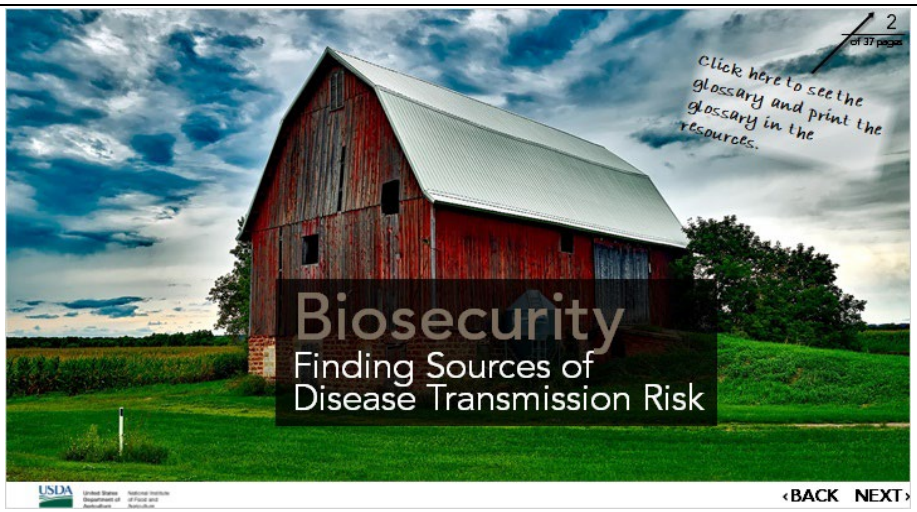
HFHA | HealthyFarms HealthyAgriculture

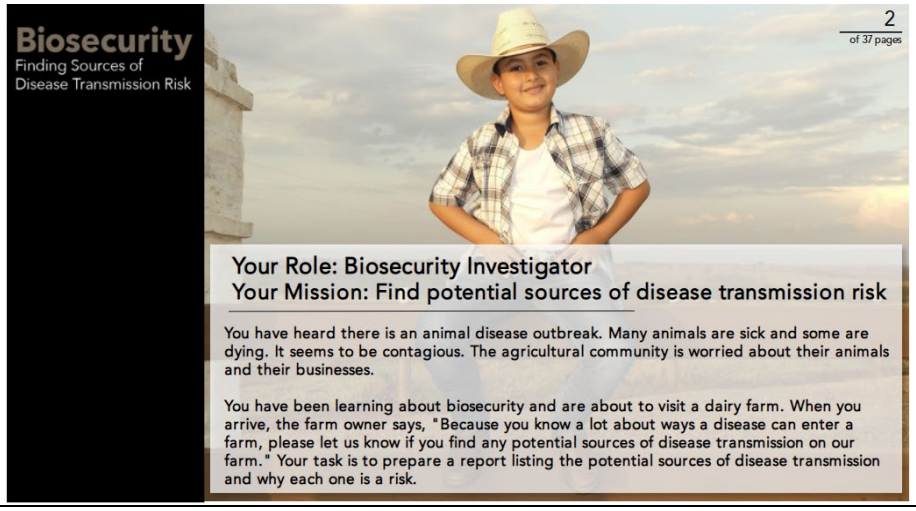
HFHA Biosecurity Learning Module 3 Screenshots: Finding Sources of Disease Transmission

Screenshots of all module layers. Each screen is numbered in the order it appears in the module. Section 2 (separate document) includes accessibility screenshots for participants using screen readers.

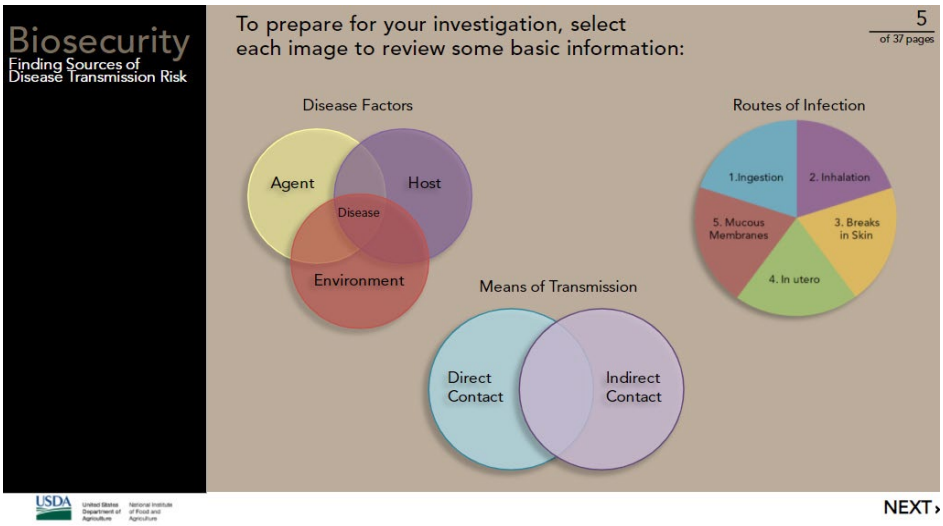
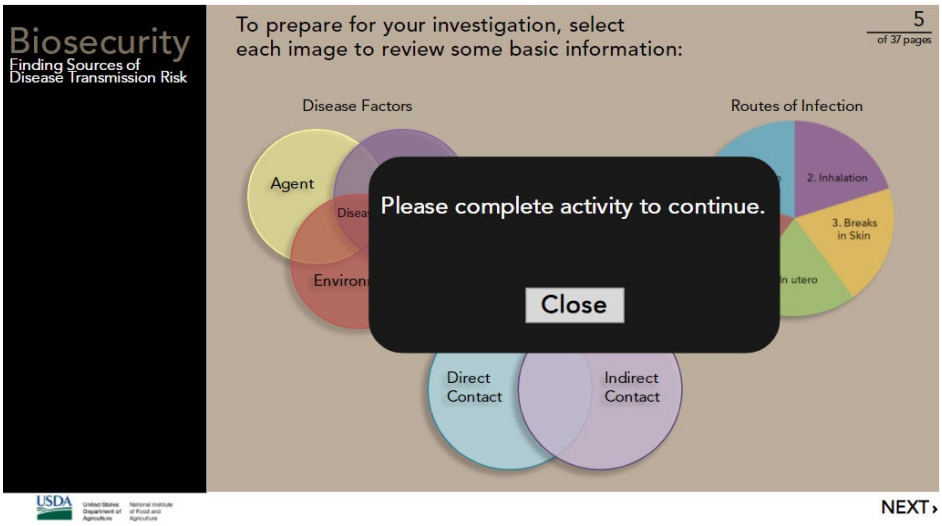
1

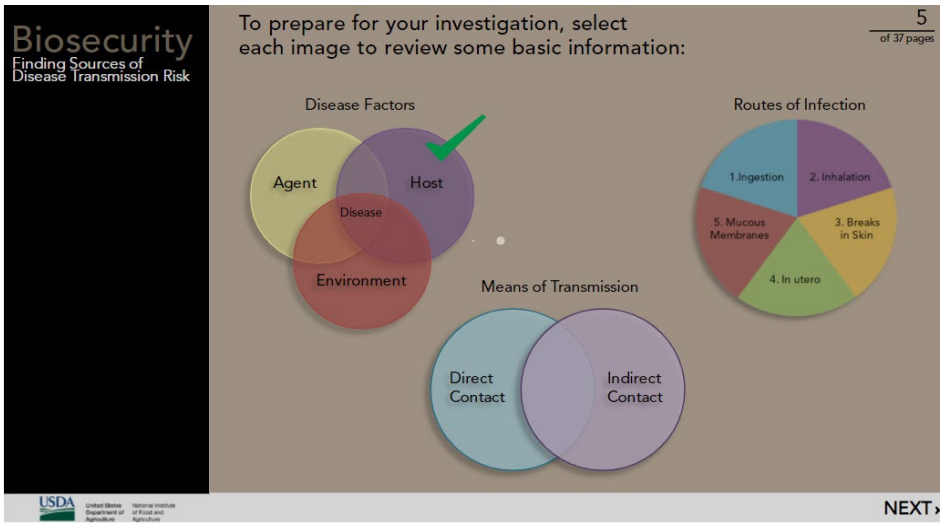
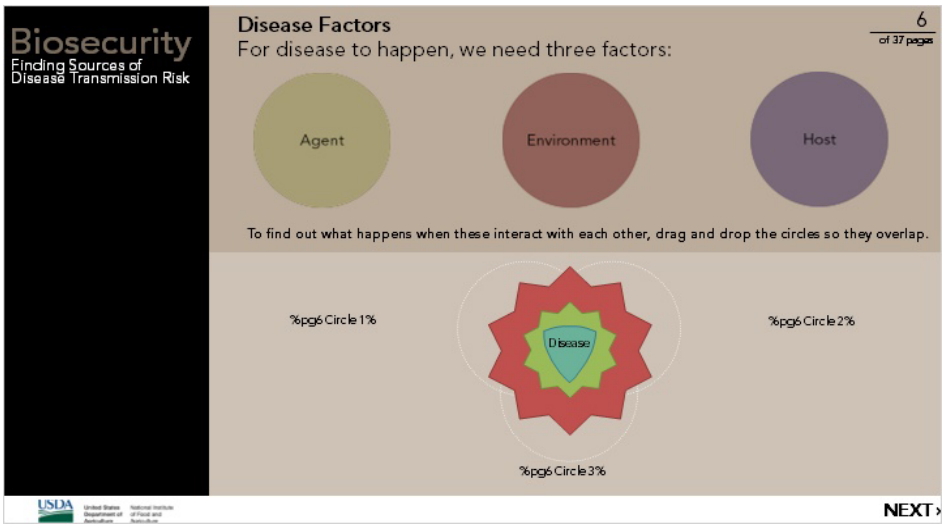


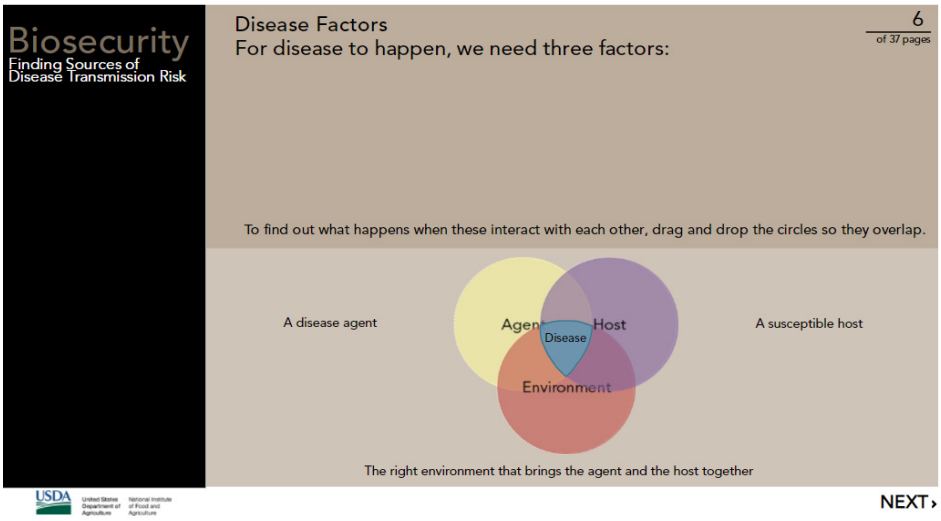
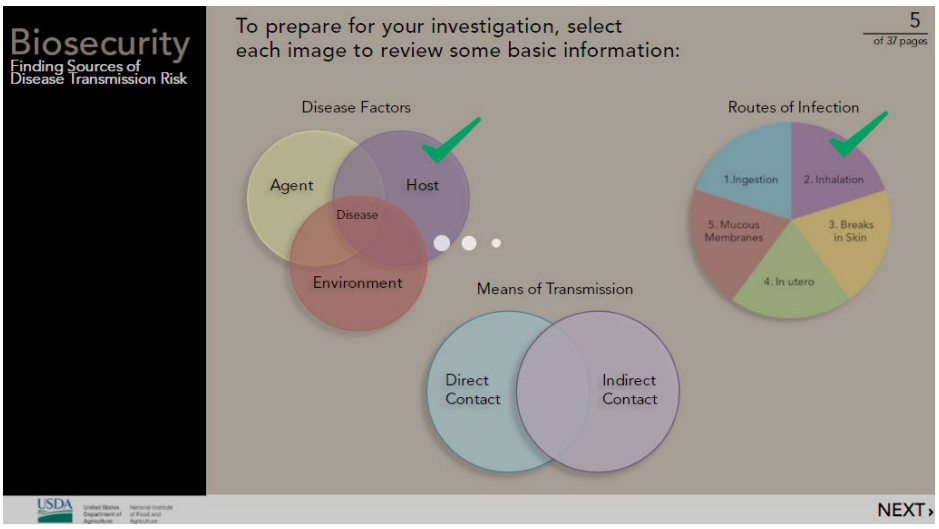
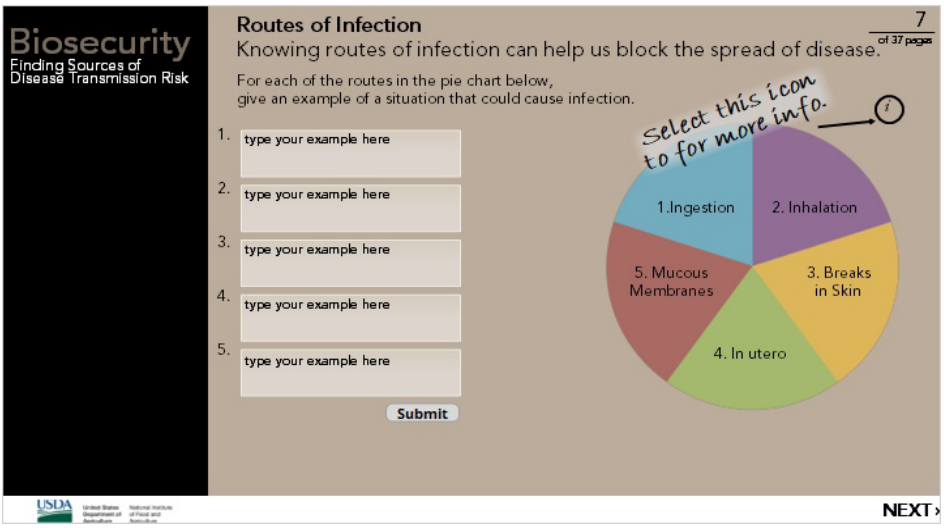
2

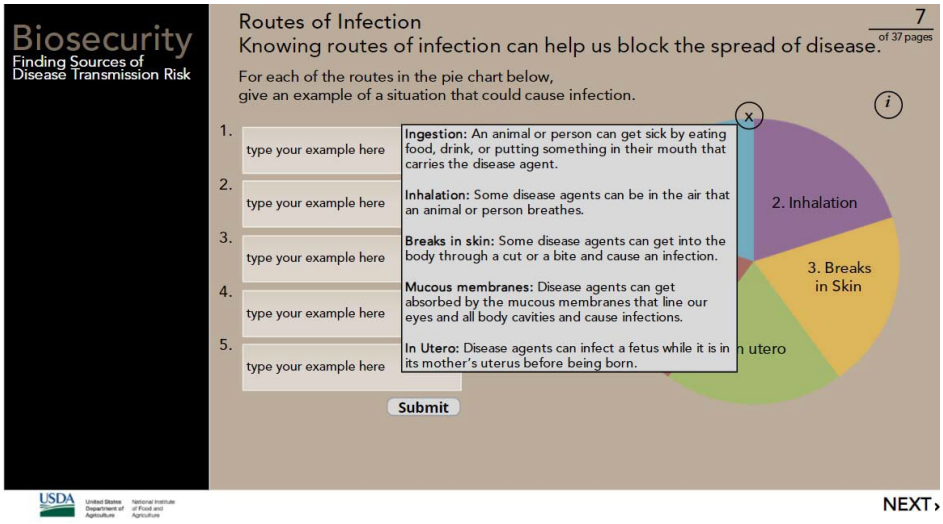
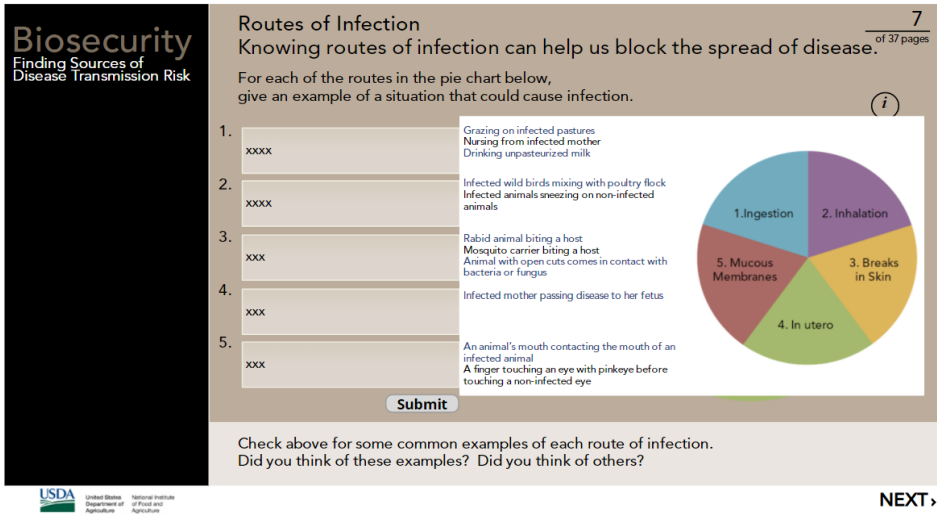
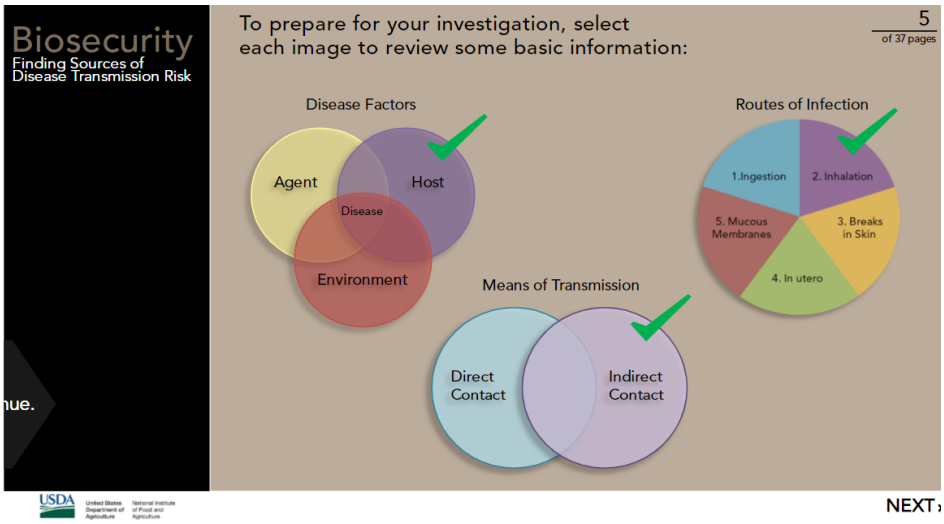


3

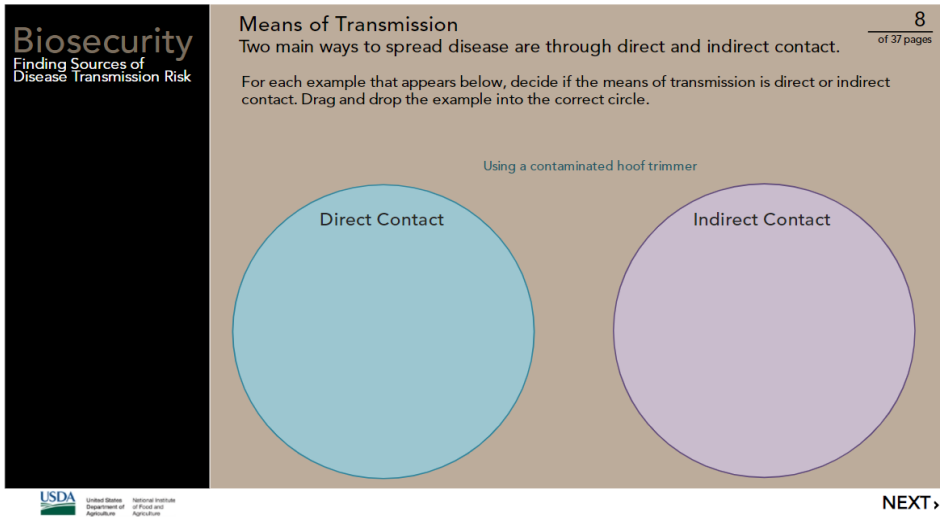
4	Biosecurity Finding Sources of Disease Transmission Risk Meet Dave and Debbie Olson They run a dairy farm. They also have some concerned visitors from neighboring operations. Dave and Debbie have agreed to let you look around their farm and ask questions of anyone you encounter. Carl raises beef cattle. "I'm worried that this disease will affect my cattle business and I won't be able to make a profit." Sharon raises dairy goats and sheep. "What if my animals get sick and die? I don't want them to suffer." Paulita raises pigs. "If there is an epidemic in pigs, prices will go up and some people won't be able to afford pork." 4 of 37 pages USDA ‹BACK NEXT›
5	 Biosecurity Finding Sources of Disease Transmission Risk To prepare for your investigation, select each image to review some basic information: 5 of 37 pages Disease Factors Agent Host Disease Environment Routes of Infection 1.Ingestion 2. Inhalation 3. Breaks in Skin 4. In utero 5. Mucous Membranes Means of Transmission Direct Contact Indirect Contact USDA NEXT›
5	 Biosecurity Finding Sources of Disease Transmission Risk To prepare for your investigation, select each image to review some basic information: 5 of 37 pages Disease Factors Agent Routes of Infection 2. Inhalation 3. Breaks in Skin Please complete activity to continue. Close Direct Contact Indirect Contact USDA NEXT›

