



Disaster Reactor

Middle School Food and Agricultural Literacy Curriculum

Precepts

- F. Continuous Improvement
- F3. Use innovative problem-solving strategies

National Standards

- FPP.01.01.02.a. Identify and explain environmental and safety concerns about the food supply.
- FPP.01.02.01.a. Explain the purposes of organizations that are part of or regulate the food products and processing industry.
- FPP.02.02.01.a. Describe contamination hazards (physical, chemical, and biological) associated with food products and processing.
- NL-ENG.K-12.4 – Communication Skills
- NL-ENG.K-12.12 – Applying Language Skills

Student Learning Objectives

- As a result of this **unit** the student will...
- Recognize how food product pathways affect consumers.
- As a result of this **lesson** the student will...
- Determine appropriate industry response to consumer concerns to assure a safe and wholesome food supply.

Content Outline

Objective 1. Determine appropriate industry response to consumer concerns to assure a safe and wholesome food supply.

Note: the concepts in this section review the content from the previous seven lessons.

- I. **Risk: the uncertainty associated with the possibility of danger, loss, or injury.**
 - A. **Risk Management:** procedures followed by agriculturalists to ensure that **risks** associated with the production and processing of edible plant and animal food products are minimized.

Time

Instruction time for this lesson: 45 minutes.

Resources

Allen, P., Bruening, T., Hoover, T., Hunter, W., Marrison, D., & Preis, B. (1993). Food Science, Safety, and Nutrition. Madison, WI: National Council for Agricultural Education. — National FFA Organization. (2003). LifeKnowledge Precepts and Signs of Success. — United States Department of Agriculture Risk Management Agency. (2009). About RMA. Retrieved August 17, 2009, from <http://www.rma.usda.gov/>

Tools, Equipment, and Supplies

Two different produce items (apple and banana/ tomato and potato)
Overhead projector/transparencies
MS.FS.1.8.TM.A – one per teacher
MS.FS.1.8.TM.B – one per teacher; cut out each image to hang around the room
MS.FS.1.8.ASSESS.A – one per student

Key Terms

The following terms are presented in this lesson and appear in bold italics:

Risk

Risk Management

Recall

1. The United States Department of Agriculture **Risk Management** Agency promotes, supports, and regulates sound **risk management** solutions to preserve and strengthen the economic stability of America's agricultural producers.
 2. No matter how closely agricultural producers follow **risk management** procedures, food products still face potential **risks**.
 3. **Risks** can occur during production, i.e., chemical contamination from pesticides or fertilizers, not cooking beef to the correct temperature or leaving raw beef at room temperature for two hours before cooking.
- B. Industry Response to **Risks**
1. When a problem arises, agriculturalists and government agencies like the USDA play a role in assuring a safe food supply.
 2. Investigation of the problem starts with the origin of the product, where products are traced back to the producer.



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3. If the **risk** involves illness among consumers, they are questioned to determine where the contaminated product originated and how the product was handled since being purchased.
4. Policies and procedures are investigated from the farm to the processing plant, to the mode of transportation to the store. Each step of the product process from farm to fork is examined for the potential origin of the **risk**.
5. Products that are thought to be contaminated or hazardous to human health are quickly **recalled**, or removed, from store shelves so that consumers can no longer purchase the product. Consumers are also informed so that anyone who has already purchased the item can return or discard it.
6. Contaminated products can be sent to labs for testing to determine the source of contamination.
7. When the problem is identified, an action plan to correct the situation and prevent future **risks** is implemented.
8. After the **risk** has been assessed and the products are no longer hazardous, they make their way back into stores.
9. Detailed information about the **risk** or hazards is typically made public through the media, which can sometimes make a situation sound worse than it is, thus scaring consumers.
10. The FDA and USDA often release statements or other accurate information to assure consumers their food is safe.

Interest Approach

An apple and banana will be used in reference to the produce items needed for show during the interest approach. Whichever set of produce items you choose, one of those should be an item that can be grown in your region and the other item, preferably an imported item, grown in a region outside of your own.

Students will do a Brain Drain concerning the potential **risks** with eating both of those items as they are, i.e., not washed. Before students turn to their neighbors and share as many concerns or **risks** associated with eating the apple or banana, you will want to introduce the thought of eating the fruit as they see it before their eyes.

