



Lesson Plan

Unit 3: Lesson 2 of 3

Safe Handling of Food

Created: 08/2022 by the National FFA Organization

This lesson will address Good Manufacturing Practices (GMPs), Sanitation Standard Operating Procedures (SSOPs) and safe ways to handle food to help prevent foodborne illnesses.

Student Learning Objectives:

After completing these activities, students will ...

1. Describe good manufacturing practices (GMPs), sanitation standard operating procedures (SSOPs) and safe ways to handle food.
2. Describe how contaminants can travel.

Suggested Grade Level:

Grades 9 and 10 (This lesson is written so instructors can scale up or down based on class needs.)

Suggested Time: 180 minutes (*Time requirements may vary based upon student understanding and class schedule.)

Resources/References:

1. Website: AgExplorer, AgExplorer.FFA.org
2. Video: Activity 1 Music, <https://www.youtube.com/watch?v=FsUa8P-L2Ag>

Related Resources:

1. Food and Drug Administration, <https://www.fda.gov/>

Lesson Preparation:

1. Purchase GloGerm supplies. Recommended: GloGerm gel or lotion, Black Glo Light and other items if desired. Purchase here: http://www.glogerm.com/mm5/merchant.mvc?Screen=CTGY&Category_Code=CK4
2. Be sure to have all GloGerm supplies in stock prior to beginning this lesson.
3. If you cannot purchase GloGerm, use spray cooking oil where the lesson indicates using GloGerm. Oil will not glow, but it will transfer from object to object and help address the same issue: contamination.

Equipment and Supplies Needed:

1. GloGerm supplies (See lesson preparation section.)
2. Computer with internet for students
3. Projector with board/screen to write on
4. One copy per student of "Activity 1: Food Safety Karaoke and Art"
5. One copy per student of "Activity 2: Case Study"
6. "Keeping Food Safe" PowerPoint c
7. "Equipment and Facility Cleaning and Inspection" PowerPoint
8. Basic art supplies for Activity 1: crayons, markers, clean white paper, construction paper, glue, tape, Play-Doh, sculpting clay, toothpicks, popsicle sticks, etc.
9. One copy per student of "Food Safety Chain" handout

Vocabulary:

1. SSOP
2. Cleaning
3. Sanitizing

4. Heat sanitizing
5. Chemical sanitizing
6. Preventative maintenance
7. Pre-operational sanitizing
8. Operational Sanitation
9. FSIS
10. FDA
11. DHS
12. DHHS
13. CDC
14. EPA
15. GMP

Cross-Curricular Connections:

Science	English/Language Arts	Technology	Engineering
Students apply the concepts of food science to help understand how microorganisms impact food spoilage throughout this entire lesson.	Activity 1: Students are challenged to “sing” a review song by reading provided lyrics.	Activity 2: Students do additional research online to complete the activity.	Activity 1: Students will construct an “art” sculpture of some kind using materials provided.

Virtual Instruction Ideas:

This lesson may be adapted to teach online and/or virtually. Students will need access to all materials digitally. Students will also need access to craft materials as found listed in this lesson plan. Ideally, remote students would record themselves for Activity 1, submit photos of their “art” online to the teacher and submit other items online as needed.

Student Activity Sheets:

Direct access to student activity sheets without lesson plan or answer key for easy upload to a learning management system or printing for classwork.

<https://ffa.box.com/s/deipndadjx2117x6ymwzrz32g3yomark> (Word)

<https://ffa.box.com/s/0f6knkklhf9aojt1byfp9cx2l2g6wz7q> (PDF)

<https://ffa.box.com/s/lkyx3bfijrp32ztjv1h7ogomm0aykafc> (Non-Designed)

<https://docs.google.com/document/d/1nQpMW3bONuRuPyM0QdjFZNB2pZkygfLriXSUOKCsY3U/copy> (Google)

These Activities are Aligned to the Following Standards:

AFNR Performance Element

- FPP.01. Develop and implement procedures to ensure safety, sanitation, and quality in food product and processing facilities.

