

## FOOD SAFETY

### Culinary Arts

- 1.1 Define Hazard Analysis Critical Control Point (HACCP)
- 1.14 Identify regulatory agencies governing sanitation and safety in food service operation
- 1.16 Identify minimal internal cooking temperatures

### English

- Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions. (6 8.RH.2)
- Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered). (6 8.RH.3)

### Student Learning Objectives

1. Identify the proper temperature to cook ground beef.
2. Recognize the critical control points during the processing of ground beef.

### Time

2-50 minute class periods. Extension activities can take additional class periods

### Tools, Equipment and Supplies

- Newspaper article about beef recall
- Excerpts from novel The Jungle by Upton Sinclair and Reading Strategy
- Worksheet: Go Get It Activity
- Brochure Rubric

### Resources

Worksheet: Safety Evaluation of Ground Beef

### Introduction

What do you think about when you get ready to eat a hot, tasty pizza? You probably are only thinking about filling your tummy but do any of you think about the safety of this product? How do you know it is safe to eat? Today we will talk about some of the history behind food safety and a series of procedures that are in place to keep the food you eat safe.

### CLASS PERIOD 1

#### Interest Approach

Conduct a poll of how many students like hamburger meat or hamburgers. Of those who do, how many prefer it rare, medium rare, medium, medium well, or well done? Write and graph the results on the board. What have you heard in the news about eating hamburgers cooked to rare or medium in temperature? Record on the board what they have heard.

#### Information to share

- Ground beef must be cooked to a temperature of 160° F to kill any pathogen that may be present. Introduce the concept of "safe and savory at 160" to help students remember this number.
- During the many stages of slaughter, processing of ground beef, shipping, packaging, distribution, storage, final preparation of hamburger in the grocery store, and consumer purchase, storage, and preparation, ground beef is exposed to many different types of microorganisms and bacteria.
- Pathogens can be controlled at each stage using the Hazard Analysis and Critical Control Plan (HACCP). The HACCP identifies hazards, develops a plan to prevent

or control such hazards at critical control points, records what is done at each of these points, and verifies that the system is working on an ongoing basis.

- Food safety has been a concern in the United States since the late 1800s when soldiers in Cuba during the Spanish-American War died from eating tainted meat sent by American meat packers.
- In 1906 Upton Sinclair wrote the novel The Jungle, which exposed the filthy conditions and unsafe production methods of the meat packing industry.
- During that same year, 1906, President Roosevelt passed the Pure Food and Drug Act and the Meat Inspection Act to help eliminate the atrocious conditions in the meat packing plant industry.

1. Read the excerpt from The Jungle by Upton Sinclair.
2. Discuss the reading selection with students. Guide discussion as it relates to food safety during that period of time (early 1900's).
3. Distribute the "Minute Paper" handout and give students one minute to write down their response to the reading. Encourage them to write the entire time and instruct them to be prepared to share.
4. Ask several students to share their responses.

### Summary/Evaluation – Class Period 1

Ask students to write down three questions or concerns they have about food safety after reading the excerpt from The Jungle.

## FOOD SAFETY

### CLASS PERIOD 2

#### Interest Approach

Ask: what did you eat for dinner last night or breakfast this morning? How do you know it was safe?

1. Pass out article and read. Discuss students' reactions to the articles. How could this happen if there are food safety teams comprised of agencies that are enforcing regulations and conducting plan inspections? Many of the problems with the food safety system are due to the fragmented jurisdictions and responsibilities of the major players on the Food Safety Team.

**Discussion:** do newspaper articles like this one change your viewpoints about what you eat?

2. Food Safety Team Activity: using the Go Get It Activity sheet, have students collect pieces that have been taped around the room. Students should attempt to place their piece of paper under the correct category which are located at the front of the room. Once each student has placed their team member responsibilities under a category, the teacher can check for accuracy.

#### Post-activity discussion:

- What makes food safety difficult to manage?
- Based on our activity, who is responsible for food safety?
- Do government agencies ensure a safe food supply, or are there multiple groups involved in ensuring that the consumer receives a safe product?

3. Companies inspect random samples for quality control. Between 1906 and 1993, the meat inspection system was based on what Food Safety and Inspection Service inspectors could see: evidences of animal diseases, defects, and visible contamination of meat. Dangers to consumers are often from unseen bacteria.

**Discussion:** can every food product coming off a manufacturing line be inspected? Why or why not?

4. All meat and poultry plants must incorporate a system known as "Hazard Analysis and Critical Control Points," or HACCP. All plants must implement standard operating procedures to ensure cleanliness of facilities and equipment, as well as employee hygienic practices.

HACCP identifies hazards, develops a plan to prevent or control such hazards at critical control points, records what is done at each of these points, and verifies that the system is working on an ongoing basis. This is done by testing, constant monitoring, and reviewing records.

#### Summary/Evaluation – Class Period 2

Have students review the questions they wrote down the previous day about food safety and ask them to try and answer those questions using information from today's lesson.