The purpose of the Brain Drain is to get them thinking about the big picture of how their foods comes from the field to their forks, thus leading to the conclusion of the unit with this lesson as a summary. Students can talk at the same time, making it a race for the finish line. They should be saying everything they can think of as fast as they can to each other all at once, adding to the excitement. When time is up, lead a brief class discussion reviewing what they shared during the Brain Drain. Invite a student to the front of the room to take some notes for the class on the board.

It's great to have my most alert and thoughtful students here today. Let's get started! Learning about the ways in which food comes from the field and ends up on our forks is essential since we are putting our trust and our health on the line when we consume raw produce.

Hold each fruit up in the air.

I have an extra apple and banana with me. Would anyone like to eat one of these?

Some students will want it, but don't give it to them.

Now, you can't leave the room to wash it.

Who still wants a piece of fruit?

Look around the room like you're deciding who should have the fruit.

Actually, I don't know where I found this apple and I got this banana from the cafeteria. Do I still have some takers?

Pause and continue to express indecision.

I have to be honest with you; this fruit is here only for demonstration purposes. I'm not actually giving them away. I know. That's not nice, but I'm actually protecting you...

When I say DRAIN, we are going to race to share every concern or worry you would have before eating these two pieces of fruit knowing what you know. Earlier I warned "the hungry" about these being unwashed and how they arrived in my possession.

Draw upon those warnings as you drain your brain with a neighbor. Each person will need a sheet of paper and will need to write down the concerns that both of you have. Take turns with



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each neighbor. Each person will get one minute to brain drain. I will say DRAIN, neighbor 1 will start. I will say SWITCH then neighbor 2 will add neighbor 1's list. Time is up when you hear me clap. You will have 30 seconds. Remember to decide who will go first before you start. What questions are there? DRAIN!

After 30 seconds, say SWITCH. Give the class another minute to complete the Brain Drain activity. When that minute is up, begin clapping.

Great job! I am looking for a volunteer to join me up here and take some notes for us.

Call on a student to be the scribe.

Thanks! Let's hear some of your thoughts from the Brain Drain.

Responses will vary, but should all be related to the last seven lessons. Allow several students to share their notes as you lead the discussion. The list on the board will help remind students of what they have learned.

Awesome discussion! It is clear to me that you have great concerns and have learned a lot about our food supply. Keep these **risks** in mind as we learn about ways the agriculture industry responds to consumer concerns for a safe food supply.

To do this, we are going to keep in mind what we have just reviewed, and we are going to be intent listeners as we explore the way agriculturalists respond to disasters.

Summary of Content and Teaching Strategies

Objective 1. Determine appropriate industry response to consumer concerns to assure a safe and wholesome food supply.

Your role will be to present content to the students from different points around the room. The points will be marked with images or key words that represent the information being discussed at that location, as provided in **MS.FS.1.8.TM.B**. While you are presenting, students should simply be listening, as the information you are presenting will be posted at the front of the room as a reference on the overhead projector using **MS.FS.1.8.TM.A**.

To review the content from each stop, you will need to physically walk back over to each stop and ask review questions, using the *Choral Response e-Moment®*. You can ask students questions about each key term and have them say back the answer as a class. For example, after completing the content at Stop 1, you would ask at the end, **Risk** is what? And the class would say the answer aloud. Once you complete the content from Stop 2, you would review the content for that stop, walk back to Stop 1, review again, and then move to Stop 3. This way, students will practice saying the key terms and their meanings, and the repetition will help transfer that information to memory.

Once all of the information is presented, students will engage in the *Eyewitness News e-Moment* to report on the topics discussed during the lesson.

Remember, for this portion of the activity we are going to be intent listeners. I am also going to ask you some questions throughout this activity. When I ask you questions, call out the answers. Let's begin with the first stop, a new concept called **risk**.

Begin moving around the room to each anchor point.

Stop 1:

Risk is the uncertainty associated with the possibility of danger, loss, or injury. We know that as with any choice in life, there is always some form of **risk** involved. For example, crossing the street, there is a **risk** of being hit by a car. The way we manage that **risk** and prevent being hit by a car is to look both ways for oncoming traffic before we cross the street.