5	 Biosecurity Finding Sources of Disease Transmission Risk To prepare for your investigation, select each image to review some basic information: 5 of 37 pages Disease Factors Agent Host Disease Environment Routes of Infection 1.Ingestion 2. Inhalation 3. Breaks in Skin 4. In utero 5. Mucous Membranes Means of Transmission Direct Contact Indirect Contact USDA NEXT ›
6	Biosecurity Finding Sources of Disease Transmission Risk Disease Factors For disease to happen, we need three factors: 6 of 37 pages Agent Environment Host To find out what happens when these interact with each other, drag and drop the circles so they overlap. USDA NEXT ›
6	 Biosecurity Finding Sources of Disease Transmission Risk Disease Factors For disease to happen, we need three factors: 6 of 37 pages Agent Environment Host To find out what happens when these interact with each other, drag and drop the circles so they overlap. %pg6 Circle 1% Disease %pg6 Circle 2% %pg6 Circle 3% USDA NEXT ›

6	 Biosecurity Finding Sources of Disease Transmission Risk Disease Factors For disease to happen, we need three factors: 6 of 37 pages To find out what happens when these interact with each other, drag and drop the circles so they overlap. A disease agent Agent Host Disease Environment A susceptible host The right environment that brings the agent and the host together USDA NEXT ›
5	 Biosecurity Finding Sources of Disease Transmission Risk To prepare for your investigation, select each image to review some basic information: 5 of 37 pages Disease Factors Agent Host Disease Environment Routes of Infection 1.Ingestion 2. Inhalation 3. Breaks in Skin 4. In utero 5. Mucous Membranes Means of Transmission Direct Contact Indirect Contact USDA NEXT ›
7	 Biosecurity Finding Sources of Disease Transmission Risk Routes of Infection Knowing routes of infection can help us block the spread of disease. 7 of 37 pages For each of the routes in the pie chart below, give an example of a situation that could cause infection. 1. type your example here 2. type your example here 3. type your example here 4. type your example here 5. type your example here Submit Select this icon to for more info. 1.Ingestion 2. Inhalation 3. Breaks in Skin 4. In utero 5. Mucous Membranes USDA NEXT ›

7	 Biosecurity Finding Sources of Disease Transmission Risk Routes of Infection Knowing routes of infection can help us block the spread of disease. 7 of 37 pages For each of the routes in the pie chart below, give an example of a situation that could cause infection. 1. type your example here 2. type your example here 3. type your example here 4. type your example here 5. type your example here Submit Ingestion: An animal or person can get sick by eating food, drink, or putting something in their mouth that carries the disease agent. Inhalation: Some disease agents can be in the air that an animal or person breathes. Breaks in skin: Some disease agents can get into the body through a cut or a bite and cause an infection. Mucous membranes: Disease agents can get absorbed by the mucous membranes that line our eyes and all body cavities and cause infections. In Utero: Disease agents can infect a fetus while it is in its mother's uterus before being born. 2. Inhalation 3. Breaks in Skin utero USDA NEXT
7	 Biosecurity Finding Sources of Disease Transmission Risk Routes of Infection Knowing routes of infection can help us block the spread of disease. 7 of 37 pages For each of the routes in the pie chart below, give an example of a situation that could cause infection. 1. xxxx 2. xxxx 3. xxx 4. xxx 5. xxx Submit Grazing on infected pastures Nursing from infected mother Drinking unpasteurized milk Infected wild birds mixing with poultry flock Infected animals sneezing on non-infected animals Rabid animal biting a host Mosquito carrier biting a host Animal with open cuts comes in contact with bacteria or fungus Infected mother passing disease to her fetus An animal's mouth contacting the mouth of an infected animal A finger touching an eye with pinkeye before touching a non-infected eye 1.Ingestion 2. Inhalation 3. Breaks in Skin 4. In utero 5. Mucous Membranes Check above for some common examples of each route of infection. Did you think of these examples? Did you think of others? USDA NEXT
5	 Biosecurity Finding Sources of Disease Transmission Risk To prepare for your investigation, select each image to review some basic information: 5 of 37 pages Disease Factors Agent Host Disease Environment Routes of Infection 1.Ingestion 2. Inhalation 3. Breaks in Skin 4. In utero 5. Mucous Membranes Means of Transmission Direct Contact Indirect Contact USDA NEXT

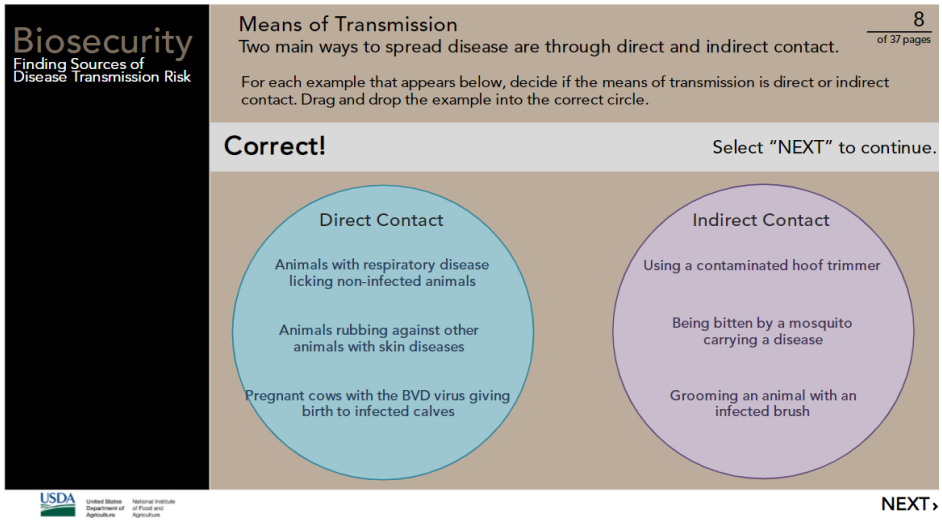
8

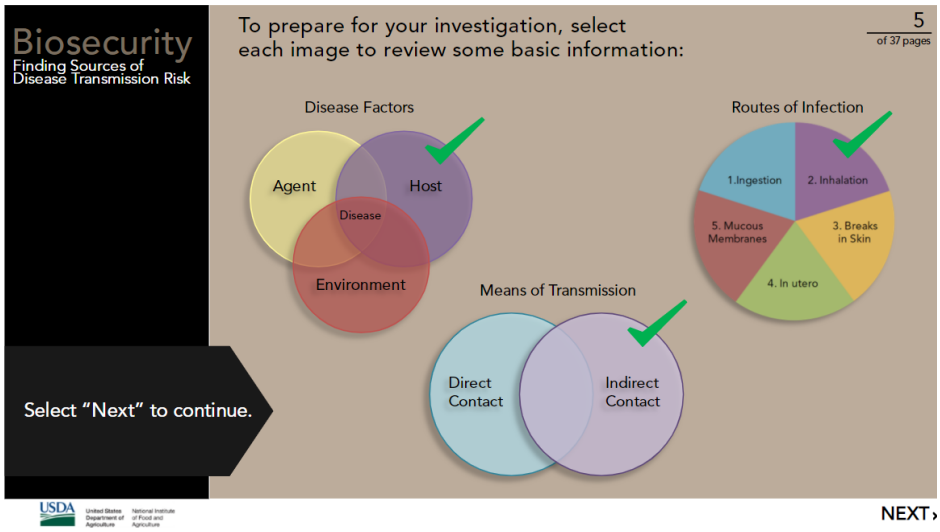
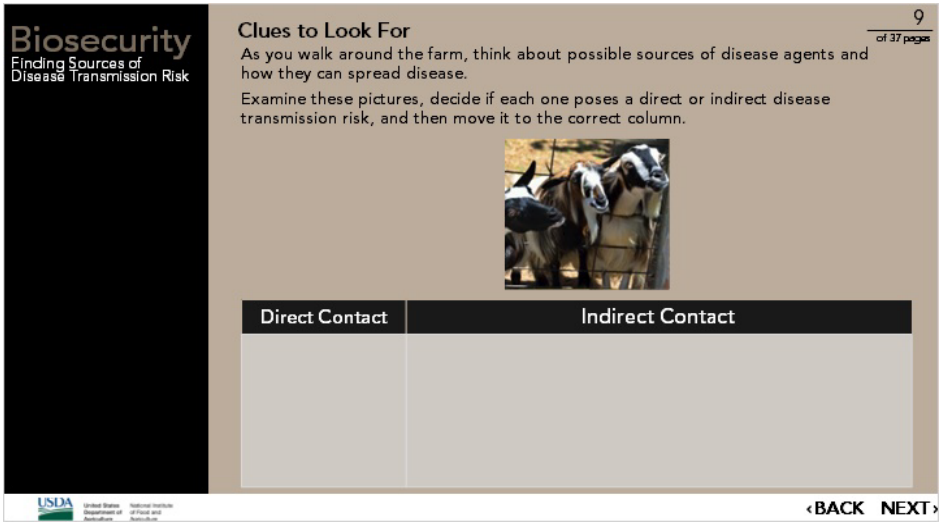
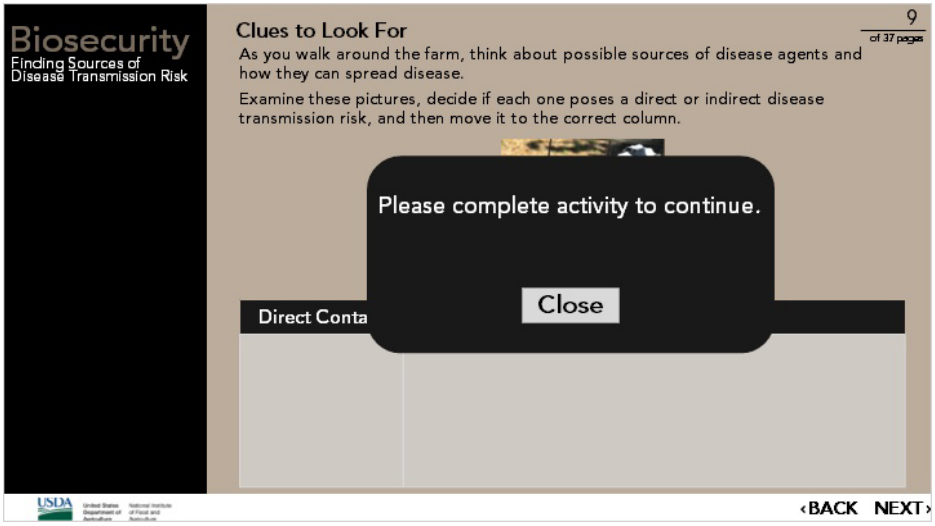


8

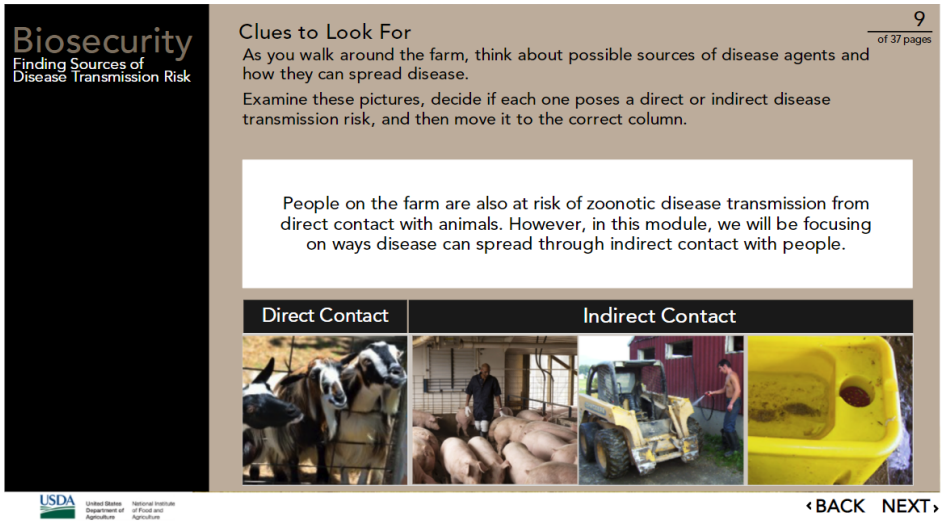
Drag Item	Drop Target
Animal with respiratory disease licking non-infected animals	Direct Contact
Using a contaminated hoof trimmer	Indirect Contact
Animals with skin diseases rubbing against other animals	Direct Contact
Being bitten by a mosquito carrying a disease	Indirect Contact
Pregnant cows with the BVD virus giving birth to infected calves	Direct Contact
Grooming an animal with an infected brush	Indirect Contact

8

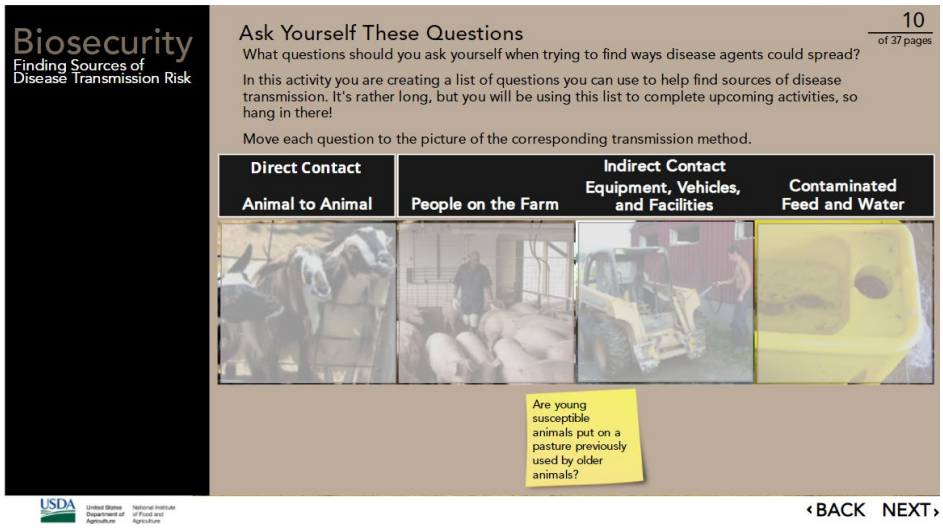


5	 Biosecurity Finding Sources of Disease Transmission Risk To prepare for your investigation, select each image to review some basic information: 5 of 37 pages Disease Factors Agent Host Disease Environment Routes of Infection 1.Ingestion 2. Inhalation 3. Breaks in Skin 4. In utero 5. Mucous Membranes Means of Transmission Direct Contact Indirect Contact Select "Next" to continue. NEXT ›
9	 Biosecurity Finding Sources of Disease Transmission Risk Clues to Look For 9 of 37 pages As you walk around the farm, think about possible sources of disease agents and how they can spread disease. Examine these pictures, decide if each one poses a direct or indirect disease transmission risk, and then move it to the correct column. Direct Contact Indirect Contact ‹BACK NEXT ›
9	 Biosecurity Finding Sources of Disease Transmission Risk Clues to Look For 9 of 37 pages As you walk around the farm, think about possible sources of disease agents and how they can spread disease. Examine these pictures, decide if each one poses a direct or indirect disease transmission risk, and then move it to the correct column. Please complete activity to continue. Close Direct Conta ‹BACK NEXT ›

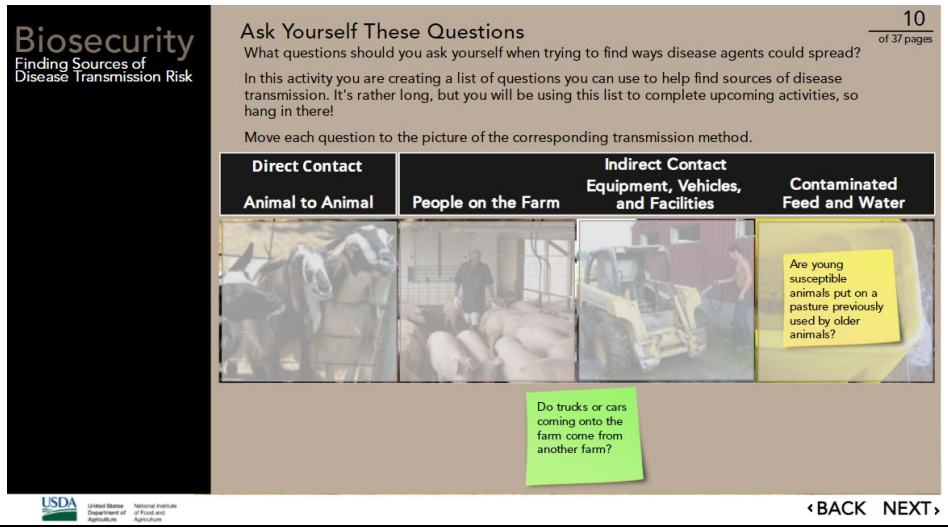
9


Biosecurity
Finding Sources of Disease Transmission Risk
Clues to Look For
9
of 37 pages
As you walk around the farm, think about possible sources of disease agents and how they can spread disease.
Examine these pictures, decide if each one poses a direct or indirect disease transmission risk, and then move it to the correct column.
People on the farm are also at risk of zoonotic disease transmission from direct contact with animals. However, in this module, we will be focusing on ways disease can spread through indirect contact with people.
Direct Contact
Indirect Contact
USDA
BACK
NEXT

10


Biosecurity
Finding Sources of Disease Transmission Risk
Ask Yourself These Questions
10
of 37 pages
What questions should you ask yourself when trying to find ways disease agents could spread?
In this activity you are creating a list of questions you can use to help find sources of disease transmission. It's rather long, but you will be using this list to complete upcoming activities, so hang in there!
Move each question to the picture of the corresponding transmission method.
Direct Contact
Animal to Animal
Indirect Contact
People on the Farm
Equipment, Vehicles, and Facilities
Contaminated Feed and Water
Are young susceptible animals put on a pasture previously used by older animals?
USDA
BACK
NEXT

10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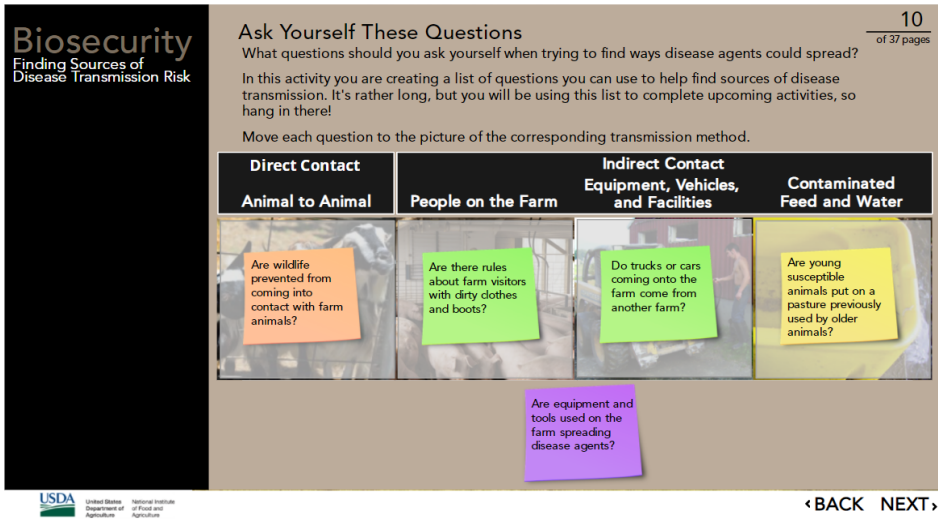
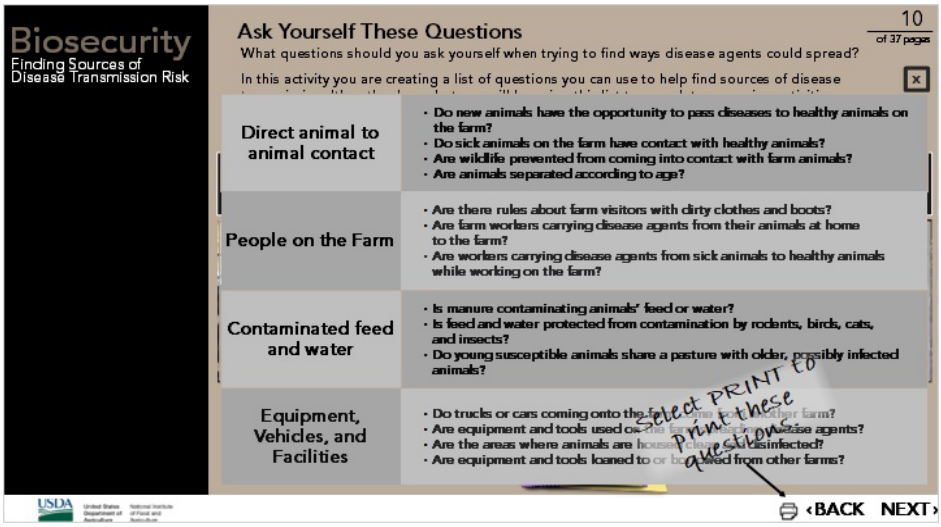
Move each question to the picture of the corresponding transmission method.
Direct Contact
Animal to Animal
Indirect Contact
People on the Farm
Equipment, Vehicles, and Facilities
Contaminated Feed and Water
Are young susceptible animals put on a pasture previously used by older animals?
Do trucks or cars coming onto the farm come from another farm?
USDA
BACK
NEXT

10



10

*Printed questions are in the next frame.