FFA Precept

- FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results, no matter what the goal or task at hand.
- FFA.PL-C.Vision: Visualize the future and how to get there.
- FFA.PG-J.Mental Growth: Embrace cognitive and intellectual development relative to reasoning, thinking and coping.
- FFA-CS-M.Communication: Effectively interact with others in personal and professional settings.
- FFA-CS-N.Decision Making: Analyze a situation and execute an appropriate course of action.

Common Career Technical Core

- AG-FD1 Develop and implement procedures to ensure safety, sanitation, and quality in food product and processing facilities.

NASDCTEc

- AGPA01.01 Design and implement procedures and plans that demonstrate application of food processing principles to manage quality control in the food product and processing industry.
- AGPA01.04 Identify and apply food processing, handling, and storage factors to demonstrate their impact on product quality and safety.

AFNR Cluster Skills

- CS.03. Examine and summarize the importance of health, safety and environmental management systems in AFNR workplaces.
- CS.01. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster.
- CS.02. Evaluate the nature and scope of the Agriculture, Food, and Natural Resources Career Cluster and the role of agriculture, food, and natural resources (AFNR) in society and the economy.

Common Core – Reading: Informational Text

- CCSS.ELA-Literacy.RI.9-10.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- CCSS.ELA-Literacy.RI.9-10.2 Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

Common Core – Writing

- CCSS.ELA-Literacy.W.9-10.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

Common Core – Speaking and Listening

- CCSS.ELA-Literacy.SL.9-10.1.C Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
- CCSS.ELA-Literacy.SL.9-10.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

Common Core – Literacy in Science & Technical Subjects: Writing

- CCSS.ELA-Literacy.WHST.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Common Core – Math Practices

- CCSS.MATH.PRACTICE.MP6 Attend to precision.

Green/Sustainability Knowledge and Skill Statements

- AFNR Career Cluster-Food Products and Processing Systems Pathway, Statement 2 Analyze the impact of various food production and processing practices and policies on ecological and public health.

National Standards for Financial Literacy

- Buying Goods and Services, Benchmarks: Grade 12, Statement 7 Governments establish laws and institutions to provide consumers with information about goods or services being purchased and to protect consumers from fraud.

AFNR Career Ready Practices

- CRP.02. Apply appropriate academic and technical skills. Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive.
- CRP.03. Attend to personal health and financial well-being. Career-ready individuals understand the relationship between personal health, workplace performance and personal well-being; they act on that understanding to regularly practice healthy diet, exercise and mental health activities.
- CRP.04. Communicate clearly, effectively, and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods.
- CRP.05. Consider the environmental, social and economic impact of decisions. Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment.
- CRP.06. Demonstrate creativity and innovation. Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization.
- CRP.07. Employ valid and reliable research strategies. Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies.
- CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem.

Partnership for 21st Century Skills

- Critical Thinking and Problem Solving
- Flexibility and Adaptability
- Implement Innovations
- Information Literacy
- Productivity and Accountability
- Think Creatively

Lesson Plan:

1. Bell Ringer:

- a. Have the following written on the board or shown via a projector:
 - i. 1) Students: Please do not wash your hands.
 - ii. 2) You may notice an oily substance on your hands. It is part of today's lesson.
 - iii. 3) Shake hands with a classmate before class begins.
- b. Seconds before class: Place a generous amount of GloGerm on your hands. You may also wish to "contaminate" areas of the classroom. (See GloGerm product purchase options online — sprays, powders, etc.).
- c. As each student enters your room, be sure to shake their hand firmly. Greet them as usual.
- d. Once all students have entered the classroom, begin by saying, *Why do you think I put an oily substance on your hands today? Any ideas on what we will be doing in class?* Allow students to answer/guess.
- e. Tell students, *I am going to turn off the lights and walk about the room with a black light. Please hold out your hands so we all can see them under the light. I am going to see how contaminated you all are!*
- f. Turn off classroom lights. Take black light around classroom examining student hands (and surfaces if you contaminated them prior to class with GloGerm). Be sure to point out hands that "glow."
- g. Instruct students to wash their hands. (Students must use water for this step.)
- h. Complete Step F again. This time make sure to point out who did not wash their hands very well if some still glow.
- i. Turn the classroom lights back on.
- j. Be sure all student hands, surfaces, etc. are washed and clean at this point.
- k. Move on to the Introduction section of the lesson.