In agriculture, producers manage **risk** using a system called **risk management**. **Risk management** involves the procedures to ensure the **risks** associated with the production and processing of edible plant and animal food products are minimized. And in the rare event a **risk** does result in a hazard, producers have to use their problem-solving skills to deal with the situation.

Think of a situation where you had to use your problem-solving skills in a stressful or scary situation. Take one minute and discuss that with your neighbor, starting NOW!

Give students a minute to talk about this. When time is up, ask a few students to share their experiences.

Time is up! Let's hear a few of your experiences.



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Allow two or three students to share.

Great! Based on your responses, I think it's safe to say we all are familiar with problem solving and use it regularly to help with difficult situations in life. Producers are always coming up with new ways to solve problems that arise, and **risk management** is a system that provides them with ideas for solving potential problems.

So, **risk** is what?

Students should call out the answer, which is uncertainty associated with danger, loss, or injury.

What is **risk management**?

Students should respond with "procedures to minimize **risks** during production and processing."

Great! What questions are there? Excellent, let's move on to learn a little more about **risk**.

Move to Stop 2.

Stop 2:

The government is responsible for setting regulations for producers to follow in keeping our food safe. The United States Department of Agriculture **Risk Management** Agency promotes, supports, and regulates sound **risk management** solutions to preserve and strengthen the economic stability of America's agricultural producers.

No matter how closely agricultural producers follow **risk management** procedures, food products still face potential **risks**. **Risks** can occur during production, like chemical contamination from pesticides or fertilizers; during processing, like beef contaminated with antibiotics or bacteria; or even during handling at home, like improper storage of food.

The agency that regulates **risk management** is called what?

Students call out answer, which is the United States Department of Agriculture **Risk Management** Agency.

Move back to Stop 1 and say, "Great, and what is the definition of **risk**?"

Then move back to Stop 2 and continue.

What questions do you have?

Allow time for students to respond.

Nice! So, now you must be wondering, with all this **risk**, how exactly do agriculturalists respond to problems when they arise.

Move to Stop 3.

Stop 3:

When a problem arises, agriculturalists and government agencies like the USDA play a role in assuring a safe food supply. Investigation of the problem starts with the origin of the product, which involves tracing the products back to where they came from.

If the **risk** involves illness among consumers, the sick individuals are questioned to determine where the contaminated product originated and how the product was handled since being purchased. Policies and procedures are investigated from the farm to the processing plant, to the mode of transportation to the store or restaurant.

Each step of the product process from farm to fork is examined for the potential origin of the **risk**. Who is responsible for assuring a safe food supply?

Students call out the answer, which is USDA.

Right!

Move back to Stop 2 and say

What does the United States Department of Agriculture **Risk Management** Agency do?

Students call out answer, which is: regulates **risk management** solutions.

Yes!

Move to Stop 1 and say

"**Risk** is what?"

Students call out the answer, which is the uncertainty associated with danger, loss, or injury. Move back to Stop 3.



Awesome! What questions are there?

Allow time for students to respond.

Great! Good job being intent listeners!

Now, let's learn about what happens when edible products are hazardous.

Move to Stop 4.

Stop 4:

Products that are thought to be contaminated or hazardous to human health are quickly **recalled**, or removed from store shelves, so that consumers can no longer purchase the product. Contaminated products can be sent to labs for testing to determine the source of contamination.

When the problem is identified, an action plan to correct the situation and prevent future **risks** is implemented. Once the **risk** has been assessed and the products are no longer hazardous, they make their way back into stores and restaurants. Detailed information about the **risk** or hazards is typically made public through the media, which can sometimes make a situation sound worse than it is, thus scaring consumers.

The FDA and USDA often release statements or other accurate information to clarify misinformation from the media, and to assure consumers their food is safe. Products that are contaminated or hazardous to our health are what?

Students call out the answer, which is **recalled**.

And who releases information to the public about the **risk**?

Students call out the answer which is FDA and USDA.

Great!

Move back to Stop 3 and say

Who investigates food safety issues or **risks**?

Students call out the answer which is the USDA.