10

Printout: Questions to Consider When Investigating Points of Potential Disease Transmission

- Direct animal to animal contact

- Do new animals have the opportunity to pass diseases to healthy animals on the farm?
- Do sick animals on the farm have contact with healthy animals?
- Are wildlife prevented from coming into contact with farm animals?
- Are animals separated according to age?

People on the Farm

- Are there rules about farm visitors with dirty clothes and boots?
- Are farm workers carrying disease agents from their animals at home to the farm?
- Are workers carrying disease agents from sick animals to heathy animals while working on the farm?

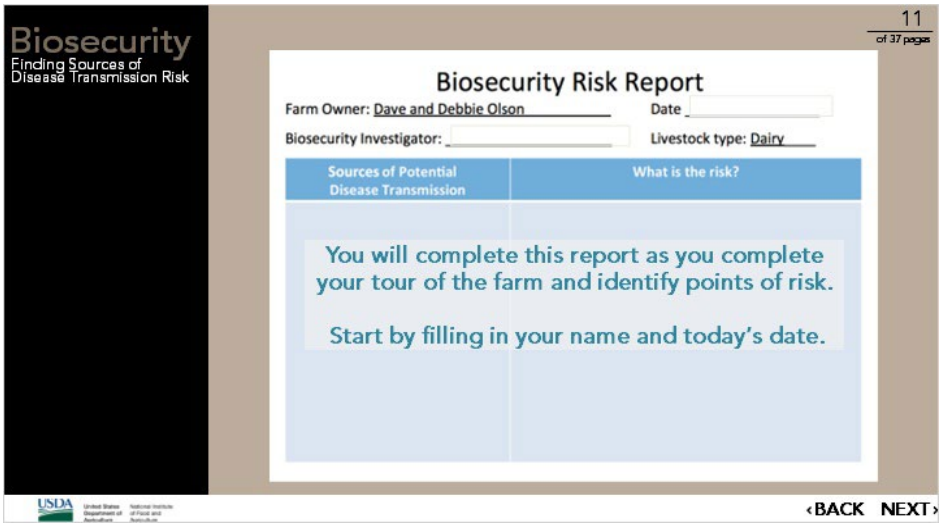
Contaminated feed and water

- Is manure contaminating animals' feed or water?
- Is feed and water protected from contamination by rodents, birds, cats, and insects?
- Do young susceptible animals share a pasture with older, possibly infected animals?

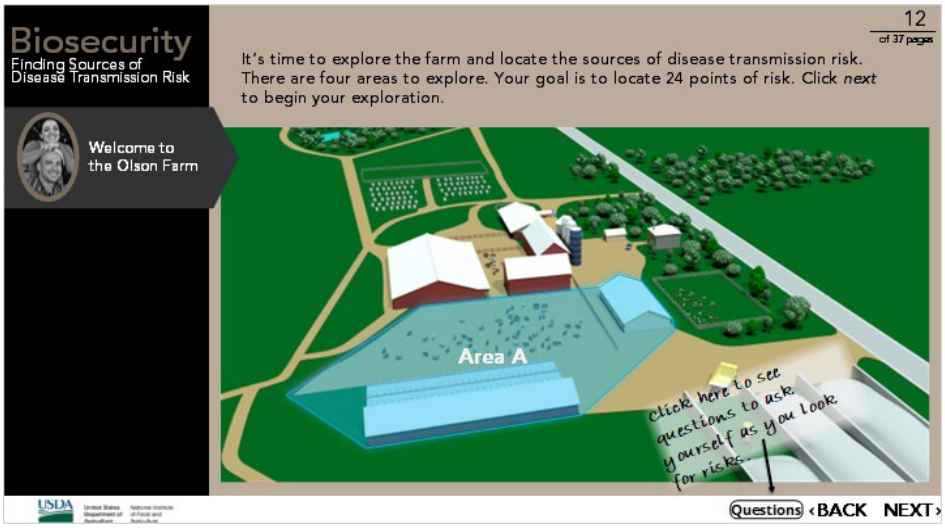
Equipment, Vehicles, and Facilities

- Do trucks or cars coming onto the farm come from another farm?
- Are equipment and tools used on the farm spreading disease agents?
- Are the areas where animals are housed clean and disinfected?
- Are equipment and tools loaned to or borrowed from other farms?

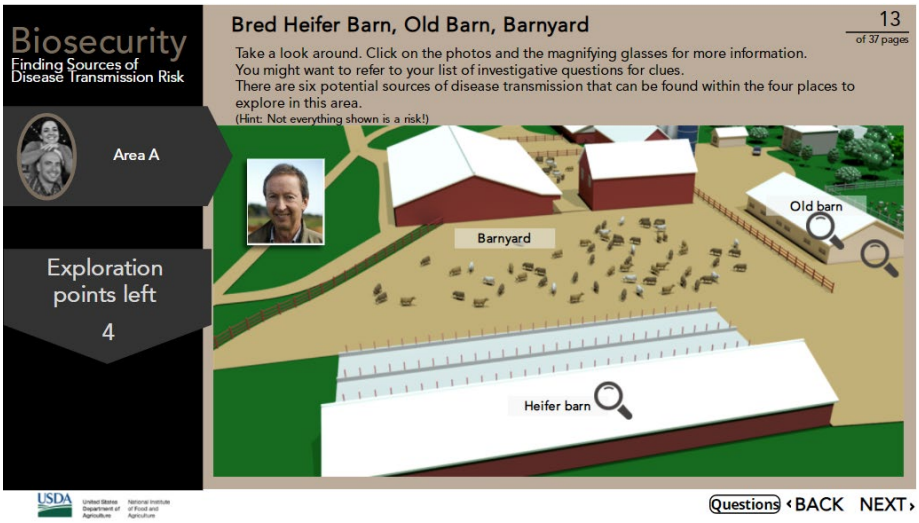
11

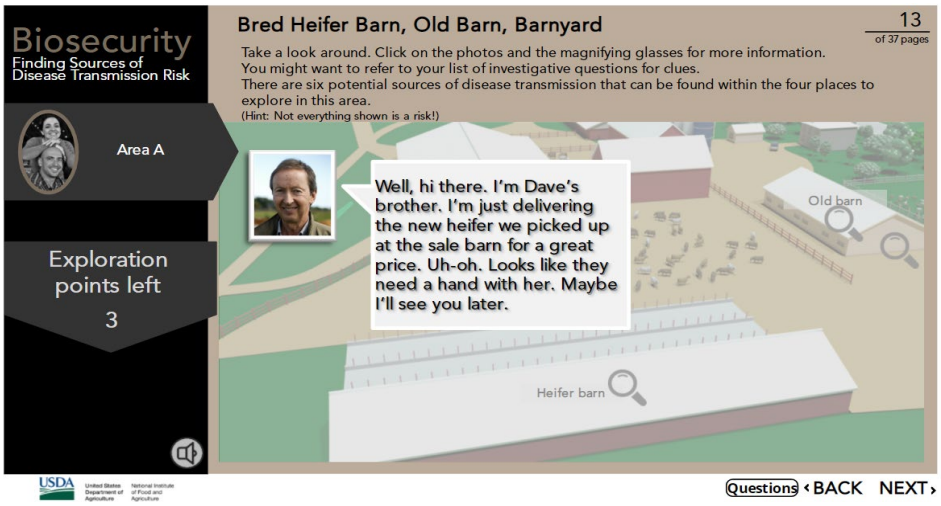

Biosecurity
Finding Sources of Disease Transmission Risk
11
of 37 pages
Biosecurity Risk Report
Farm Owner: Dave and Debbie Olson
Date
Biosecurity Investigator:
Livestock type: Dairy
Sources of Potential Disease Transmission
What is the risk?
You will complete this report as you complete your tour of the farm and identify points of risk.
Start by filling in your name and today's date.
‹BACK NEXT›

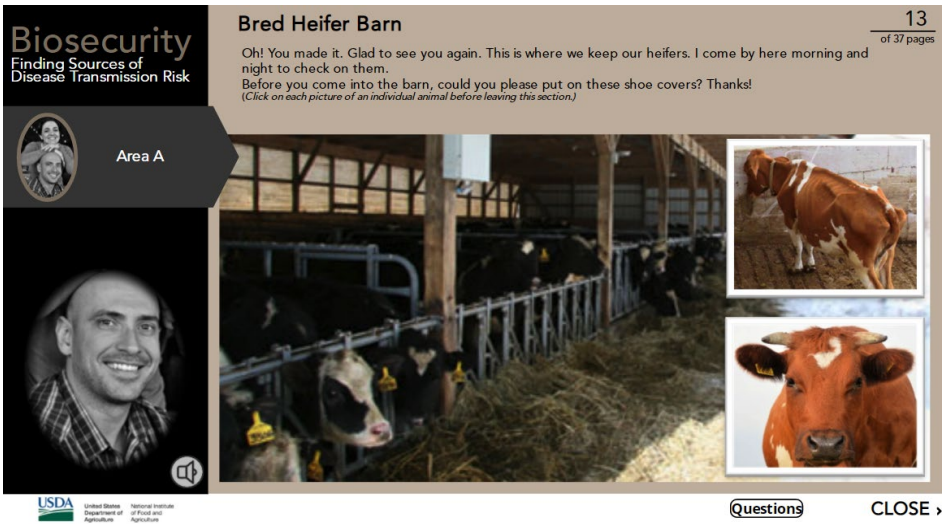
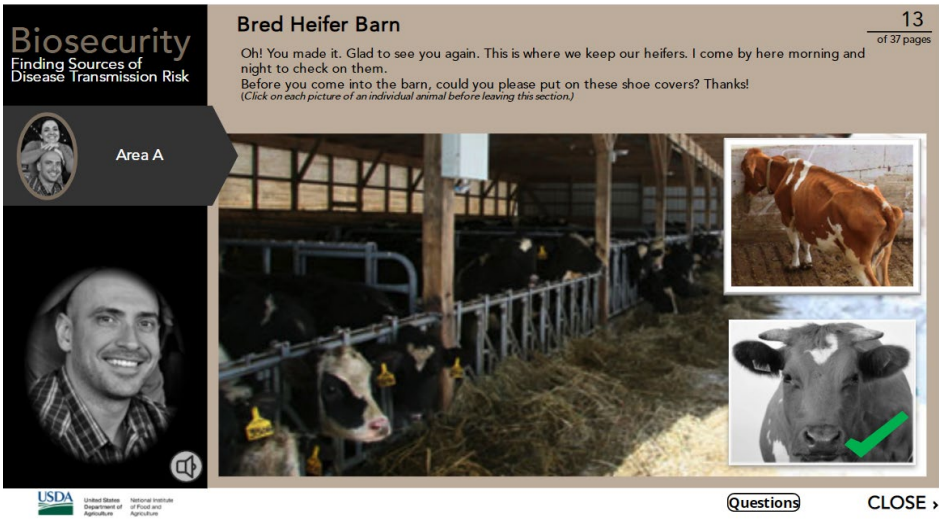
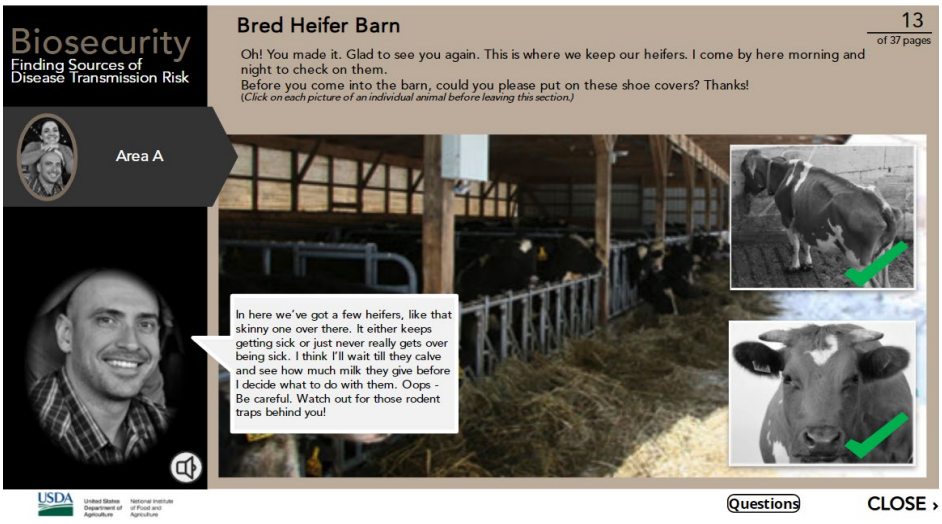
12

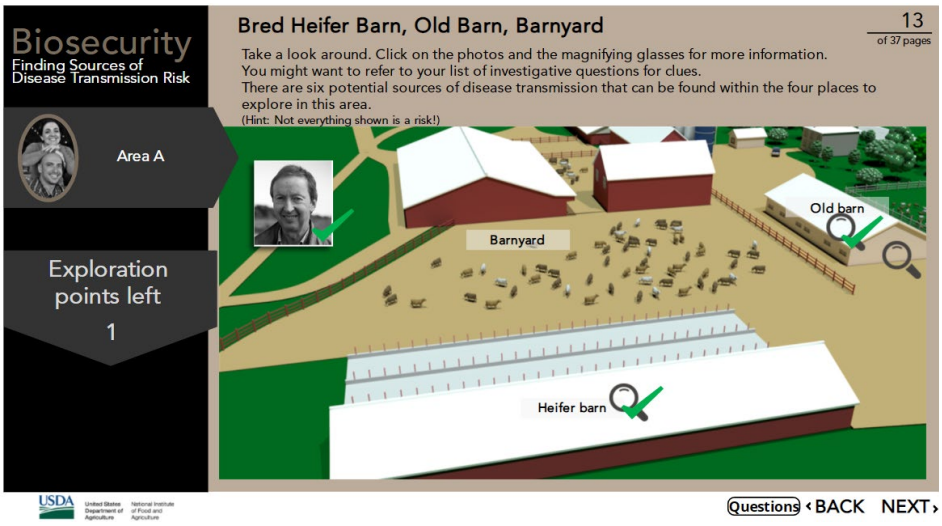
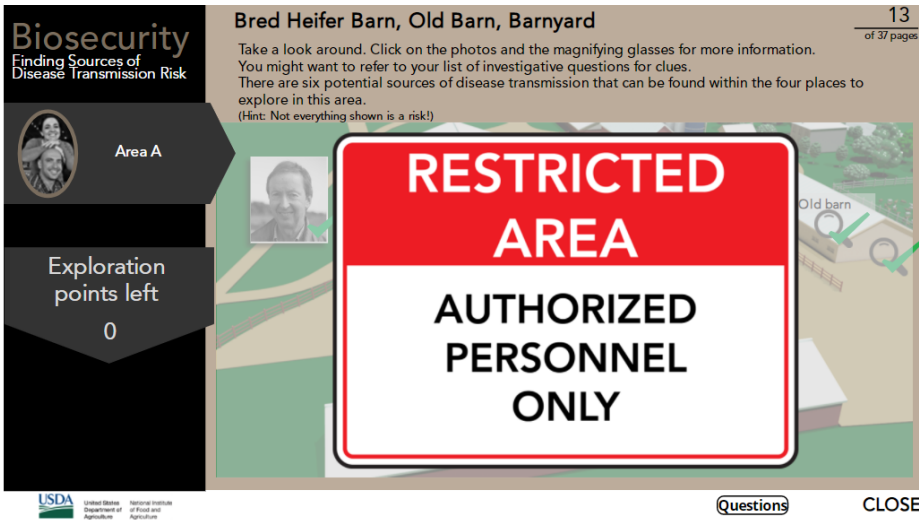
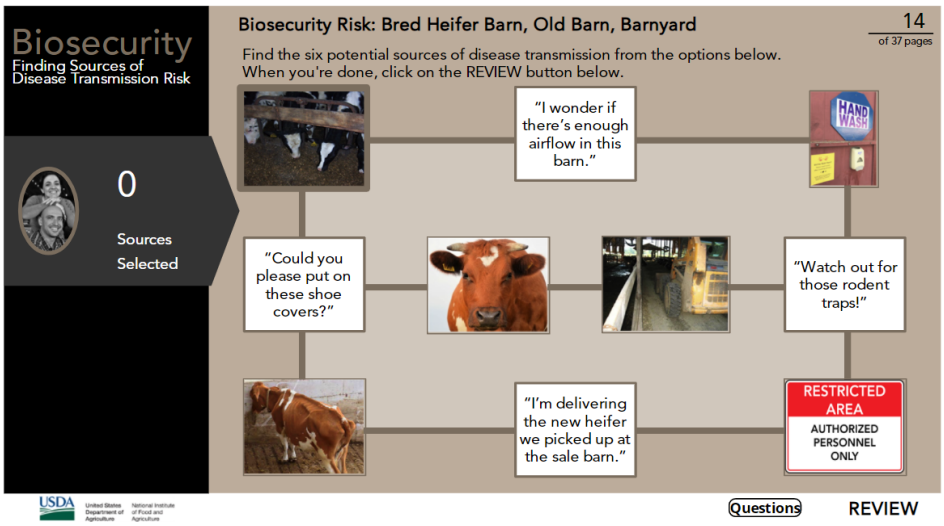

Biosecurity
Finding Sources of Disease Transmission Risk
12
of 37 pages
It's time to explore the farm and locate the sources of disease transmission risk. There are four areas to explore. Your goal is to locate 24 points of risk. Click *next* to begin your exploration.
Welcome to the Olson Farm
Area A
click here to see questions to ask yourself as you look for risks.
Questions ‹BACK NEXT›

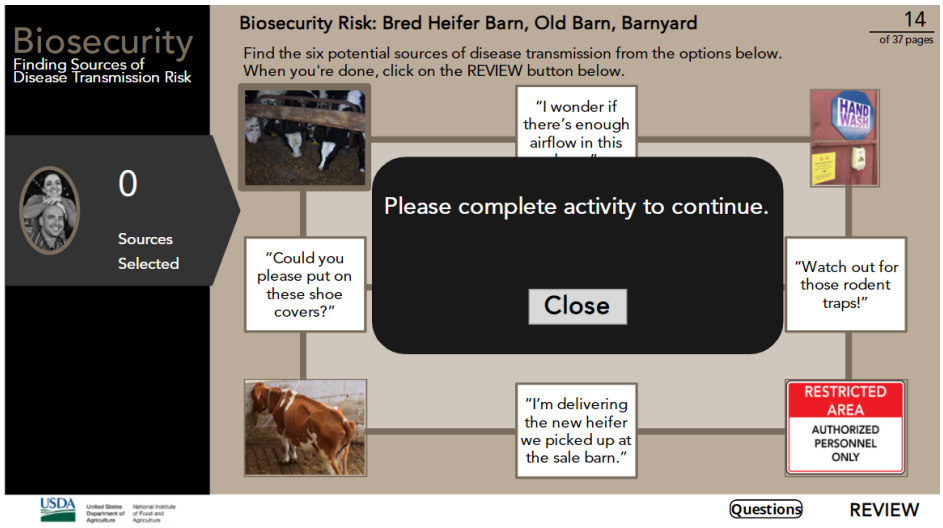
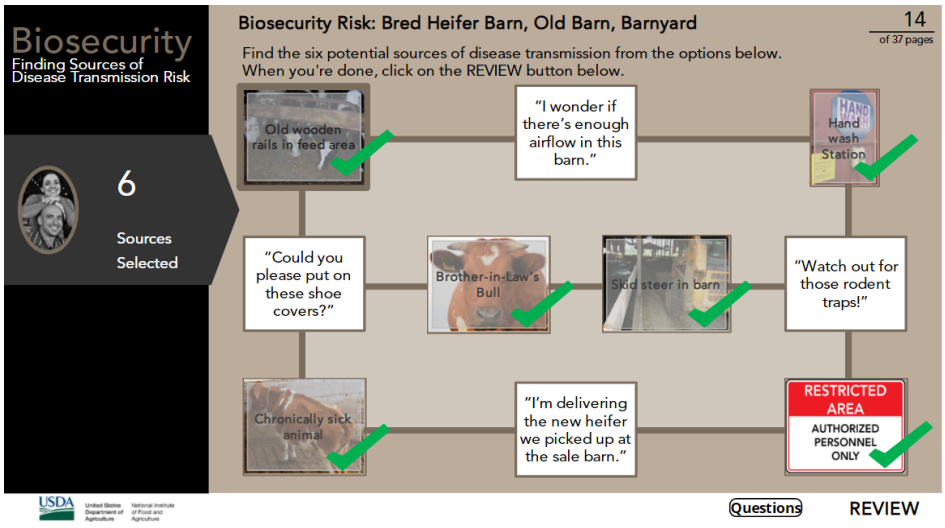
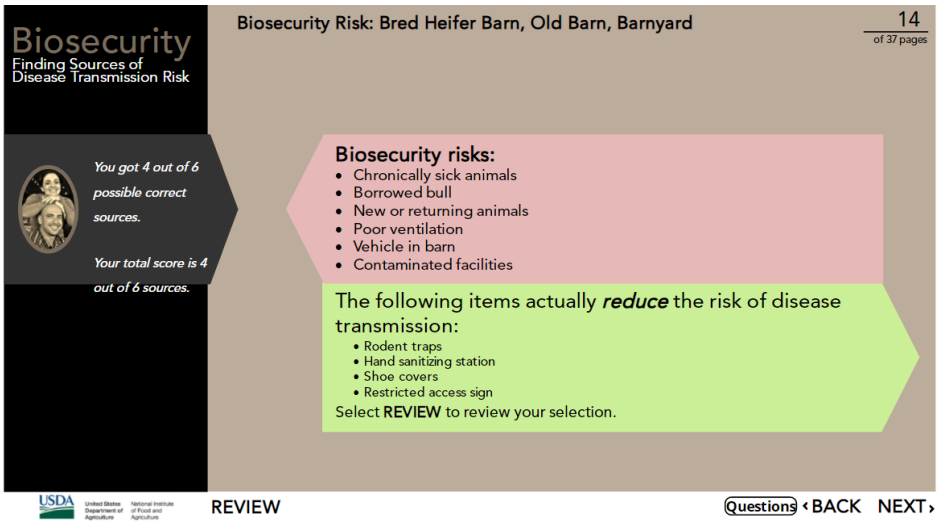
13