2. Introduction:

- a. Ask students, "What was the purpose of the GloGerm activity?" Allow students to answer: to show how easily and quickly germs can spread from person to person and across surfaces. Tell students, *Let's take a look at how we can help keep our food supply safe.*
- b. Begin the PowerPoint "Keeping Food Safe." Go through entire PowerPoint. Be sure students have a digital or hard copy to follow along.
- c. Move to Activity 1. Return to this section AFTER completion of Activity 1. (You may wish to break this unit into two class periods. This would be a good stopping point for Day 1.)
- d. After completion of Activity 1, begin the PowerPoint "Equipment and Facility Cleaning and Inspection." Be sure students have a copy (hard copy or digital) to follow along. Go through the entire PowerPoint.
- e. Move into Activity 2.

3. Activity 1: Food Safety Art (Approximate time required: 60 minutes total)

- a. Give each student a copy of "Activity 1: Food Safety Karaoke and Art."
- b. Students may work with a partner if desired.
- c. Read over the directions with students. Ask, "What questions are there?"
- d. Allow students 25 to 30 minutes to complete the activity.
- e. When students have finished creating their "art" pieces, instruct them on where to place them for display in the classroom. Be sure to allow all students to walk around and view the art pieces.
- f. After students view the art pieces, discuss with students their overall thoughts. What did they learn?

4. Activity 2: Case Study (Approximate time required: 30 to 45 minutes total)

- a. Give each student a copy of "Activity 2: Case Study."
- b. Students may work in groups of two or three, if desired.
- c. Read over the directions with students. Ask, "What questions are there?"
- d. Allow students 15 to 20 minutes to complete the activity.
- e. Once all students have completed their plans, have them present to the class.

5. Follow-up:

- a. Give each student a copy of the "Food Safety Chain" handout.
- b. Instruct students to read over each section of the handout on their own. Move into the "Exit Ticket" portion of the lesson.

6. **Optional – Extended Learning Opportunities (Not factored into time requirement):**

- a. If students have access or the ability to add apps to their cellphones or computers, have them check out this website: <https://www.apppicker.com/reviews/12518/Perfect-Picnic-app-review-create-a-beautiful-picnic>. The app is free and places great emphasis on safe handling of food.
- b. play the following karaoke music and have groups provide the lyrics. This portion can become very comical — allow students to have fun with it. Consider putting students in groups of four for this so they can share the task of attempting to sing. Link to use for the karaoke music: <https://www.youtube.com/watch?v=FsUa8P-L2Aq>

7. **Exit Ticket:**

- a. Using the “[Food Safety Chain](#)” handout, have students select one area from the handout and write down how or where food may become contaminated within that step. Be sure they provide detail.
 - i. Be sure students use a clean sheet of paper for this activity and put their name on it.
 - ii. Collect student papers prior to students exiting the classroom.
 - iii. Note: Students will have various answers for this activity. Read student responses carefully to determine if they grasp the concept you were asking of them, OR you may wish to give only participation points for this activity.

Name: _____

Activity 1: Food Safety Art

Directions:

Using the concepts learned from the PowerPoint “Keeping Food Safe,” create an “art” piece that represents concepts addressed in the PowerPoint and through the activities in this lesson. Also, the relationship to HACCP. Use the provided class materials. Be prepared to put your “art” on display.