#### Lesson Conclusion

Create a brochure that explains how to safely prepare ground beef. This should be a summarizing activity that reflects all concepts covered in this lesson. Use Brochure Rubric as a guideline for evaluation.

#### Extension Activities

1. Using the Summary/Evaluation activity from day 1 and 2, allow students time to research remaining questions or concerns they have about food safety. Students can report back to the class like they are presenting a news report.
2. Cut out articles from the newspaper or find articles in the library about the meat processing industry. What issues are presented in these articles? List the positive and negative issues in the articles. Was HACCP mentioned in the article that you cut out?
3. The teacher can demonstrate the cooking of ground beef. As the ground beef is cooking, the teacher will point out the safety points to remember when cooking beef. Students can evaluate the handling, cooking, and serving process for ground beef and can identify if proper steps were taken to ensure the safety of the ground beef during the handling, cooking, and serving process. Use the "Safety Evaluation of Ground Beef" workshee



LEXINGTON, KENTUCKY  
EST. 2017

## TRI-FOLD BROCHURE RUBRIC

	<b>Excellent (15-13 points)</b>	<b>Good (12-10 points)</b>	<b>Satisfactory (9-6 points)</b>	<b>Needs Improvement (5-0 points)</b>
Organization of Information	Each section in the brochure has a clear beginning, middle, and end.	75% or more sections of the brochure have a clear beginning, middle, and end.	60% of the sections of the brochure have a clear beginning, middle, and end.	Less than half of the sections of the brochure have a clear beginning, middle, and end.
Content: valid and accurate	All facts in the brochure are accurate and match cited resources.	99-90% of the facts in the brochure are accurate.	89-80% of the facts in the brochure are accurate.	Less than 80% of the facts in the brochure are accurate.
Spelling and mechanics	No spelling errors and all sections of brochure are free of writing errors.	No more than 3 spelling and/or writing errors are present.	No more than 5 spelling and/or writing errors are present.	More than 5 spelling and/or writing errors are present.
Attractiveness and organization	The brochure has exceptionally attractive formatting and well-organized information.	The brochure has attractive formatting and well-organized information.	The brochure has well organized information or format but not both.	The brochure's formatting and organization of material is confusing to the reader.
Graphics and pictures	Graphics match the topic and text in section where placed. Each section has no more than two graphics and there are at least a total of three graphics used.	Graphics go well with the text, but there are so many (more than two per section) that they distract from the text.	Graphics go well with the text, but there are too few (less than three graphics for entire brochure) and the brochure seems "text-heavy".	Graphics do not go with the accompanying text or appear to be randomly chosen.
<b>Total (75 points possible)</b>				



## “GO GET IT” ACTIVITY

**Directions:** Print the following information (you may want to print two copies and keep one copy as an activity key). Cut the information into strips of paper – ideally there will be one strip of paper for each student to retrieve. Place sentences or paragraphs of information in conspicuous and inconspicuous locations throughout the room. You can tape them under desks, chairs, tables, on the overhead, board, or door, slip them between books on the shelf, or staple them to the wall. Students retrieve the information and share it with the class. As students share, you can make sure each responsibility is categorized under the correct agency or group.

Government Agencies	Farmers	Processors
Make food safety rules & regulations	Apply chemicals according to strict rules when growing crops	Prepare and package food
Inspect food processing plants	Give drugs in safe amounts to animals to help keep them disease free	Keep factories clean
Inspect grocery stores and all places that serve food	Maintain a clean living environment for animals	Use food additives to preserve food
Set the amount of pesticides that can be used by farmers	Raise animals for food	Maintain cleanliness when processing food
Enforce food safety regulations	Grow crops for food	Inspect raw materials and processing materials
Identify where potential contamination can occur and strictly manage and monitor these points to ensure the process is controlled and to produce the safest product	Keep rodents, insects, and wild fowl away from the animals and their food supplies	Control temperatures throughout all stages of processing packages
	Clean equipment regularly, such as milking machines or egg holders	
	Make sure workers follow safe hygiene practices	

Grocery & Retail	Consumers	Restaurant & Institutional
Make sure cracked jars and bulging cans are not sold	Buy and prepare food for family and friends	Place sneeze covers over salad bars and dessert bars
Train personnel in safe food handling	Prepare foods on clean surfaces	Store food properly before use in cooking
Maintain foods at appropriate temperatures; monitor frozen food and refrigerator cases for consistent temperatures	Refrigerate or freeze cold food immediately after purchasing and/or preparing it	Make sure that food servers wash their hands before serving food and follow general rules of sanitation
Rotate stock regularly so foods are moved off the shelf by their sell dates	Wash fruits & vegetables before eating	Make sure food is cooked to appropriate temperatures
Clean and sterilize all surfaces that hold food	Check the “sell by” freshness dates on food products before buying them	Workers who handle food do not handle money
Put Safe Handling Instructions labels on	Always wash hands before preparing food	Routinely scrub and sanitize counter tops, equipment and floors
	Cook foods thoroughly, check internal temperature	Dispose of garbage properly and keep dumpsites clean.
	Store foods in small, shallow containers and refrigerate quickly	
	Separate: Don't contaminate	

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## SAFETY EVALUATION: GROUND BEEF

**Directions:** Score handling, cooking, serving, and storing of ground beef topping and pizza using the rating scale of 1-4. Four is the highest score and one is the lowest score. Make comments and corrections in the box under the rating.