Right!

Move to Stop 2 and say

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What agency is responsible for **risk management**?

Students call out the answer which is the United States Department of Agriculture **Risk Management** Agency.

Yes!

Move to Stop 1 and say

And **risk management** is what?

Students call out the answer, procedures to minimize **risks** during production and processing.

Awesome!

Move back to Stop 4.

What questions are there? Great job!

Review/Summary

The Eyewitness News e-Moment® will be used to review the content as students act out a press conference using the information presented in the lesson. In pairs, students will take turns playing the role of eyewitness and reporter. This activity will be timed with two minutes for the entire activity, and students will switch roles after 30 seconds. Students will have to think fast, and they can refer to the outline at the front of the room if they need a reminder of the content.

It's a good thing you did such a great job being intent listeners, because now we are going to take all of that new information and become informed reporters!

In just a moment, we are going to do a role-playing activity, where we are going to take turns being eyewitnesses and reporters. Think about news reports you may have seen recently. The eyewitness is confident and full of accurate information, while the reporter will use their microphone to interview the eyewitness.

Let me give you a quick example, "This is a breaking news report for CBS news. We are here live with Julie, who just witnessed her best friend drive off to the hospital with E. coli food poisoning. Please tell us, what did your friend eat before she became ill?" When you switch roles, you will continue the conversation where you left off or start a new topic if you covered all the information during the first round. What questions are there?



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OK, so we know we are going to take turns being the eyewitness and the reporter. This is a timed activity, so it should take about two minutes to complete. You will work with the partner you had for the Brain Drain earlier in the class. The person who took notes will be the first reporter.

After 30 seconds you will hear me say SWITCH, then we will switch roles. When I say GO LIVE, you may find your partner and begin. You will know when time is up when I say CUT. What questions are there? OK, GO LIVE!

After about 30 seconds, tell the students to switch roles.

SWITCH!

Allow the remainder of the time for students to finish their conversations.

CUT! Time is up. Be sure to thank your partners for the interview. Now, let's hear about the accounts of your eyewitnesses.

At this point, call on random students to share what their eyewitnesses said. This can be done for the remainder of the class period, along with a brief discussion if time permits.

Application

Extended classroom Activity:

Editorials: Students will find a news story or article about a situation with an edible food product where **risk** was involved and an industry response was necessary. Using the news story or article, students will write an editorial response to the information in the news report, either responding to what was reported on the situation, how they feel about the situation, or if they have accurate information to relate to the situation that is not written in the report as learned in class.

FFA Activity:

FFA Food Science and Technology Career Development Event consumer complaint letter component: Students will read complaint letters from unhappy consumers and determine how to respond from the perspective of the business owner or producer by writing a response to the letter. Scenarios may include a spoiled product, a product containing a foreign object, or an allergic reaction in the consumer due to an unidentified chemical. Students will use the knowledge gained in this unit to respond to the problem and assure the consumer the products are safe and wholesome.

SAE Activity:

Risk Evaluation: Students will research different **risks** faced by producers and the strategies for assessing **risks**. Students can pick a **risk** to focus on and create a poster including the **risk** and management strategies for the particular **risk**. Students can present their posters for the class. This will allow students to further investigate the **risks** associated with food production and processing, and the ways in which producers respond to **risks**.

Evaluation

MS.FS.1.8.ASSESS.A

Answers to Evaluation

1. A
2. B
3. Any of the following are correct: production, processing, or handling at home
4. A
5. E



Objective 1. Determine appropriate industry response to consumer concerns to assure a safe and wholesome food supply.

I. Risk: the uncertainty associated with the possibility of danger, loss, or injury.

A. **Risk Management:** procedures followed by agriculturalists to ensure the risks associated with the production and processing of edible plant and animal food products are minimized.