Name: _____

Activity 2: Case Study

Aligned to the following standards: FFA.PL-A; FFA.PL-C; FFA.PG-J; FFA-CS-M; FFA-CS-N; AG-FD1; AGPA01.01; AGPA01.04; CS.03; CS.01; CS.02; CCSS.ELA.RI.9-10.1; CCSS.ELA.RI.9-10.2; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.1; CCSS.ELA.SL.9-10.4; CCSS.ELA.WHST.9-10.4; MP6; AFNR Career Cluster-Food Products and Processing Systems Pathway, Statement 2; Buying Goods and Services, Benchmarks: Grade 12, Statement 7; CRP.02; CRP.03; CRP.04; CRP.05; CRP.06; CRP.07; CRP.08

Directions:

Using the information/concepts learned in class about equipment and facility cleaning, read the case study below and answer the questions. Be sure to reference back to the agencies listed in the PowerPoint that may be of assistance in this case study.

- Using a **red** writing utensil, circle the major concerns/issues.

"There has been an outbreak of listeria in fruit packing plant in California. The plant receives fruit from many farms in California, Arizona and Northern Mexico to be processed and shipped throughout the United States, Canada and the world. The outbreak was discovered early in the week and plant production was immediately stopped. So far 13 people in six states have become ill from the tainted fruit. In an effort to solve the problem and keep more people from becoming sick the president of the United States has devised a plan to double the budget of any agency that can trace, identify and eliminate the cause of the outbreak and the president has promised to keep the budget doubled for as long as that agency can continue to keep the citizens of the United States and its trading partners safe from foodborne illnesses." Facts about the processing plant:

- It obtains fruit from 17 different farms in 3 states and Mexico.
- Fruit from all farms is commingled before packaging and shipping.
- Shipments for the 5 days before the outbreak occurred had been sent to 32 states.
- All shipments into and out of the facility are by truck. All trucks are independently owned and operated by a separate trucking company.
- The facility is cleaned each night during the night shift before packing occurs on the day shift.
- Not all fruit is inspected before entering the facility.
- The facility does not have enough cooler space to store the fruit during peak production times of the summer.
- The plant offers tours to the public and about 2,000 people a day tour the facility.

Answer the following:

1. Which agency should be in charge of this outbreak? _____
2. Defend why your agency should be in charge of this outbreak.
3. How might the listeria outbreak impact your agency?
4. What activities or facts about the facility concern your agency and what policies and procedures does your agency have that could impact the situation.

Name: _____

5. Prepare a mini, verbal presentation outlining why your agency should be in charge of this outbreak and how the agency is best prepared to handle the situation. Your team will have only 2 to 5 minutes to make your case and explain how your agency should have sole jurisdiction of the situation to obtain the extra budget money. Use this space to plan.

6. How can food processing facilities benefit from government regulatory agencies?

7. What could have been done to limit exposure to the listeria outbreak?

8. What impact does this outbreak have on the general population/consumers and the economy?

Name: _____

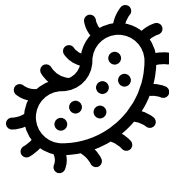
Karaoke

Directions:

Using the “I Will Survive” lyrics provided, practice “singing” it with your partner/group. Your teacher will play the karaoke version soundtrack, and you will provide the singing!

I WILL SURVIVE Lyrics (“I Will Survive” by Gloria Gaynor)

