey are included in the PSA and somewhat support the main idea.	No facts learned from class or from the class survey are included in the PSA.

PSA Team Progress List

Students should document the following tasks on their Project Management Log and the teacher should initial by each task as they are completed.

- Completed PSA planning guide
- Discussed PSA topic and plan for execution with the teacher
- Completed PSA script
- Video has been recorded
- Video editing completed
- Planned for presentation



Self-Reflection on Project Work

Think about what you did in this project and how well the project went. Write your comments in the right column.

Student Name:	
Project Name:	
Driving Question:	
List the major steps of the project:	
ABOUT YOURSELF:	
What is the most important thing you learned in this project:	
What do you wish you had spent more time on or done differently:	
What part of the project did you do your best work on:	
ABOUT THE PROJECT:	
What was the most enjoyable part of this project:	
What was the least enjoyable part of this project:	
How could your teacher(s) change this project to make it better next time:	



Project Presentation Audience Feedback

Student Team _____

Project Name _____ Date _____

Thank you for attending our project presentations and taking the time to write thoughtful answers to the following questions:

1. What did you learn from this presentation, or what did it make you think about?

2. What did you like about this presentation?

3. Do you have any questions about the topic or about how the project was done?

4. Any other comments about this presentation?



Collaboration Rubric

	BELOW STANDARD	APPROACHING STANDARD	AT STANDARD	ABOVE STANDARD
RESPONSIBILITY FOR ONESELF	<ul style="list-style-type: none"> is not prepared and ready to work with the team does not do project tasks does not complete tasks on time does not use feedback from others to improve his/her work 	<ul style="list-style-type: none"> is sometimes prepared and ready to work with the team does some project tasks, but needs to be reminded competes some tasks on time sometimes uses feedback from others 	<ul style="list-style-type: none"> is prepared and ready to work with the team; is available for meetings and uses the team's communication system does what he or she is supposed to do without having to be reminded completes tasks on time uses feedback from others to improve his or her work 	<p><i>In addition to At Standard criteria:</i></p> <ul style="list-style-type: none"> does more than what he or she has to do asks for additional feedback to improve his or her work, beyond what everyone has been given
HELPING THE TEAM	<ul style="list-style-type: none"> does not help the team solve problems; may cause problems does not share ideas with other team members does not give useful feedback to others does not offer to help others 	<ul style="list-style-type: none"> cooperates with the team but does not actively help it makes some effort to share ideas with the team sometimes gives useful feedback to others sometimes offers to help others 	<ul style="list-style-type: none"> helps the team solve problems, manage conflicts, and stay focused and organized shares ideas that help the team improve its work gives useful feedback (specific and supportive) to others so they can improve their work offers to help others do their work if they need it 	<p><i>In addition to At Standard criteria:</i></p> <ul style="list-style-type: none"> steps in to help the team when another member is absent encourages others to share ideas, helps to make them clear, and connects them to the team's work notices if a team member does not understand something and takes action to help
RESPECT FOR OTHERS	<ul style="list-style-type: none"> does not pay attention to what teammates are talking about does not show respect for teammates (may interrupt, ignore ideas, hurt feelings) 	<ul style="list-style-type: none"> usually listens to teammates, but not always is polite and kind to teammates most of the time, but not always 	<ul style="list-style-type: none"> listens carefully to teammates is polite and kind to teammates 	<p><i>In addition to At Standard criteria:</i></p> <ul style="list-style-type: none"> encourages the team to be respectful to each other recognizes everyone's strengths and encourages the team to use them



Milk Sensory Evaluation

Name _____ Date _____ Class Period _____

"MILK" SAMPLE	AROMA	TEXTURE	COLOR	FLAVOR
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				