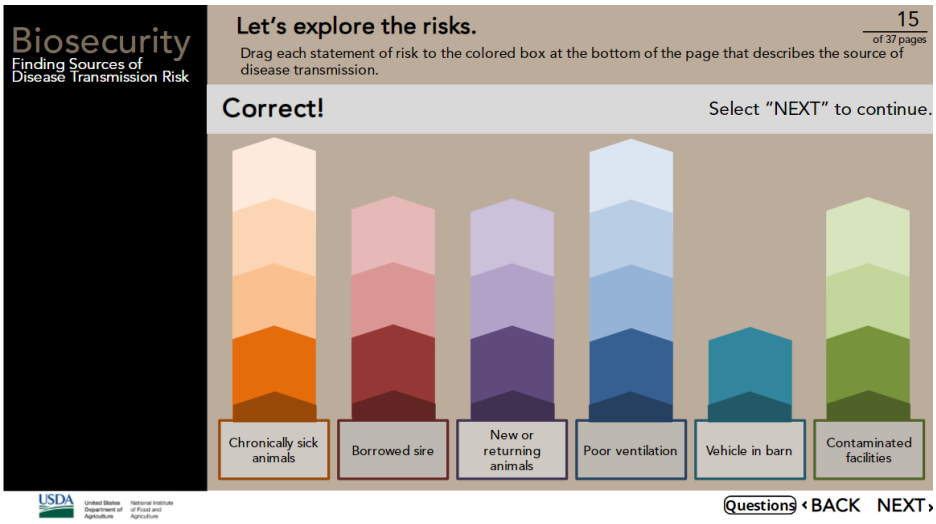

Biosecurity
Finding Sources of Disease Transmission Risk
Bred Heifer Barn, Old Barn, Barnyard
13
of 37 pages
Take a look around. Click on the photos and the magnifying glasses for more information.
You might want to refer to your list of investigative questions for clues.
There are six potential sources of disease transmission that can be found within the four places to explore in this area.
(Hint: Not everything shown is a risk!)
Area A
Exploration points left
4
Barnyard
Old barn
Heifer barn
Questions ‹BACK NEXT›

13	
13 *Click "Close" to go to the next screen	
13	

13	 Biosecurity Finding Sources of Disease Transmission Risk Bred Heifer Barn 13 of 37 pages Oh! You made it. Glad to see you again. This is where we keep our heifers. I come by here morning and night to check on them. Before you come into the barn, could you please put on these shoe covers? Thanks! (Click on each picture of an individual animal before leaving this section.) Area A Questions CLOSE ›
13	 Biosecurity Finding Sources of Disease Transmission Risk Bred Heifer Barn 13 of 37 pages Oh! You made it. Glad to see you again. This is where we keep our heifers. I come by here morning and night to check on them. Before you come into the barn, could you please put on these shoe covers? Thanks! (Click on each picture of an individual animal before leaving this section.) Area A Questions CLOSE ›
13	 Biosecurity Finding Sources of Disease Transmission Risk Bred Heifer Barn 13 of 37 pages Oh! You made it. Glad to see you again. This is where we keep our heifers. I come by here morning and night to check on them. Before you come into the barn, could you please put on these shoe covers? Thanks! (Click on each picture of an individual animal before leaving this section.) Area A In here we've got a few heifers, like that skinny one over there. It either keeps getting sick or just never really gets over being sick. I think I'll wait till they calve and see how much milk they give before I decide what to do with them. Oops - Be careful. Watch out for those rodent traps behind you! Questions CLOSE ›

13	 Biosecurity Finding Sources of Disease Transmission Risk Bred Heifer Barn, Old Barn, Barnyard 13 of 37 pages Take a look around. Click on the photos and the magnifying glasses for more information. You might want to refer to your list of investigative questions for clues. There are six potential sources of disease transmission that can be found within the four places to explore in this area. (Hint: Not everything shown is a risk!) Area A Exploration points left 1 Barnyard Old barn Heifer barn Questions BACK NEXT
13	 Biosecurity Finding Sources of Disease Transmission Risk Bred Heifer Barn, Old Barn, Barnyard 13 of 37 pages Take a look around. Click on the photos and the magnifying glasses for more information. You might want to refer to your list of investigative questions for clues. There are six potential sources of disease transmission that can be found within the four places to explore in this area. (Hint: Not everything shown is a risk!) Area A Exploration points left 0 RESTRICTED AREA AUTHORIZED PERSONNEL ONLY Old barn Questions CLOSE
14	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Bred Heifer Barn, Old Barn, Barnyard 14 of 37 pages Find the six potential sources of disease transmission from the options below. When you're done, click on the REVIEW button below. 0 Sources Selected "I wonder if there's enough airflow in this barn." "Could you please put on these shoe covers?" "Watch out for those rodent traps!" "I'm delivering the new heifer we picked up at the sale barn." RESTRICTED AREA AUTHORIZED PERSONNEL ONLY Questions REVIEW

14	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Bred Heifer Barn, Old Barn, Barnyard 14 of 37 pages Find the six potential sources of disease transmission from the options below. When you're done, click on the REVIEW button below. 0 Sources Selected "I wonder if there's enough airflow in this Please complete activity to continue. Close "Could you please put on these shoe covers?" "Watch out for those rodent traps!" "I'm delivering the new heifer we picked up at the sale barn." RESTRICTED AREA AUTHORIZED PERSONNEL ONLY Questions REVIEW
14	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Bred Heifer Barn, Old Barn, Barnyard 14 of 37 pages Find the six potential sources of disease transmission from the options below. When you're done, click on the REVIEW button below. 6 Sources Selected Old wooden rails in feed area "I wonder if there's enough airflow in this barn." Hand wash Station "Could you please put on these shoe covers?" Brother-in-Law's Bull Skid steer in barn "Watch out for those rodent traps!" Chronically sick animal "I'm delivering the new heifer we picked up at the sale barn." RESTRICTED AREA AUTHORIZED PERSONNEL ONLY Questions REVIEW
14	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Bred Heifer Barn, Old Barn, Barnyard 14 of 37 pages You got 4 out of 6 possible correct sources. Your total score is 4 out of 6 sources. Biosecurity risks: • Chronically sick animals • Borrowed bull • New or returning animals • Poor ventilation • Vehicle in barn • Contaminated facilities The following items actually reduce the risk of disease transmission: • Rodent traps • Hand sanitizing station • Shoe covers • Restricted access sign Select REVIEW to review your selection. REVIEW Questions ‹ BACK NEXT ›

15	
15	
15	See next page for Drag and Drop interactions.

	Drag Item	Drop Target
15	Continually contaminate the environment and other animals.	Chronically sick animals
	Large pig farms usually control air quality with automatic fans because it's so important.	Poor ventilation
	Fairly common practice in small beef and dairy herds but not common in large dairy or beef herds.	Borrowed sire
	Purchasing livestock from auction yards is a high-risk activity and good way to introduce diseases to a herd	New or returning animals
	Concrete and metal facilities, such as used in large scale pig farms, make cleaning and disinfecting easier.	Contaminated facilities
	Lack of quarantine for incoming animals allows new animals to spread disease to existing animals.	New or returning animals
	Chronically ill or carrier animals may exist in large beef cattle herds because cows may only be seen closely during calving, calf weaning, vaccination, and transport.	Chronically sick animals
	Vehicles, tires, and/or driver's shoes could be contaminated and spread disease agents.	Vehicle in barn
	Facilities that are not cleaned and disinfected regularly (or have surfaces difficult to clean and disinfect, such as wood or dirt) can harbor disease-causing agents.	Contaminated facilities
	Very common practice with small pig farms, sheep, and goats.	Borrowed sire
	Air high in ammonia from urine and feces can irritate linings of the nose, throat, and lungs and increase likelihood of respiratory disease.	Poor ventilation
	Mostly a problem for dairy cattle. Beef, sheep, and goats are outside a lot.	Contaminated facilities
	Taking animals to and from livestock shows is a major health risk.	New or returning animals
	Some animals can carry diseases without showing any signs of illness.	Chronically sick animals
	Possibly a problem for confined animals.	Poor ventilation
	Shared or new breeding males could be carrying diseases that could spread to others.	Pentagon 14
	Sheep and goats with foot rot are often not culled as they should be.	Chronically sick animals
	Water condensation on windows is an indication of poor ventilation.	Poor ventilation

16

Biosecurity
Finding Sources of Disease Transmission Risk

Here is your Biosecurity Risk Report so far.

16 of 37 pages

Biosecurity Risk Report

Farm Owner: Dave and Debbie Olson Date fff

Biosecurity Investigator: fff Livestock type: Dairy

Sources of Potential Disease Transmission	What is the risk?
Heifer barn, old barn, and barnyard:	
1. Chronically sick animals	• Continually contaminate environment and other animals. • Some animals can carry diseases without showing any signs of illness.
2. Borrowed bull	• Shared or new breeding males could be carrying diseases that could spread to others.
3. New or returning animals	• Lack of quarantine for incoming animals allows new animals to spread disease to existing animals. • Shows, auction market buying, breeder shows are the most likely cause of disease introduction.
4. Poor ventilation	• Air high in ammonia from urine and feces can irritate linings of the nose, throat, and lungs and increase likelihood of respiratory disease.
5. Vehicle in barn	• Vehicles, tires, or driver's shoes could be contaminated and spreading disease agents.
6. Contaminated facilities	• Facilities that are not cleaned and disinfected regularly (or are difficult to C&D, such as wood structures or dirt floors) can harbor disease-causing agents; a build-up of "bad" bugs can overwhelm the resistance of an animal and cause disease.

You will be able to print the Biosecurity Risk Report later on in the module to review.

USDA United States Department of Agriculture National Institute of Food and Agriculture

Questions ‹BACK NEXT›

17

Biosecurity
Finding Sources of Disease Transmission Risk

Great! What will you learn in the next area?

17 of 37 pages

Select *Next* to move to Area B.

4 of 6 sources found

USDA United States Department of Agriculture National Institute of Food and Agriculture

Questions ‹BACK NEXT›

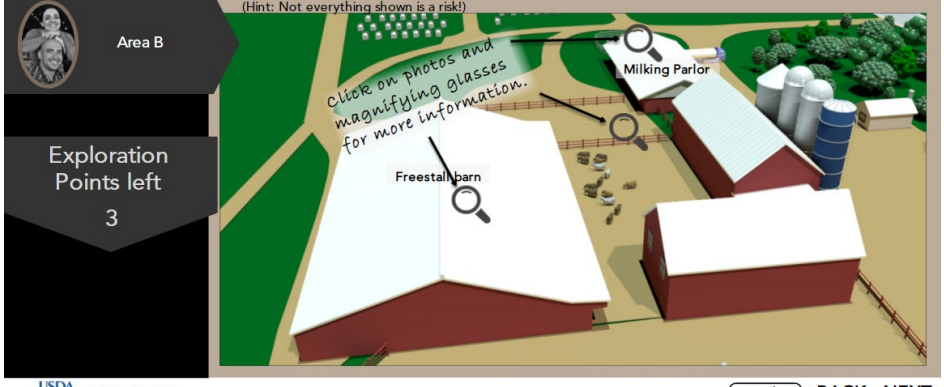
18

Biosecurity
Finding Sources of Disease Transmission Risk

Freestall Barn and Milking Parlor

18 of 37 pages

Take a look around. Click on the photos and magnifying glasses for more information.
You might want to refer to your list of investigative questions for clues.
There are seven potential sources of disease transmission that can be found within the three places to explore in this area.
(Hint: Not everything shown is a risk!)

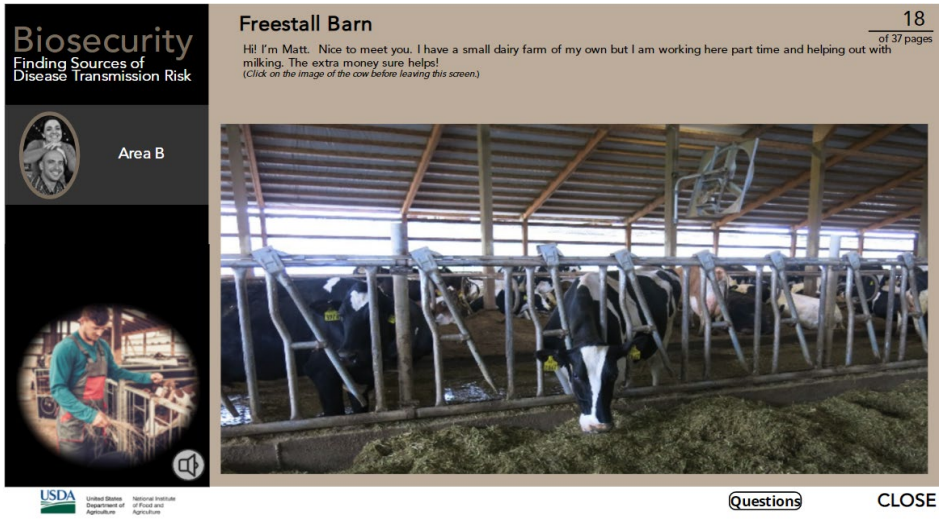
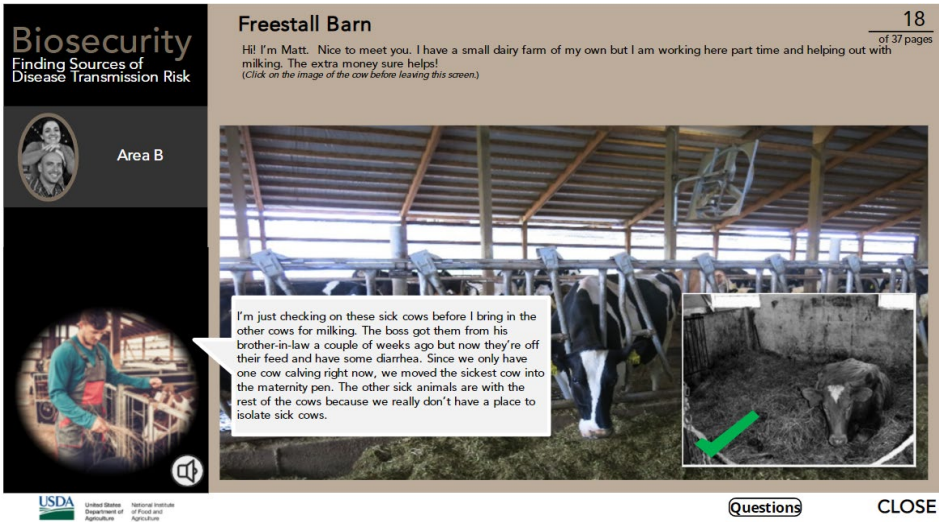
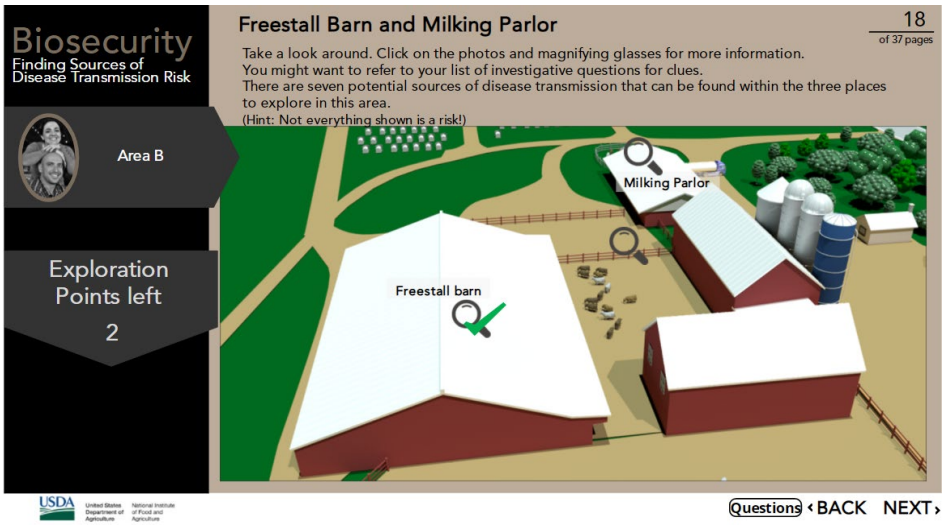


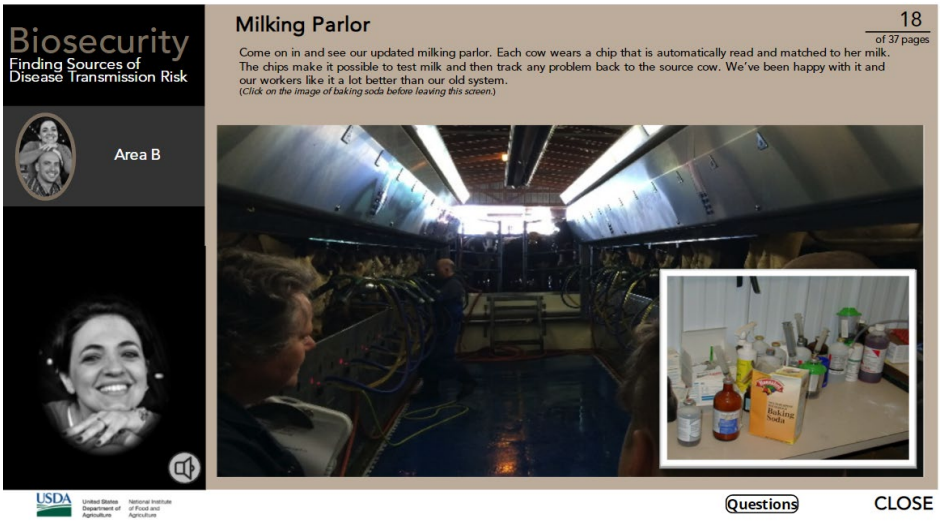
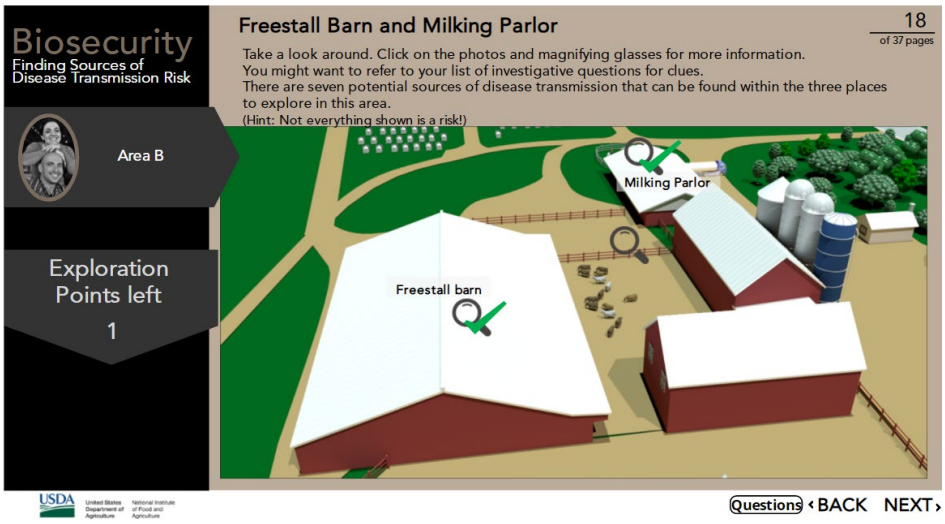
Area B