I'd listen to the news and I'd be petrified
Another foodborne outbreak, I'd be all torn up inside
But then I spent so many nights
Worried about what I just ate
Could I be next?
Did I have poisons on my plate?
But now I'm back
From cyberspace
Determined that I won't become a foodborne-illness case
I've learned some simple steps
To keep my food all safe for me
And if you do the same
You'll raise your life expectancy
I've got a sign
On my fridge door
Sayin' go away bacteria
Cause you're not welcome anymore
Listeria don't scare me nor does that nasty E. coli
Hey Salmonella?
Did you think I'd lay down and die?
Oh no, not I
I will survive
Oh as long as I am careful with my food I'll stay alive
Cause I've got all my safety plans
I disinfect and wash my hands
And I'll survive, I will survive
Hey, hey
I pointed my web browser
to fightbac.O R G
I learned that microbes pose a danger
Though they are too small to see
So I spent a couple nights
Gettin' myself into the know
And now I take the steps
That don't allow those bugs to grow
I cook my meats and poultry through
A thermometer is handy to show me just how well I do
I defrost food in the fridge
And promptly refrigerate
When you're dealing with food pathogens
There's not much time to wait
READY, SET, FOOD SAFE
I've got a sign
On my fridge door
Sayin' go away bacteria
Cause you're not welcome anymore
Listeria don't scare me nor does that nasty E. coli
Hey Salmonella?
Did you think I'd lay down and die?
Oh no, not I!



Name: _____

I will survive

Oh as long as I am careful with my food I'll stay alive

Cause I've got all my safety plans

I disinfect and wash my hands

And I'll survive, I will survive

There's a sign

On my fridge door

Sayin' go away bacteria

Cause you're not welcome anymore

Listeria don't scare me nor does that nasty E. coli

Hey Salmonella?

Did you think I'd lay down and die?

Oh no, not !!

I will survive

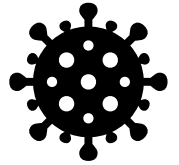
Oh as long as I am careful with my food I'll stay alive

Cause I've got all my safety plans

I disinfect and wash my hands

And I'll survive, I will survive

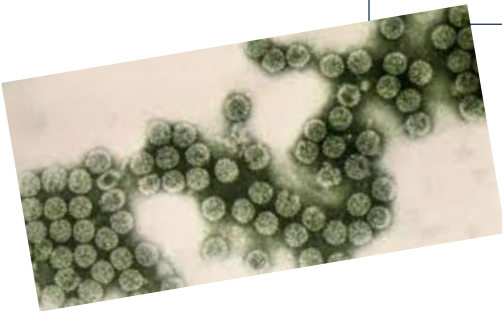
I will survive



How does this song relate to what we are learning?



What role would HACCP play with the issues presented in the song above?



Name: _____

KEY: Activity 1: Food Safety Karaoke and Art

*Key concepts to consider when giving participation/grading points for the karaoke activity:

- Did all students participate and try?
- Did students handle the role responsibly and professionally (did not goof around, etc.)?

*Key concepts to consider when grading "art" pieces:

- Did students follow the directions and create a piece of art relevant to the unit?
- Did students give it their best effort (i.e., the art piece is well put together, etc.)?

KEY: Activity 2: Case Study

*There is no right or wrong agency to defend the case study. Score students on their ability to defend the agency they picked.

*Consider the following when scoring students' verbal presentations:

- Agency selected and ability to defend why this agency would be the best
- Length of presentation — was it at least two minutes?
- Were students prepared? Did all students speak?
- Did the group answer all questions as outlined?

***How can food processing facilities benefit from government regulatory agencies?**

Government regulated agencies help to maintain consistency in how food processing facilities operate. They also hold facilities accountable for maintaining levels of cleanliness, etc. Food processing facilities can be shut down and/or fined if they do not remain in compliance with government regulations. Government agencies help to enforce the regulations.

***What could have been done to limit exposure to the listeria outbreak?**

- 1) Reduce the number of farms from which fruit is obtained.
- 2) Do not comingle fruit from other farms.
- 3) Consider using trucks only operated by one company.
- 4) Attempt to inspect more fruit prior to entry to the facility.
- 5) Attempt to purchase more coolers to keep fruit cooled.
- 6) Tours are great! However, either reduce the number of people allowed to tour or require PPE be worn during tours.

*** What impact does this outbreak have on the general population/consumers and the economy?**

Not only can the outbreak cause illness and potential death in different populations, the outbreak causes the shutdown of the facility which causes higher prices and limited stock of food supplies.