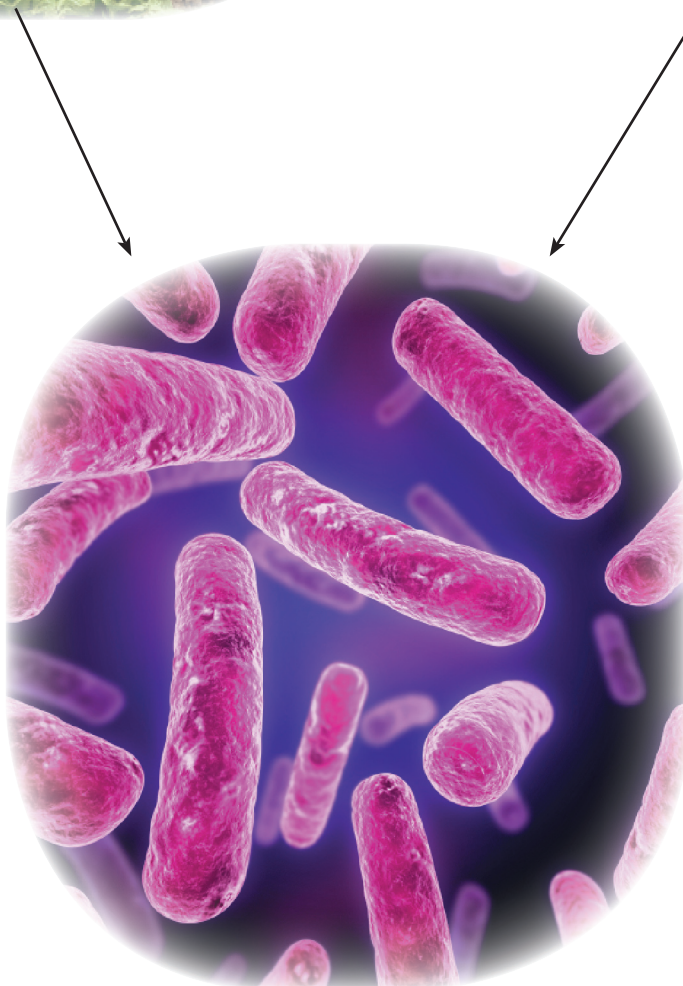
1. The United States Department of Agriculture Risk Management Agency promotes, supports and regulates sound risk management solutions to preserve and strengthen the economic stability of America's agricultural producers.
2. No matter how closely agricultural producers follow risk management procedures, food products still face potential risks.
3. Risks can occur during production, like chemical contamination from pesticides or fertilizers; during processing, like a beef contaminated with antibiotics or bacteria; or even during handling at home, like improper handling.

B. Industry Response to Risks

1. When a problem arises, agriculturalists and government agencies like the USDA play a role in assuring a safe food supply.
2. Investigation of the problem starts with the origin of the product, where products are traced back to where they came from.
3. If the risk involves illness among consumers, they are questioned to determine where the contaminated product originated and how the product was handled since being purchased.
4. Policies and procedures are investigated from the farm to the processing plant, to the mode of transportation to the store or restaurant. Each step of the product process from farm to fork is examined for the potential origin of the risk.
5. Products that are thought to be contaminated or hazardous to human health are quickly **recalled**, or removed from store shelves so that consumers can no longer purchase the product.
6. Contaminated products can be sent to labs for testing to determine the source of contamination.
7. When the problem is identified, an action plan to correct the situation and prevent future risks is implemented.
8. After the risk has been assessed and the products are no longer hazardous, they make their way back into stores and restaurants.
9. Detailed information about the risk or hazards is typically made public through the media, which can sometimes make a situation sound worse than it is, thus scaring consumers.
10. The FDA and USDA often release statements or other accurate information to assure consumers their food is safe.