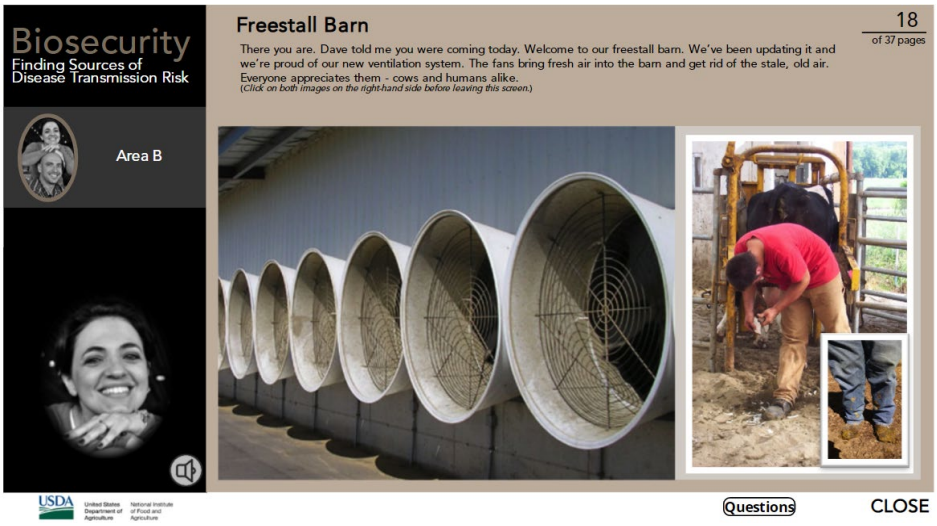
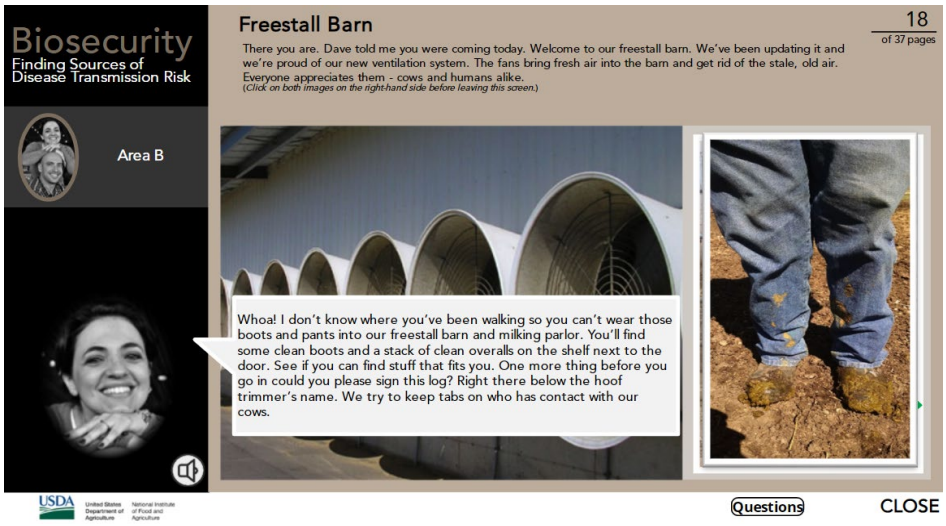
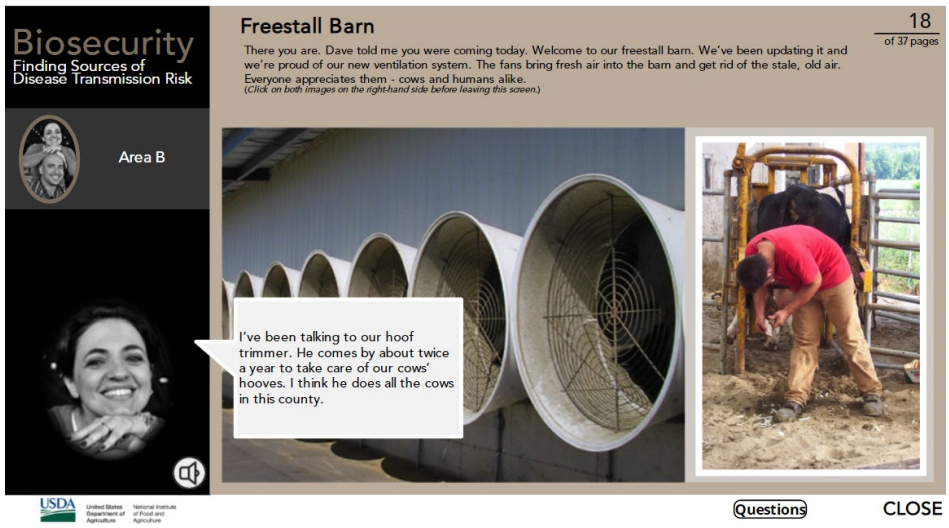
Exploration Points left
3

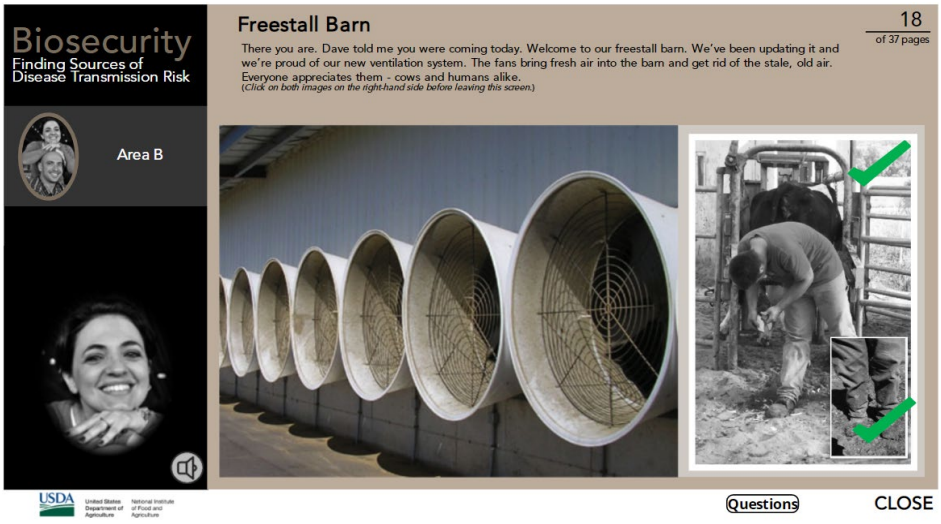
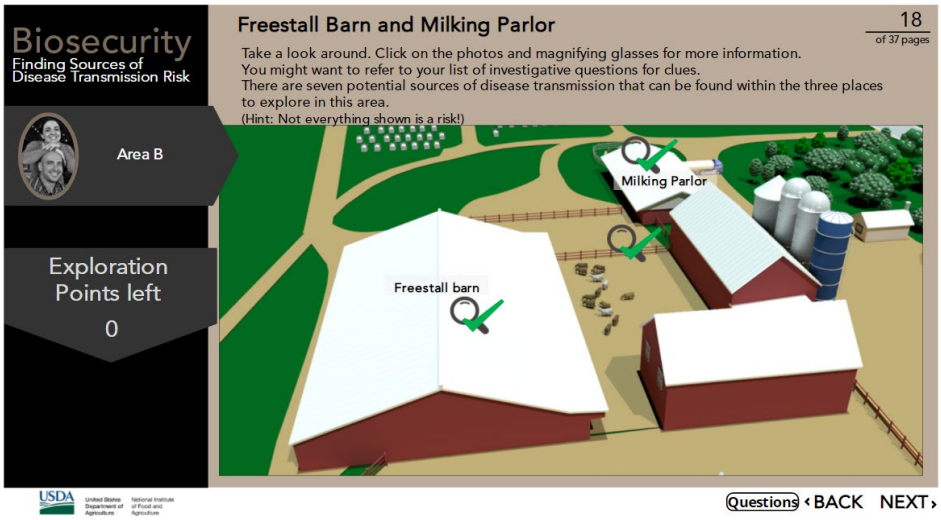
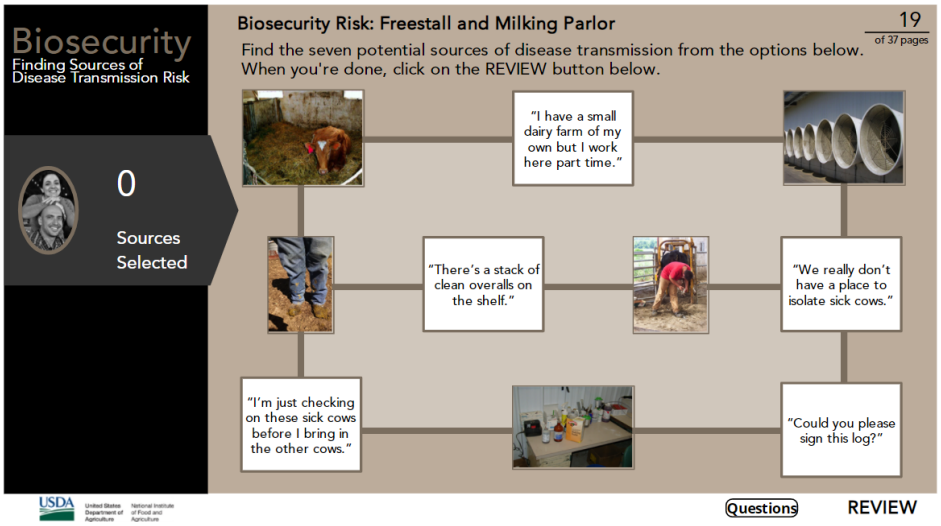
USDA United States Department of Agriculture National Institute of Food and Agriculture

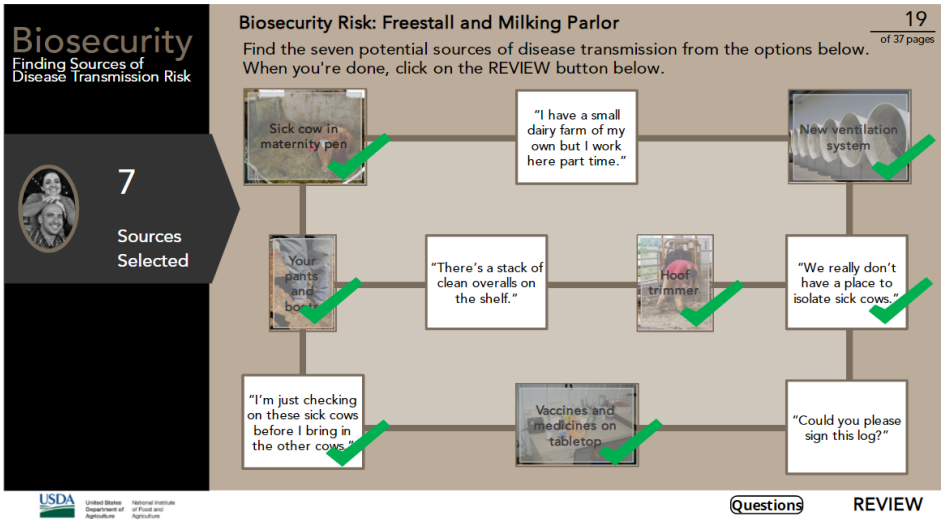
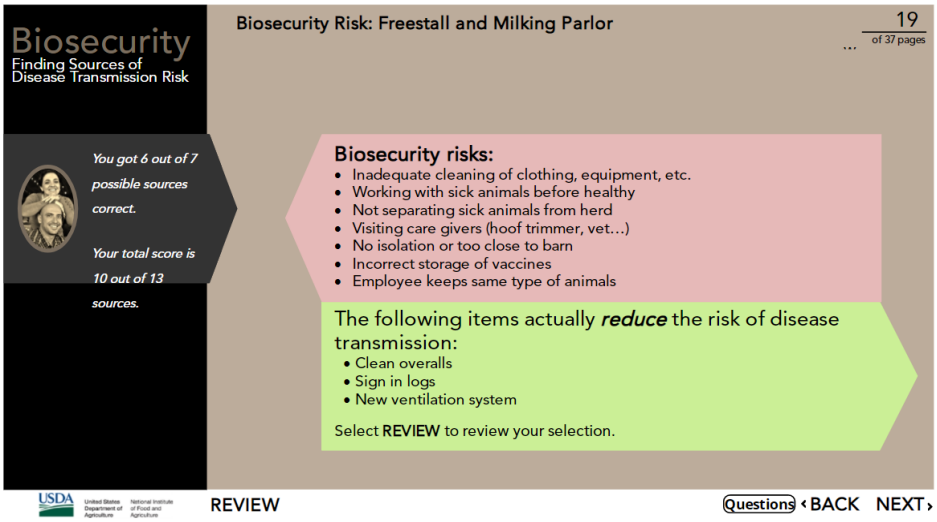
Questions ‹BACK NEXT›

18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Freestall Barn 18 of 37 pages Hi! I'm Matt. Nice to meet you. I have a small dairy farm of my own but I am working here part time and helping out with milking. The extra money sure helps! (Click on the image of the cow before leaving this screen.) Questions CLOSE
18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Freestall Barn 18 of 37 pages Hi! I'm Matt. Nice to meet you. I have a small dairy farm of my own but I am working here part time and helping out with milking. The extra money sure helps! (Click on the image of the cow before leaving this screen.) I'm just checking on these sick cows before I bring in the other cows for milking. The boss got them from his brother-in-law a couple of weeks ago but now they're off their feed and have some diarrhea. Since we only have one cow calving right now, we moved the sickest cow into the maternity pen. The other sick animals are with the rest of the cows because we really don't have a place to isolate sick cows. Questions CLOSE
18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Exploration Points left 2 Freestall Barn and Milking Parlor 18 of 37 pages Take a look around. Click on the photos and magnifying glasses for more information. You might want to refer to your list of investigative questions for clues. There are seven potential sources of disease transmission that can be found within the three places to explore in this area. (Hint: Not everything shown is a risk!) Milking Parlor Freestall barn Questions BACK NEXT

18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Milking Parlor 18 of 37 pages Come on in and see our updated milking parlor. Each cow wears a chip that is automatically read and matched to her milk. The chips make it possible to test milk and then track any problem back to the source cow. We've been happy with it and our workers like it a lot better than our old system. (Click on the image of baking soda before leaving this screen.) Baking Soda USDA Questions CLOSE
18	Biosecurity Finding Sources of Disease Transmission Risk Area B Milking Parlor 18 of 37 pages Come on in and see our updated milking parlor. Each cow wears a chip that is automatically read and matched to her milk. The chips make it possible to test milk and then track any problem back to the source cow. We've been happy with it and our workers like it a lot better than our old system. (Click on the image of baking soda before leaving this screen.) Sorry. Gotta run - I just came in to grab some vaccines off the table and take them out to the calf hutches. Baking Soda USDA Questions CLOSE
18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Exploration Points left 1 Freestall Barn and Milking Parlor 18 of 37 pages Take a look around. Click on the photos and magnifying glasses for more information. You might want to refer to your list of investigative questions for clues. There are seven potential sources of disease transmission that can be found within the three places to explore in this area. (Hint: Not everything shown is a risk!) Milking Parlor Freestall barn USDA Questions ‹ BACK NEXT ›

18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Freestall Barn 18 of 37 pages There you are. Dave told me you were coming today. Welcome to our freestall barn. We've been updating it and we're proud of our new ventilation system. The fans bring fresh air into the barn and get rid of the stale, old air. Everyone appreciates them - cows and humans alike. (Click on both images on the right-hand side before leaving this screen.) Questions CLOSE
18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Freestall Barn 18 of 37 pages There you are. Dave told me you were coming today. Welcome to our freestall barn. We've been updating it and we're proud of our new ventilation system. The fans bring fresh air into the barn and get rid of the stale, old air. Everyone appreciates them - cows and humans alike. (Click on both images on the right-hand side before leaving this screen.) Whoa! I don't know where you've been walking so you can't wear those boots and pants into our freestall barn and milking parlor. You'll find some clean boots and a stack of clean overalls on the shelf next to the door. See if you can find stuff that fits you. One more thing before you go in could you please sign this log? Right there below the hoof trimmer's name. We try to keep tabs on who has contact with our cows. Questions CLOSE
18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Freestall Barn 18 of 37 pages There you are. Dave told me you were coming today. Welcome to our freestall barn. We've been updating it and we're proud of our new ventilation system. The fans bring fresh air into the barn and get rid of the stale, old air. Everyone appreciates them - cows and humans alike. (Click on both images on the right-hand side before leaving this screen.) I've been talking to our hoof trimmer. He comes by about twice a year to take care of our cows' hooves. I think he does all the cows in this county. Questions CLOSE

18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Freestall Barn 18 of 37 pages There you are. Dave told me you were coming today. Welcome to our freestall barn. We've been updating it and we're proud of our new ventilation system. The fans bring fresh air into the barn and get rid of the stale, old air. Everyone appreciates them - cows and humans alike. (Click on both images on the right-hand side before leaving this screen.) Questions CLOSE
18	 Biosecurity Finding Sources of Disease Transmission Risk Area B Exploration Points left 0 Freestall Barn and Milking Parlor 18 of 37 pages Take a look around. Click on the photos and magnifying glasses for more information. You might want to refer to your list of investigative questions for clues. There are seven potential sources of disease transmission that can be found within the three places to explore in this area. (Hint: Not everything shown is a risk!) Milking Parlor Freestall barn Questions ‹ BACK NEXT ›
19	 Biosecurity Finding Sources of Disease Transmission Risk 0 Sources Selected Biosecurity Risk: Freestall and Milking Parlor 19 of 37 pages Find the seven potential sources of disease transmission from the options below. When you're done, click on the REVIEW button below. "I have a small dairy farm of my own but I work here part time." "There's a stack of clean overalls on the shelf." "We really don't have a place to isolate sick cows." "I'm just checking on these sick cows before I bring in the other cows." "Could you please sign this log?" Questions REVIEW

19	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Freestall and Milking Parlor 19 of 37 pages Find the seven potential sources of disease transmission from the options below. When you're done, click on the REVIEW button below. 7 Sources Selected Sick cow in maternity pen "I have a small dairy farm of my own but I work here part time." New ventilation system Your pants and boots "There's a stack of clean overalls on the shelf." Hoof trimmer "We really don't have a place to isolate sick cows." "I'm just checking on these sick cows before I bring in the other cows." Vaccines and medicines on tabletop "Could you please sign this log?" Questions REVIEW
19	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Freestall and Milking Parlor 19 of 37 pages You got 6 out of 7 possible sources correct. Your total score is 10 out of 13 sources. Biosecurity risks: • Inadequate cleaning of clothing, equipment, etc. • Working with sick animals before healthy • Not separating sick animals from herd • Visiting care givers (hoof trimmer, vet…) • No isolation or too close to barn • Incorrect storage of vaccines • Employee keeps same type of animals The following items actually reduce the risk of disease transmission: • Clean overalls • Sign in logs • New ventilation system Select REVIEW to review your selection. REVIEW Questions ‹ BACK NEXT ›
20	Biosecurity Finding Sources of Disease Transmission Risk Let's Explore the Risks: Million Dollar Quiz 20 of 37 pages What are the risks for the potential disease transmission sources you've identified in the freestall and milking parlor areas? See if you can select the best answer for each question. If you're having trouble, you have one chance to Ask a Farmer for help, or you can use your 50-50 hints. But use them sparingly. You only have two! Select "Next" to begin the quiz. Questions ‹ BACK NEXT ›

20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 1 of 7 20 of 37 pages Lack of sanitation lets disease agents build up, which makes contact between disease agents and animals more likely. This is a risk of what potential source of disease transmission? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 No isolation or isolation too close to barn Incorrect storage of vaccine Inadequate cleaning and disinfecting of clothing, equipment, and facilities. Separate sick animals from herd Submit USDA United States Department of Agriculture National Institute of Food and Agriculture 50-50 50-50 Ask a farmer Questions NEXT ›
20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 1 of 7 20 of 37 pages Lack of sanitation lets disease agents build up, which makes contact between disease agents and animals more likely. This is a risk of what potential source of disease transmission? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 No isolation or isolation too close to barn Incorrect storage of vaccine Inadequate cleaning and disinfecting of clothing, equipment, and facilities. Separate sick animals from herd Submit USDA United States Department of Agriculture National Institute of Food and Agriculture 50-50 50-50 Ask a farmer Questions NEXT ›
20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 1 of 7 20 of 37 pages Lack of sanitation lets disease agents build up, which makes contact between disease agents and animals more likely. This is a risk of what potential source of disease transmission? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 No isolation or isolation too close to barn Incorrect storage of vaccine You're right! Cleaning and disinfecting clothing, equipment, and facilities can prevent diseases from spreading. Large pig farms that are in buildings are usually very careful about cleaning and disinfecting. However, beef cattle, and sheep and goat farms may not be as careful, especially during busy periods of birthing when boots and coveralls aren't changed or cleaned as often as they should be. Owners of small sheep and goat farms should change footwear between the house and barn or their farm and neighboring ones. Select "Next" To continue. USDA United States Department of Agriculture National Institute of Food and Agriculture 50-50 50-50 Ask a farmer Questions NEXT ›

20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 1 of 7 20 of 37 pages Lack of sanitation lets disease agents build up, which makes contact between disease agents and animals more likely. This is a risk of what potential source of disease transmission? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 No isolation or isolation too close to barn Incorrect storage of vaccine **Sorry!** The correct answer is - cleaning and disinfecting of clothing, equipment, and facilities. Thorough cleaning and disinfecting can prevent diseases from spreading. Large pig farms that are in buildings are usually very careful about cleaning and disinfecting. However, beef, cattle, and sheep and goats farms may not be so careful, especially during busy periods of birthing when boots and coveralls aren't changed or cleaned as often as they should be. Owners of small sheep and goat farms should change footwear between the house and barn or their farm and neighboring ones. Select "Next" To continue. 50-50 50-50 Return to Farmer Questions NEXT ›
20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 1 of 7 20 of 37 pages Lack of sanitation lets disease agents build up, which makes contact between disease agents and animals more likely. This is a risk of what potential source of disease transmission? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Carl Raises beef cows. It sure gets busy during birthing season. I just don't have time to change in between births or when I run up to the house for a quick bite to eat! 50-50 50-50 Ask a farmer Questions CLOSE
20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 2 of 7 20 of 37 pages Which human activity can spread disease from sick to healthy animals? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Insects and birds Working with sick animals before healthy Contaminated feed or water Wildlife/domestic animals in barn Submit 50-50 50-50 Ask a farmer Questions NEXT ›