	4	3	2	1
Wash hands				
Work area and equipment are clean				
Keep raw and cooked meat separate, avoid cross contamination				
Turn ground beef over and break up large pieces to distribute the heat				
Cook ground beef to 160°F				
Use clean plate to hold cooked meat				
Serve food as soon as possible after cooking				
Wrap leftover ground beef in storage container				
Store as soon as possible in refrigerator or freezer				



## EXCERPT FROM “THE JUNGLE” BY UPTON SINCLAIR, 1906

When Jurgis had first inspected the packing plants with Szedvilas, he had marveled while he listened to the tale of all the things that were made out of the carcasses of animals, and of all the lesser industries that were maintained there; now he found that each one of these lesser industries was a separate little inferno, in its way as horrible as the killing-beds, the source and fountain of them all. The workers in each of them had their own peculiar diseases...

There were the “hoisters,” as they were called, whose task it was to press the lever which lifted the dead cattle off the floor. They ran along upon a rafter, peering down through the damp and the steam, and as old Durham’s architects had not built the killing room for the convenience of the hoisters, at every few feet they would have to stoop under a beam, say four feet above the one they ran on, which got them into the habit of stooping, so that in a few years they would be walking like chimpanzees. Worst of any, however, were the fertilizer men, and those who served in the cooking rooms. These people could not be shown to the visitor—for the odor of a fertilizer man would scare any ordinary visitor at a hundred yards, and as for the other men, who worked in tank rooms full of steam, and in some of which there were open vats near the level of the floor, their peculiar trouble was that they fell into the vats; and when they were fished out, there was never enough of them left to be worth exhibiting—sometimes they would be overlooked for days, till all but the bones of them had gone out of the world as Durham’s purse Leaf Lard...

There was never the least attention paid to what was cut up for sausage; there would come all the way back from Europe old sausage that had been rejected, and that was moldy and white—it would be dosed with borax and glycerine, and dumped into the hoppers, and made over again for home consumption. There would be meat that had tumbled out on the floor, in the dirt and sawdust, where the workers had tramped and spit uncounted billions of consumption germs. There would be meat stored in great piles in rooms; and the water from leaky roofs would drip over it, and thousands of rats would race about in it. It was too dark in these storage places to see well, but a man could run his hand over these piles of meat and sweep off handfuls of the dried dung of rats. These rats were nuisances, and the packers would put poisoned bread out for them, they would die, and then rats, bread, and meat would go into the hoppers together...All of the sausage came out of the same bowl, but when they came to wrap it, they would stamp some of it “special,” and for this they would charge two cents more a pound.

Meat scraps were also found being shoveled into receptacles from dirty floors, where they were left to lie again until shoveled into barrels or into machines for chopping. These floors, it must be noted, were in most cases damp and soggy, in dark, ill-ventilated rooms, and the employees in utter ignorance of cleanliness of danger to health expectorated at will upon them. In a word, we saw meat shoveled from filthy box carts, in all of which processes it was in the way of gathering dirt, splinters, floor filth, and the expectoration of tuberculous and other diseased workers.

Where comment was made to floor superintendents about these matters, it was always the reply that this meat would afterwards be cooked and that this sterilization would prevent any danger from its use. Even this, it may be pointed out in passing, is not wholly true. A very considerable portion of the meat so handled is sent out as smoked products in the form of sausages, which are prepared to be eaten without being cooked...

As an extreme example of the entire disregard, on the part of employees of any notion of cleanliness in handling dressed meat, we saw a hog that had just been killed, cleaned, washed, and started on its way to the cooling room fall from the sliding rail to a dirty wooden floor and slide part way into a filthy men’s privy. It was picked up by two employees, placed upon a truck, carried into the cooling room and hung up with other carcasses, no effort being made to clean it...

In one well-known establishment we came upon fresh meat being shoveled into barrels, and a regular proportion being added of stale scraps that had lain on a dirty floor in a corner of a room for some days previous. In another establishment, equally well known, a long table was noted covered with several hundred pounds of cooked scraps of beef and other meats. Some of these meat scraps were dry, leathery, and unfit to be eaten, and in the heap were found pieces of pigskin, and even some bits of rope strands and other rubbish. Inquiry evoked the frank admission from the man in charge that this was to be ground up and used in making “potted ham.”

All of these canned products bear labels of which the following is a sample:

*Abattoir No.  
The contents of this package have been  
inspected according to the Act of Congress of March 3, 1891.*