Stop 1: Risk Results in Hazzard





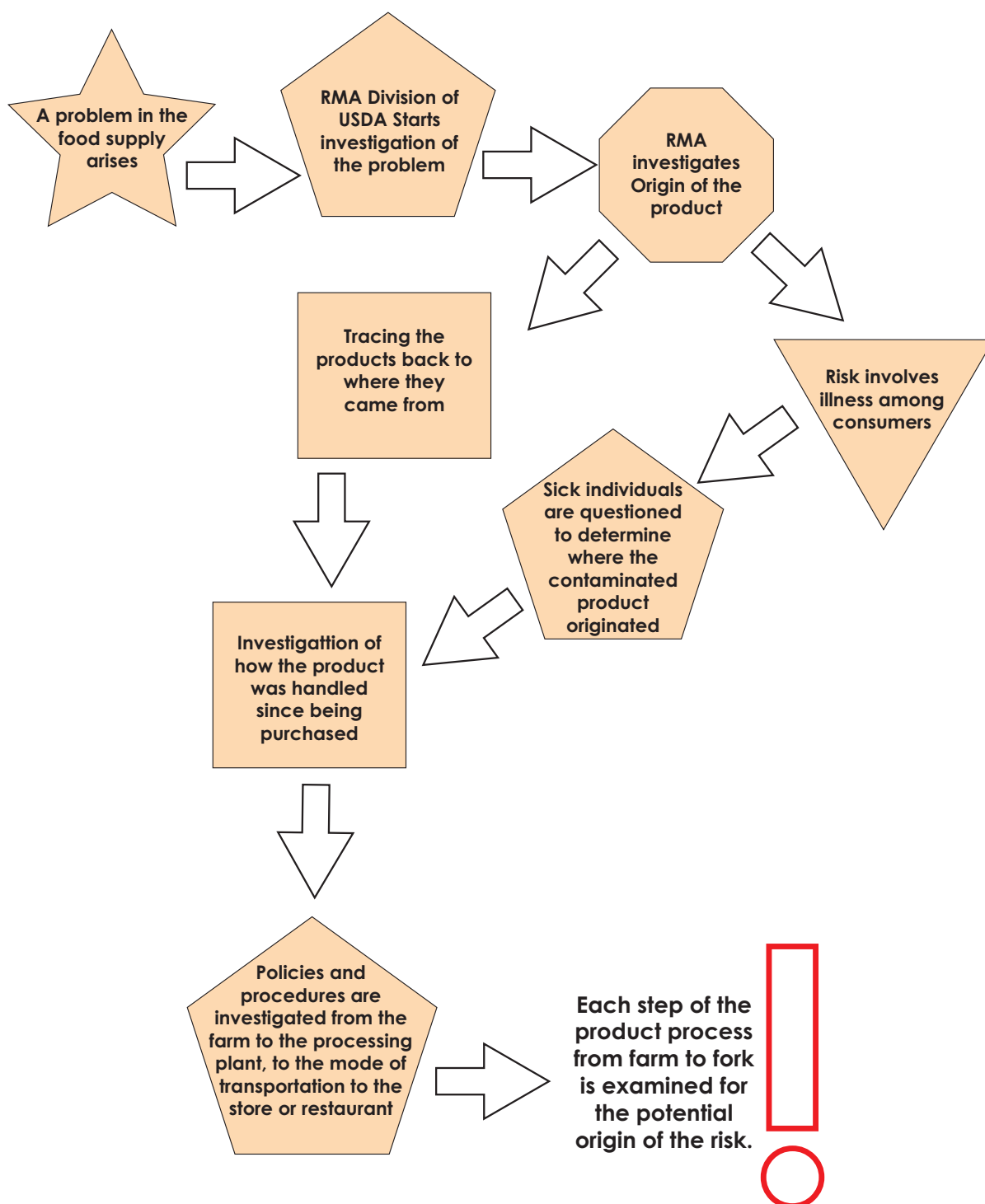
MS.FS.1.8.TM.B

Stop 2: Risk Management Agency





Stop 3: The investigation — from Farm to Fork





Stop 4: RECALL





Name _____

Directions: Read each statement and decide which response is appropriate by circling the correct letter that corresponds with the selected response, or by writing the response in the space provided.

1. The USDA Risk Management Agency is responsible for promoting and regulating risk management strategies.

- A. True
- B. False

2. When a product is identified as risky or hazardous, government agencies like the USDA or FDA _____ the product from stores.

- A. Remove
- B. Recall
- C. Eliminate
- D. None of the above

3. List two examples of situations when risk can occur in edible food products as identified in class.

- A. _____
- B. _____

4. A risk is the uncertainty associated with the possibility of danger, loss, or injury.

- A. True
- B. False

5. Policies and procedures from _____ are assessed during the investigation of a hazard incident.

- A. Farm
- B. Processing plant
- C. Transportation method
- D. Store or restaurant
- E. All of the above