20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 2 of 7 20 of 37 pages Which human activity can spread disease from sick to healthy animals? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Insects and birds Working with sick animals before healthy Contaminated feed or water You're right! Human hands, clothing and equipment can spread diseases from sick animals to healthy ones. This is why employees on big pig farms are assigned to specific buildings or tasks. It reduces the risk of spreading diseases between barns. But with dairy and beef cattle, too often caretakers treat the scouring calves before going to tend to healthy calves. This is a dangerous habit! Select "Next" To continue. 50-50 50-50 Ask a farmer Questions NEXT ›
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20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 3 of 7 20 of 37 pages Which of the following strategies would you use to prevent sick animals from spreading diseases directly to herd mates? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Set up handwashing stations Store vaccines in a cool, clean, dry place Keep barns clear of birds and insects Separate sick animals from the herd Submit 50-50 50-50 Ask a farmer Questions NEXT ›
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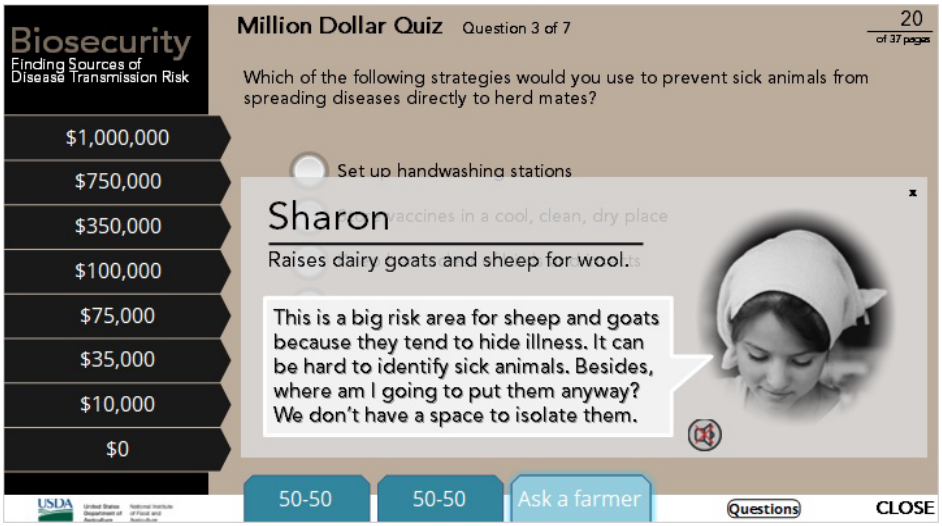
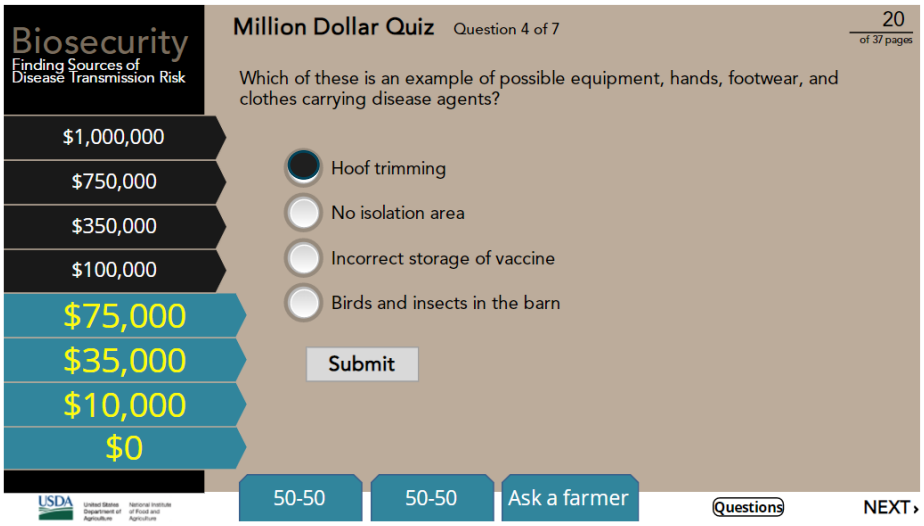
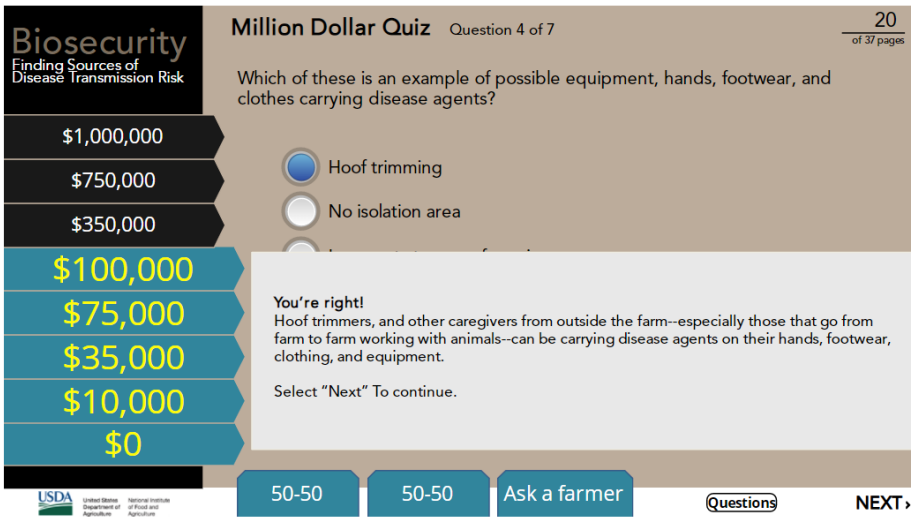
20	 Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 3 of 7 20 of 37 pages Which of the following strategies would you use to prevent sick animals from spreading diseases directly to herd mates? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Set up handwashing stations Sharon Raises dairy goats and sheep for wool. This is a big risk area for sheep and goats because they tend to hide illness. It can be hard to identify sick animals. Besides, where am I going to put them anyway? We don't have a space to isolate them. 50-50 50-50 Ask a farmer Questions CLOSE
20	 Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 4 of 7 20 of 37 pages Which of these is an example of possible equipment, hands, footwear, and clothes carrying disease agents? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Hoof trimming No isolation area Incorrect storage of vaccine Birds and insects in the barn Submit 50-50 50-50 Ask a farmer Questions NEXT ›
20	 Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 4 of 7 20 of 37 pages Which of these is an example of possible equipment, hands, footwear, and clothes carrying disease agents? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Hoof trimming No isolation area You're right! Hoof trimmers, and other caregivers from outside the farm--especially those that go from farm to farm working with animals--can be carrying disease agents on their hands, footwear, clothing, and equipment. Select "Next" To continue. 50-50 50-50 Ask a farmer Questions NEXT ›

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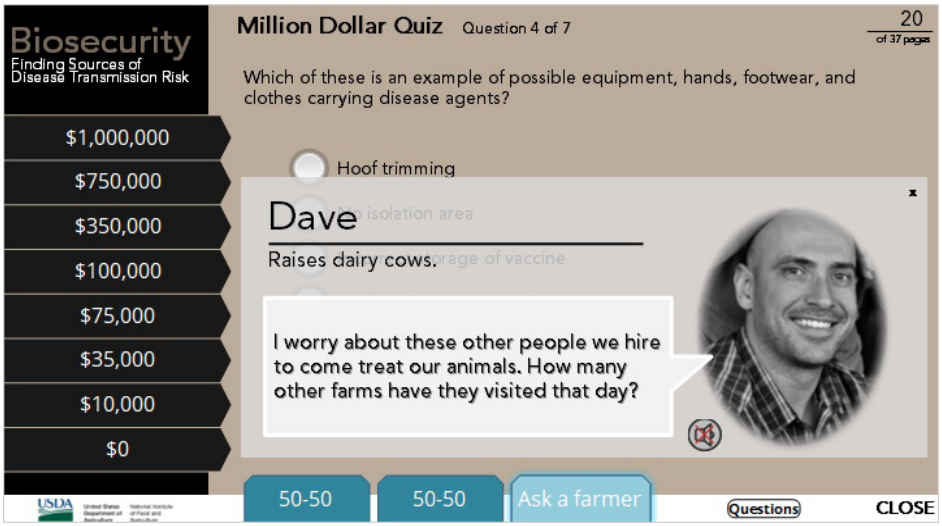
20	 Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 4 of 7 20 of 37 pages Which of these is an example of possible equipment, hands, footwear, and clothes carrying disease agents? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Hoof trimming Dave Raises dairy cows. I worry about these other people we hire to come treat our animals. How many other farms have they visited that day? 50-50 50-50 Ask a farmer Questions CLOSE
20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 5 of 7 20 of 37 pages Sick animals can spread disease directly to their healthy herd mates. Which of these is a source of this type of risk? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 No handwashing facilities Hoof trimming Poor ventilation No isolation area or isolation too close to the barn Submit 50-50 50-50 Ask a farmer Questions NEXT ›

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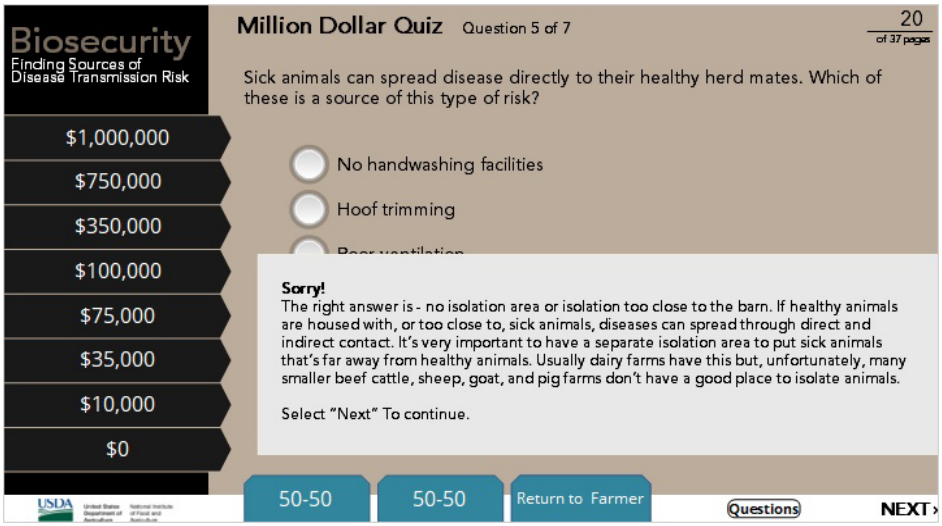
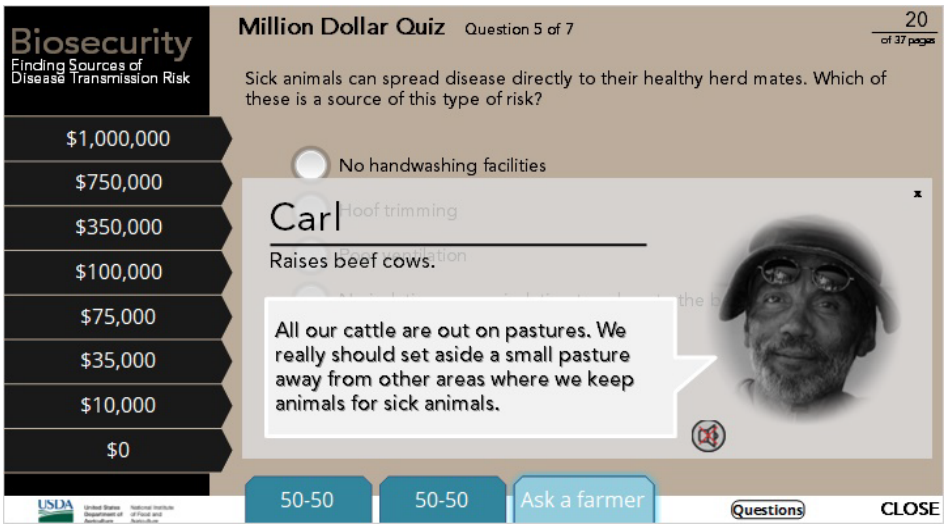
20	 Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 5 of 7 20 of 37 pages Sick animals can spread disease directly to their healthy herd mates. Which of these is a source of this type of risk? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 No handwashing facilities Hoof trimming Sorry! The right answer is - no isolation area or isolation too close to the barn. If healthy animals are housed with, or too close to, sick animals, diseases can spread through direct and indirect contact. It's very important to have a separate isolation area to put sick animals that's far away from healthy animals. Usually dairy farms have this but, unfortunately, many smaller beef cattle, sheep, goat, and pig farms don't have a good place to isolate animals. Select "Next" To continue. 50-50 50-50 Return to Farmer Questions NEXT ›
20	 Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 5 of 7 20 of 37 pages Sick animals can spread disease directly to their healthy herd mates. Which of these is a source of this type of risk? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 No handwashing facilities Carl Raises beef cows. All our cattle are out on pastures. We really should set aside a small pasture away from other areas where we keep animals for sick animals. 50-50 50-50 Ask a farmer Questions CLOSE

20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 6 of 7 20 of 37 pages What is the risk involved with storing vaccines incorrectly? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Human hands can carry diseases and spread them to healthy animals Sick animals can spread diseases through direct contact High temperatures or freezing can kill vaccines Contaminated equipment can carry disease agents and be a source of transmission Submit 50-50 50-50 Ask a farmer Questions NEXT ›
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20	Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 7 of 7 20 of 37 pages What is the risk of employees keeping the same type of animals at home as those where they work? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Working with the same species of animals increases chances of spreading diseases The workers might not wash and disinfect their hands well before coming to work The workers might have dirty shoes or clothes All of the above Submit 50-50 50-50 Ask a farmer Questions NEXT ›
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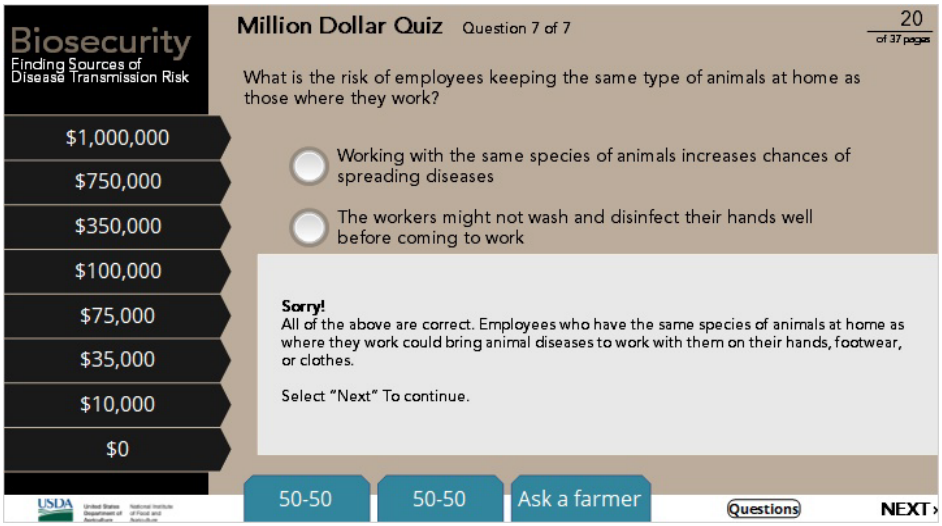
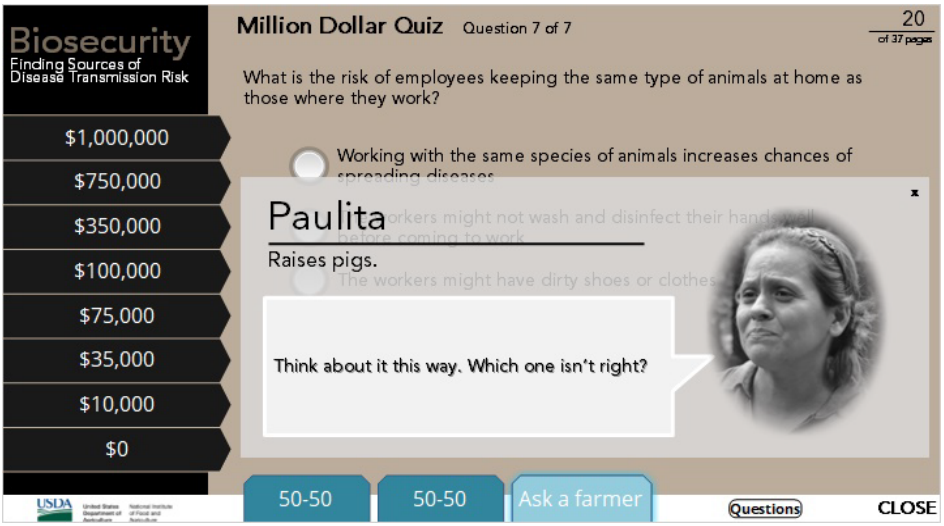
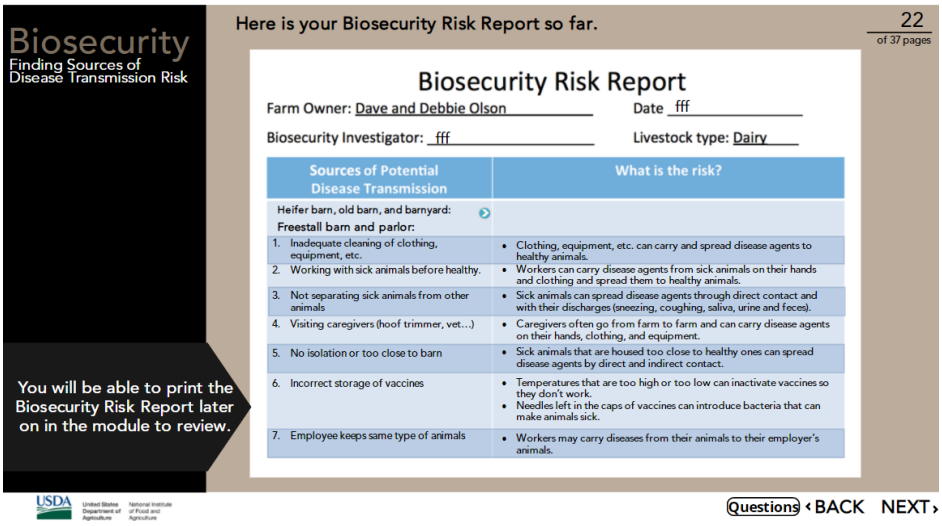
20	 Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 7 of 7 20 of 37 pages What is the risk of employees keeping the same type of animals at home as those where they work? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Working with the same species of animals increases chances of spreading diseases The workers might not wash and disinfect their hands well before coming to work Sorry! All of the above are correct. Employees who have the same species of animals at home as where they work could bring animal diseases to work with them on their hands, footwear, or clothes. Select "Next" To continue. 50-50 50-50 Ask a farmer Questions NEXT ›
20	 Biosecurity Finding Sources of Disease Transmission Risk Million Dollar Quiz Question 7 of 7 20 of 37 pages What is the risk of employees keeping the same type of animals at home as those where they work? $1,000,000 $750,000 $350,000 $100,000 $75,000 $35,000 $10,000 $0 Working with the same species of animals increases chances of spreading diseases Paulita Raises pigs. Think about it this way. Which one isn't right? 50-50 50-50 Ask a farmer Questions CLOSE
20	

21

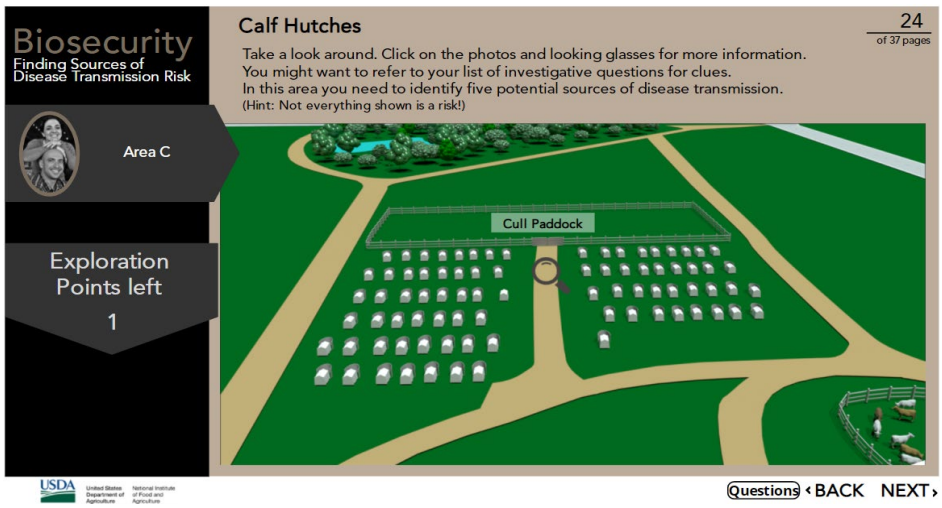
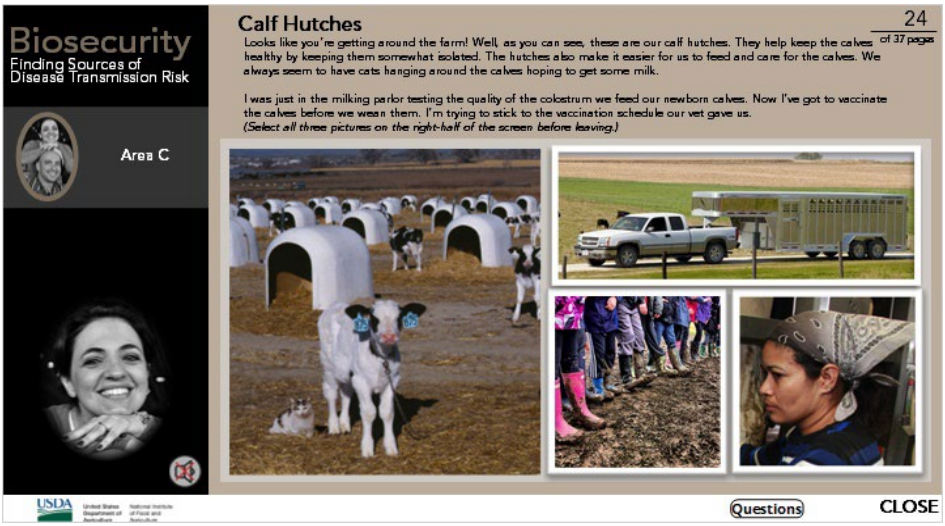
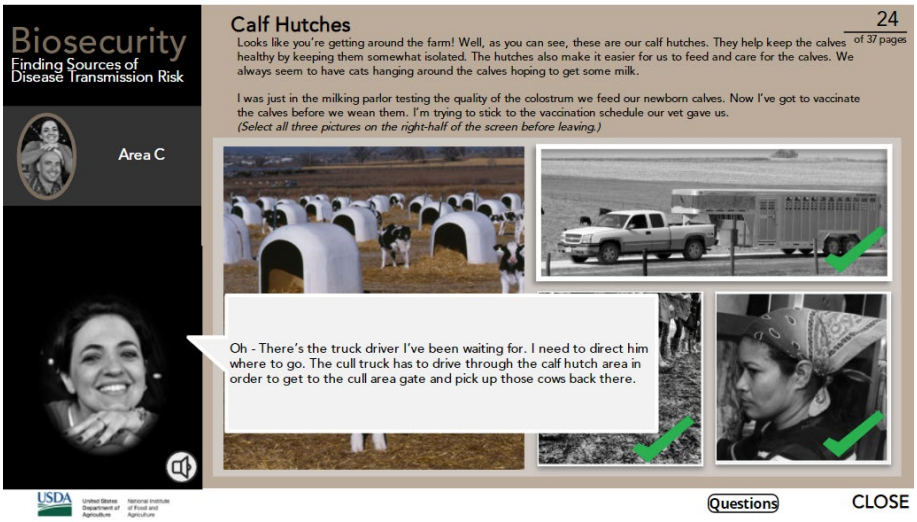
Biosecurity
Finding Sources of Disease Transmission Risk
Million Dollar Quiz Results
21
of 37 pages
Congratulations! You won $1,000,000!
You got 7 out of 7 answers correct!
$1,000,000
$750,000
$350,000
$100,000
$75,000
$35,000
$10,000
$0
$1,000,000!
Select "Next" to continue.
50-50
50-50
Ask a farmer
Questions
BACK
NEXT

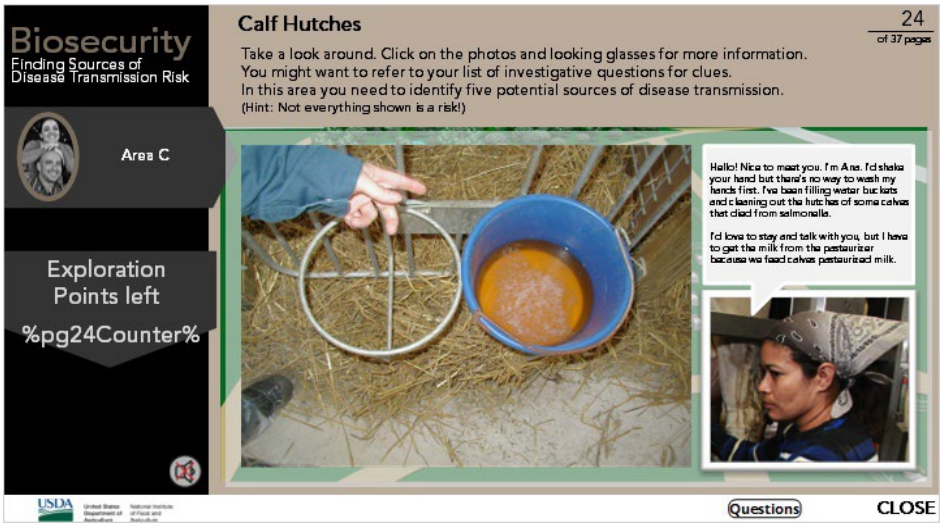
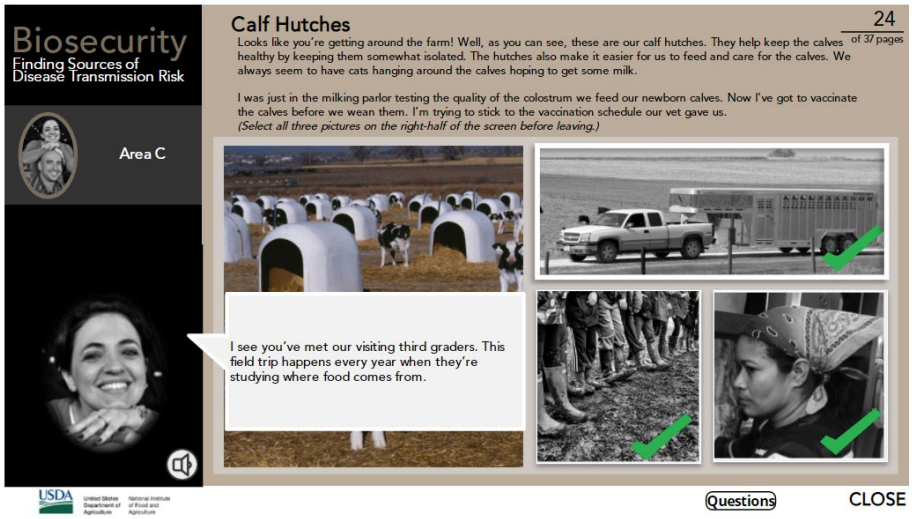
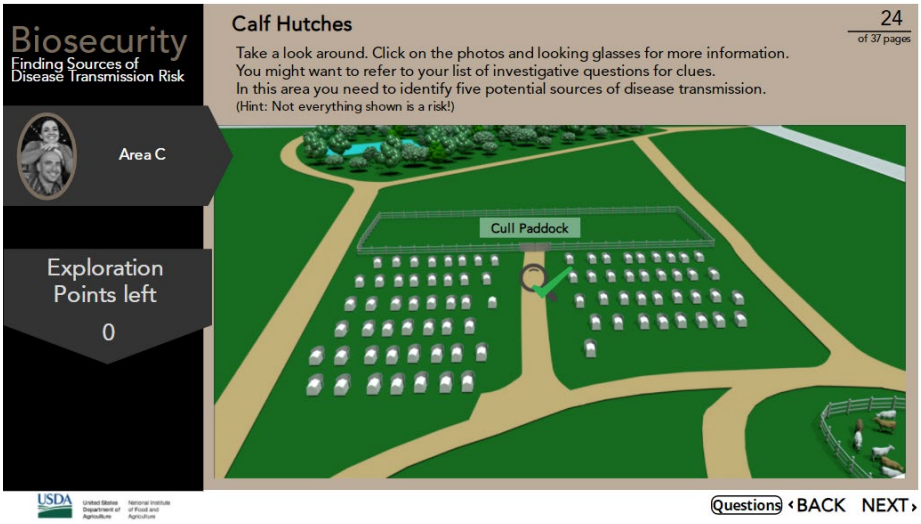
22

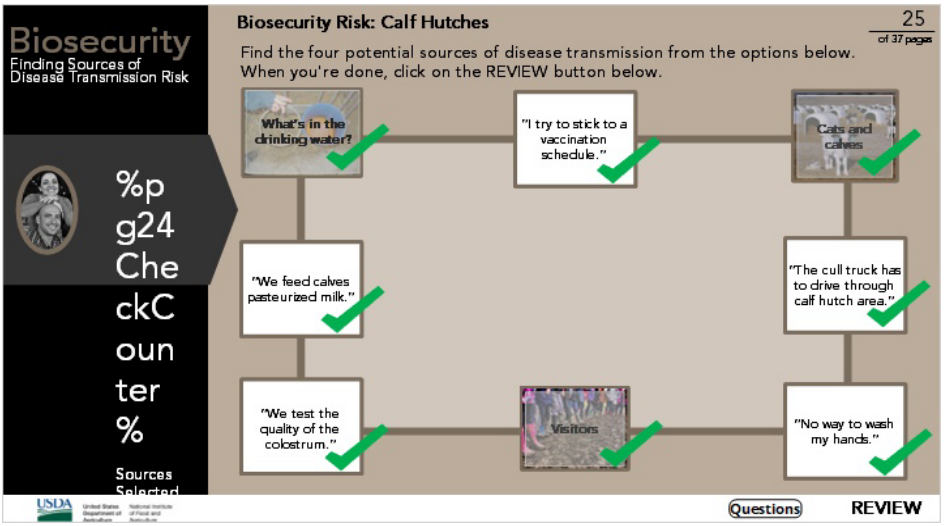
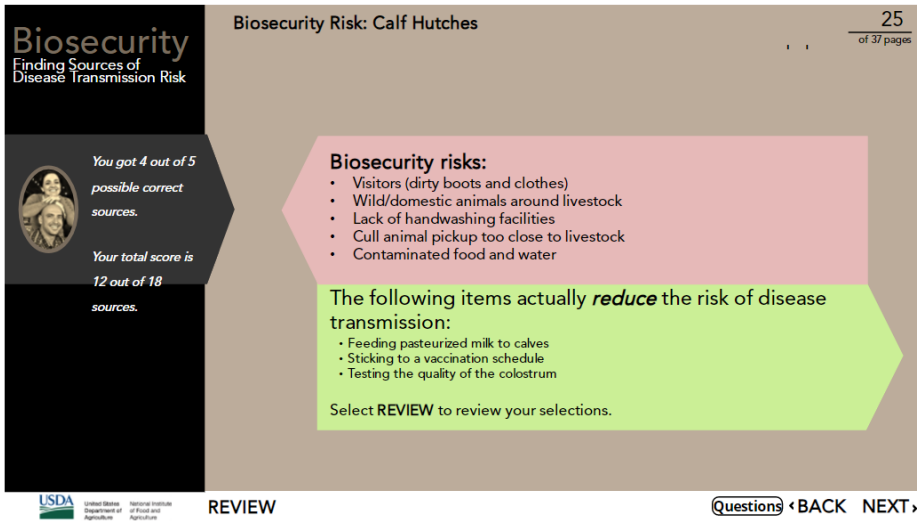

Biosecurity
Finding Sources of Disease Transmission Risk
Here is your Biosecurity Risk Report so far.
22
of 37 pages
Biosecurity Risk Report
Farm Owner: Dave and Debbie Olson
Date fff
Biosecurity Investigator: fff
Livestock type: Dairy
Sources of Potential Disease Transmission
What is the risk?
Heifer barn, old barn, and barnyard:
Freestall barn and parlor:
1. Inadequate cleaning of clothing, equipment, etc.
• Clothing, equipment, etc. can carry and spread disease agents to healthy animals.
2. Working with sick animals before healthy.
• Workers can carry disease agents from sick animals on their hands and clothing and spread them to healthy animals.
3. Not separating sick animals from other animals
• Sick animals can spread disease agents through direct contact and with their discharges (sneezing, coughing, saliva, urine and feces).
4. Visiting caregivers (hoof trimmer, vet…)
• Caregivers often go from farm to farm and can carry disease agents on their hands, clothing, and equipment.
5. No isolation or too close to barn
• Sick animals that are housed too close to healthy ones can spread disease agents by direct and indirect contact.
6. Incorrect storage of vaccines
• Temperatures that are too high or too low can inactivate vaccines so they don't work.
• Needles left in the caps of vaccines can introduce bacteria that can make animals sick.
7. Employee keeps same type of animals
• Workers may carry diseases from their animals to their employer's animals.
You will be able to print the Biosecurity Risk Report later on in the module to review.
Questions
BACK
NEXT

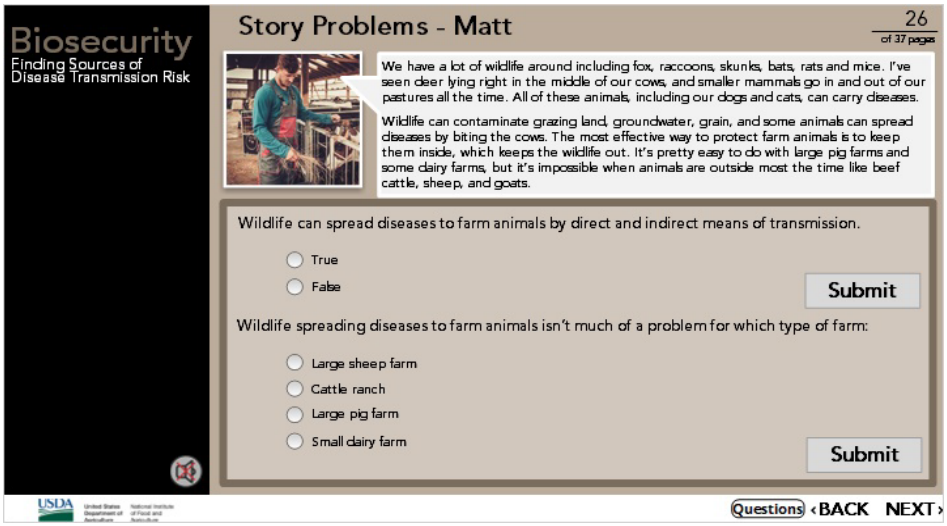
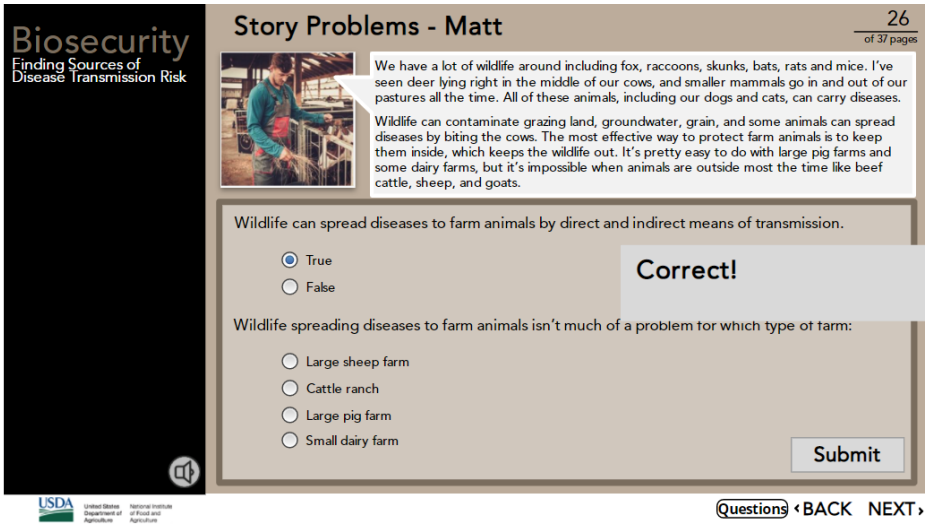
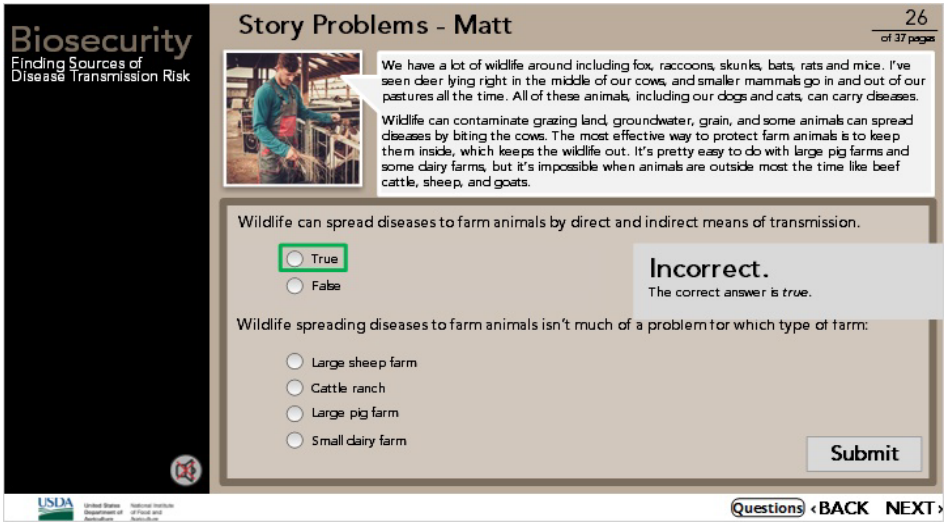
23

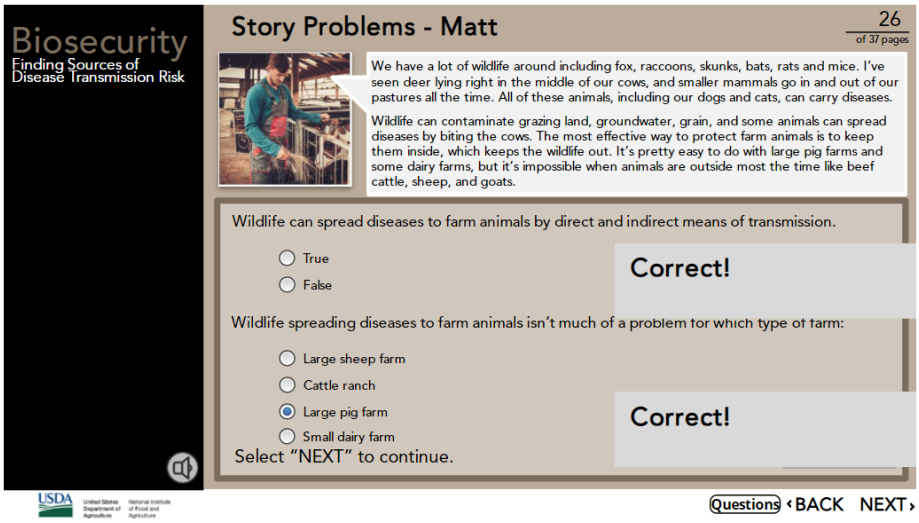
Biosecurity
Finding Sources of Disease Transmission Risk
Great! What will you learn in the next area?
23
of 37 pages
Select Next to move to Area C.
10 of 13 sources found
Area C
Area B
Area A
Questions
BACK
NEXT

24	 Biosecurity Finding Sources of Disease Transmission Risk Area C Exploration Points left 1 Calf Hutches 24 of 37 pages Take a look around. Click on the photos and looking glasses for more information. You might want to refer to your list of investigative questions for clues. In this area you need to identify five potential sources of disease transmission. (Hint: Not everything shown is a risk!) Cull Paddock Questions BACK NEXT
24	 Biosecurity Finding Sources of Disease Transmission Risk Area C Calf Hutches 24 of 37 pages Looks like you're getting around the farm! Well, as you can see, these are our calf hutches. They help keep the calves healthy by keeping them somewhat isolated. The hutches also make it easier for us to feed and care for the calves. We always seem to have cats hanging around the calves hoping to get some milk. I was just in the milking parlor testing the quality of the colostrum we feed our newborn calves. Now I've got to vaccinate the calves before we wean them. I'm trying to stick to the vaccination schedule our vet gave us. (Select all three pictures on the right-half of the screen before leaving.) Questions CLOSE
24	 Biosecurity Finding Sources of Disease Transmission Risk Area C Calf Hutches 24 of 37 pages Looks like you're getting around the farm! Well, as you can see, these are our calf hutches. They help keep the calves healthy by keeping them somewhat isolated. The hutches also make it easier for us to feed and care for the calves. We always seem to have cats hanging around the calves hoping to get some milk. I was just in the milking parlor testing the quality of the colostrum we feed our newborn calves. Now I've got to vaccinate the calves before we wean them. I'm trying to stick to the vaccination schedule our vet gave us. (Select all three pictures on the right-half of the screen before leaving.) Oh - There's the truck driver I've been waiting for. I need to direct him where to go. The cull truck has to drive through the calf hutch area in order to get to the cull area gate and pick up those cows back there. Questions CLOSE

24	 Biosecurity Finding Sources of Disease Transmission Risk Area C Exploration Points left %pg24Counter% Calf Hutches 24 of 37 pages Take a look around. Click on the photos and looking glasses for more information. You might want to refer to your list of investigative questions for clues. In this area you need to identify five potential sources of disease transmission. (Hint: Not everything shown is a risk!) Hello! Nice to meet you. I'm Ana. I'd shake your hand but there's no way to wash my hands first. I've been filling water buckets and cleaning out the hutches of some calves that died from salmonella. I'd love to stay and talk with you, but I have to get the milk from the pasteurizer because we feed calves pasteurized milk. Questions CLOSE
24	 Biosecurity Finding Sources of Disease Transmission Risk Area C Calf Hutches 24 of 37 pages Looks like you're getting around the farm! Well, as you can see, these are our calf hutches. They help keep the calves healthy by keeping them somewhat isolated. The hutches also make it easier for us to feed and care for the calves. We always seem to have cats hanging around the calves hoping to get some milk. I was just in the milking parlor testing the quality of the colostrum we feed our newborn calves. Now I've got to vaccinate the calves before we wean them. I'm trying to stick to the vaccination schedule our vet gave us. (Select all three pictures on the right-half of the screen before leaving.) I see you've met our visiting third graders. This field trip happens every year when they're studying where food comes from. Questions CLOSE
24	 Biosecurity Finding Sources of Disease Transmission Risk Area C Exploration Points left 0 Calf Hutches 24 of 37 pages Take a look around. Click on the photos and looking glasses for more information. You might want to refer to your list of investigative questions for clues. In this area you need to identify five potential sources of disease transmission. (Hint: Not everything shown is a risk!) Cull Paddock Questions ‹BACK NEXT›

25	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Calf Hutches 25 of 37 pages Find the four potential sources of disease transmission from the options below. When you're done, click on the REVIEW button below. What's in the drinking water? "I try to stick to a vaccination schedule." Cats and calves %p g24 Che ckC oun ter % Sources Selected "We feed calves pasteurized milk." "The cull truck has to drive through calf hutch area." "We test the quality of the colostrum." Visitors "No way to wash my hands." Questions REVIEW
25	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Calf Hutches 25 of 37 pages You got 4 out of 5 possible correct sources. Your total score is 12 out of 18 sources. Biosecurity risks: • Visitors (dirty boots and clothes) • Wild/domestic animals around livestock • Lack of handwashing facilities • Cull animal pickup too close to livestock • Contaminated food and water The following items actually reduce the risk of disease transmission: • Feeding pasteurized milk to calves • Sticking to a vaccination schedule • Testing the quality of the colostrum Select REVIEW to review your selections. REVIEW Questions ‹BACK NEXT›
26	Biosecurity Finding Sources of Disease Transmission Risk Let's explore the risks: Story Problems 26 of 37 pages To explore the risks shown in the calf hutch area, click on each picture and listen to what each person has to say. Then, see if you can answer the questions based on the information you've been given. Questions ‹BACK NEXT›

26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Matt 26 of 37 pages We have a lot of wildlife around including fox, raccoons, skunks, bats, rats and mice. I've seen deer lying right in the middle of our cows, and smaller mammals go in and out of our pastures all the time. All of these animals, including our dogs and cats, can carry diseases. Wildlife can contaminate grazing land, groundwater, grain, and some animals can spread diseases by biting the cows. The most effective way to protect farm animals is to keep them inside, which keeps the wildlife out. It's pretty easy to do with large pig farms and some dairy farms, but it's impossible when animals are outside most the time like beef cattle, sheep, and goats. Wildlife can spread diseases to farm animals by direct and indirect means of transmission. True False Submit Wildlife spreading diseases to farm animals isn't much of a problem for which type of farm: Large sheep farm Cattle ranch Large pig farm Small dairy farm Submit Questions ‹BACK NEXT›
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Matt 26 of 37 pages We have a lot of wildlife around including fox, raccoons, skunks, bats, rats and mice. I've seen deer lying right in the middle of our cows, and smaller mammals go in and out of our pastures all the time. All of these animals, including our dogs and cats, can carry diseases. Wildlife can contaminate grazing land, groundwater, grain, and some animals can spread diseases by biting the cows. The most effective way to protect farm animals is to keep them inside, which keeps the wildlife out. It's pretty easy to do with large pig farms and some dairy farms, but it's impossible when animals are outside most the time like beef cattle, sheep, and goats. Wildlife can spread diseases to farm animals by direct and indirect means of transmission. True False Correct! Wildlife spreading diseases to farm animals isn't much of a problem for which type of farm: Large sheep farm Cattle ranch Large pig farm Small dairy farm Submit Questions ‹BACK NEXT›
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Matt 26 of 37 pages We have a lot of wildlife around including fox, raccoons, skunks, bats, rats and mice. I've seen deer lying right in the middle of our cows, and smaller mammals go in and out of our pastures all the time. All of these animals, including our dogs and cats, can carry diseases. Wildlife can contaminate grazing land, groundwater, grain, and some animals can spread diseases by biting the cows. The most effective way to protect farm animals is to keep them inside, which keeps the wildlife out. It's pretty easy to do with large pig farms and some dairy farms, but it's impossible when animals are outside most the time like beef cattle, sheep, and goats. Wildlife can spread diseases to farm animals by direct and indirect means of transmission. True False Incorrect. The correct answer is *true*. Wildlife spreading diseases to farm animals isn't much of a problem for which type of farm: Large sheep farm Cattle ranch Large pig farm Small dairy farm Submit Questions ‹BACK NEXT›

26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Matt 26 of 37 pages We have a lot of wildlife around including fox, raccoons, skunks, bats, rats and mice. I've seen deer lying right in the middle of our cows, and smaller mammals go in and out of our pastures all the time. All of these animals, including our dogs and cats, can carry diseases. Wildlife can contaminate grazing land, groundwater, grain, and some animals can spread diseases by biting the cows. The most effective way to protect farm animals is to keep them inside, which keeps the wildlife out. It's pretty easy to do with large pig farms and some dairy farms, but it's impossible when animals are outside most the time like beef cattle, sheep, and goats. Wildlife can spread diseases to farm animals by direct and indirect means of transmission. True False Correct! Wildlife spreading diseases to farm animals isn't much of a problem for which type of farm: Large sheep farm Cattle ranch Large pig farm Small dairy farm Correct! Select "NEXT" to continue. Questions ‹BACK NEXT›
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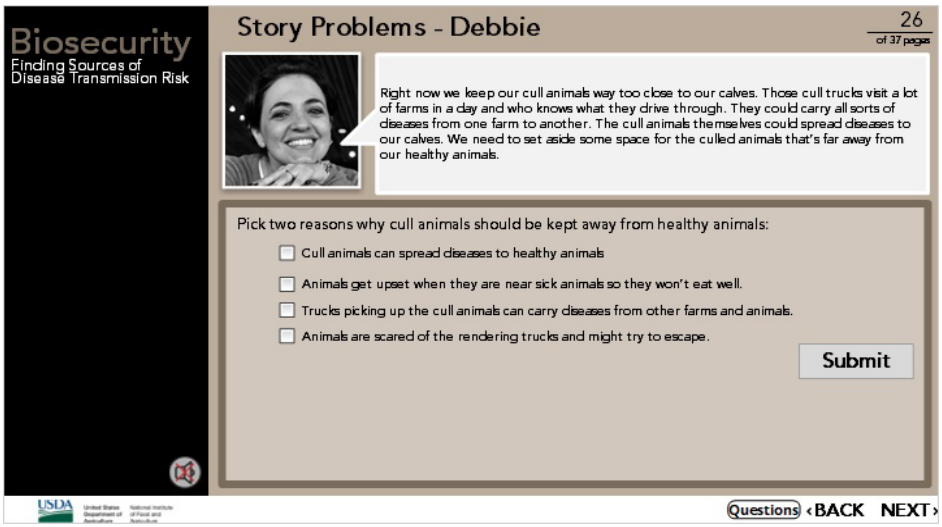
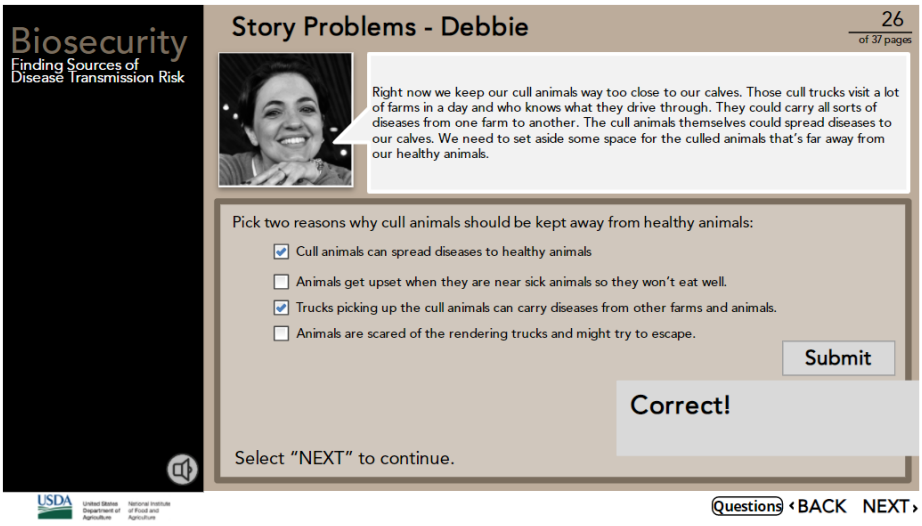
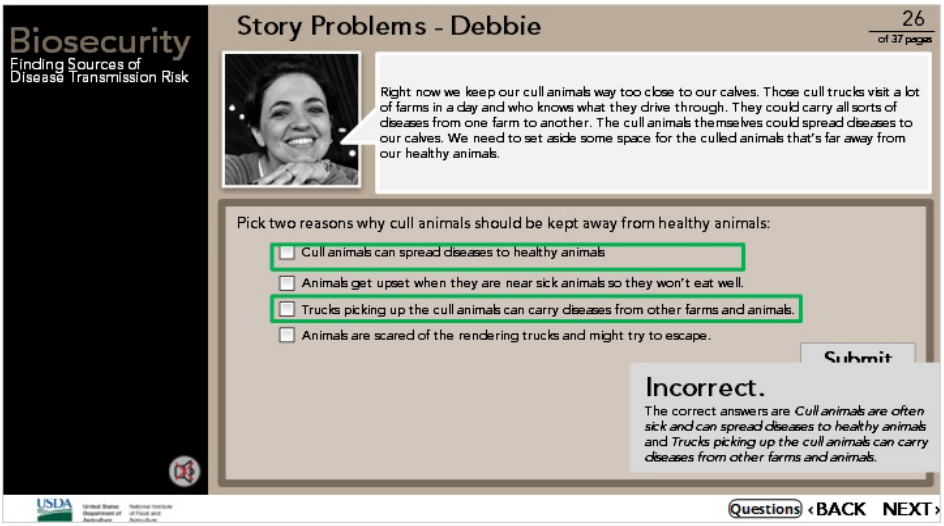
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Debbie 26 of 37 pages Right now we keep our cull animals way too close to our calves. Those cull trucks visit a lot of farms in a day and who knows what they drive through. They could carry all sorts of diseases from one farm to another. The cull animals themselves could spread diseases to our calves. We need to set aside some space for the culled animals that's far away from our healthy animals. Pick two reasons why cull animals should be kept away from healthy animals: Cull animals can spread diseases to healthy animals Animals get upset when they are near sick animals so they won't eat well. Trucks picking up the cull animals can carry diseases from other farms and animals. Animals are scared of the rendering trucks and might try to escape. Submit Questions ‹BACK NEXT›

26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Debbie 26 of 37 pages Right now we keep our cull animals way too close to our calves. Those cull trucks visit a lot of farms in a day and who knows what they drive through. They could carry all sorts of diseases from one farm to another. The cull animals themselves could spread diseases to our calves. We need to set aside some space for the culled animals that's far away from our healthy animals. Pick two reasons why cull animals should be kept away from healthy animals: Cull animals can spread diseases to healthy animals Animals get upset when they are near sick animals so they won't eat well. Trucks picking up the cull animals can carry diseases from other farms and animals. Animals are scared of the rendering trucks and might try to escape. Submit Correct! Select "NEXT" to continue. Questions ‹BACK NEXT›
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Debbie 26 of 37 pages Right now we keep our cull animals way too close to our calves. Those cull trucks visit a lot of farms in a day and who knows what they drive through. They could carry all sorts of diseases from one farm to another. The cull animals themselves could spread diseases to our calves. We need to set aside some space for the culled animals that's far away from our healthy animals. Pick two reasons why cull animals should be kept away from healthy animals: Cull animals can spread diseases to healthy animals Animals get upset when they are near sick animals so they won't eat well. Trucks picking up the cull animals can carry diseases from other farms and animals. Animals are scared of the rendering trucks and might try to escape. Incorrect. The correct answers are Cull animals are often sick and can spread diseases to healthy animals and Trucks picking up the cull animals can carry diseases from other farms and animals. Questions ‹BACK NEXT›
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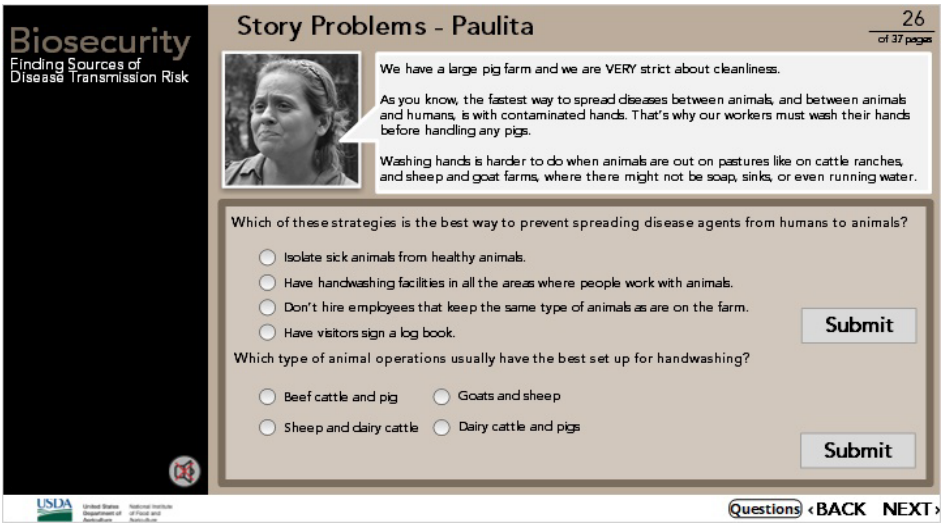
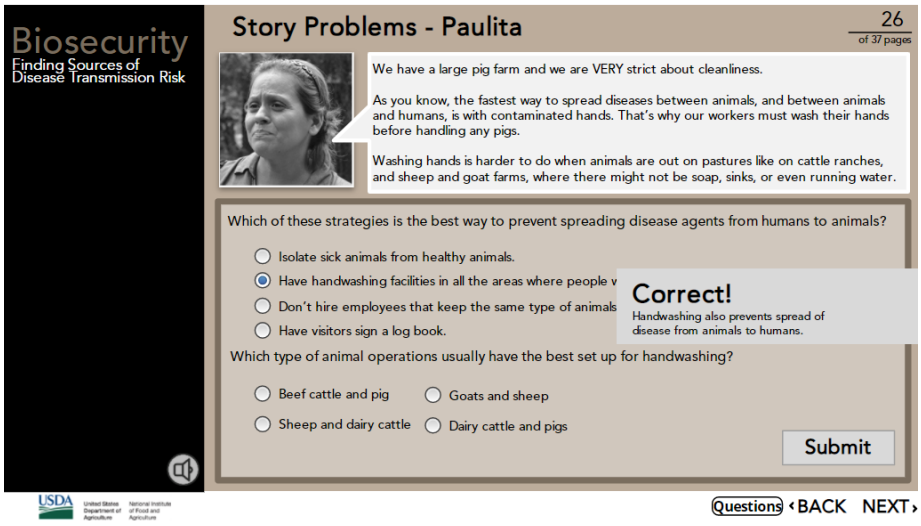
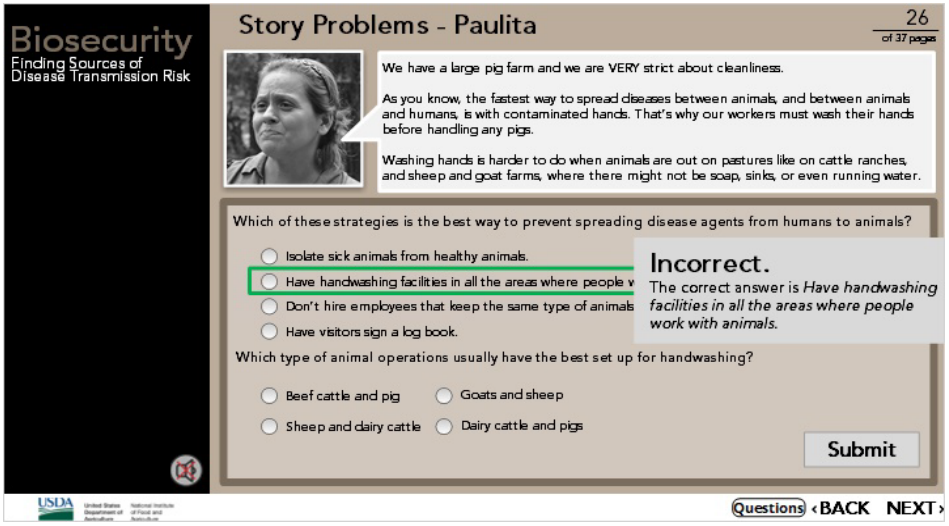
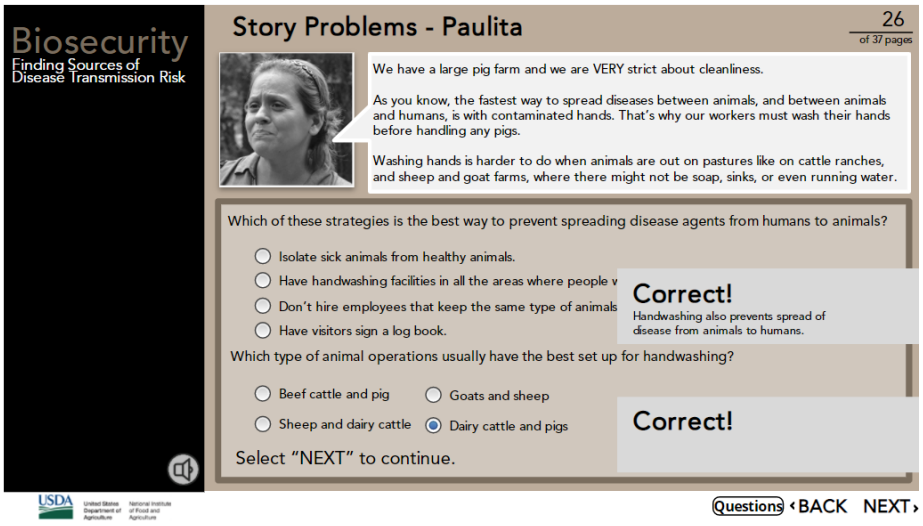
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Paulita 26 of 37 pages We have a large pig farm and we are VERY strict about cleanliness. As you know, the fastest way to spread diseases between animals, and between animals and humans, is with contaminated hands. That's why our workers must wash their hands before handling any pigs. Washing hands is harder to do when animals are out on pastures like on cattle ranches, and sheep and goat farms, where there might not be soap, sinks, or even running water. Which of these strategies is the best way to prevent spreading disease agents from humans to animals? Isolate sick animals from healthy animals. Have handwashing facilities in all the areas where people work with animals. Don't hire employees that keep the same type of animals as are on the farm. Have visitors sign a log book. Submit Which type of animal operations usually have the best set up for handwashing? Beef cattle and pig Goats and sheep Sheep and dairy cattle Dairy cattle and pigs Submit Questions ‹BACK NEXT›
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Paulita 26 of 37 pages We have a large pig farm and we are VERY strict about cleanliness. As you know, the fastest way to spread diseases between animals, and between animals and humans, is with contaminated hands. That's why our workers must wash their hands before handling any pigs. Washing hands is harder to do when animals are out on pastures like on cattle ranches, and sheep and goat farms, where there might not be soap, sinks, or even running water. Which of these strategies is the best way to prevent spreading disease agents from humans to animals? Isolate sick animals from healthy animals. Have handwashing facilities in all the areas where people w Don't hire employees that keep the same type of animals Have visitors sign a log book. Correct! Handwashing also prevents spread of disease from animals to humans. Which type of animal operations usually have the best set up for handwashing? Beef cattle and pig Goats and sheep Sheep and dairy cattle Dairy cattle and pigs Submit Questions ‹BACK NEXT›
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Paulita 26 of 37 pages We have a large pig farm and we are VERY strict about cleanliness. As you know, the fastest way to spread diseases between animals, and between animals and humans, is with contaminated hands. That's why our workers must wash their hands before handling any pigs. Washing hands is harder to do when animals are out on pastures like on cattle ranches, and sheep and goat farms, where there might not be soap, sinks, or even running water. Which of these strategies is the best way to prevent spreading disease agents from humans to animals? Isolate sick animals from healthy animals. Have handwashing facilities in all the areas where people w Don't hire employees that keep the same type of animals Have visitors sign a log book. Incorrect. The correct answer is Have handwashing facilities in all the areas where people work with animals. Which type of animal operations usually have the best set up for handwashing? Beef cattle and pig Goats and sheep Sheep and dairy cattle Dairy cattle and pigs Submit Questions ‹BACK NEXT›

26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Paulita 26 of 37 pages We have a large pig farm and we are VERY strict about cleanliness. As you know, the fastest way to spread diseases between animals, and between animals and humans, is with contaminated hands. That's why our workers must wash their hands before handling any pigs. Washing hands is harder to do when animals are out on pastures like on cattle ranches, and sheep and goat farms, where there might not be soap, sinks, or even running water. Which of these strategies is the best way to prevent spreading disease agents from humans to animals? Isolate sick animals from healthy animals. Have handwashing facilities in all the areas where people v Don't hire employees that keep the same type of animals Have visitors sign a log book. Correct! Handwashing also prevents spread of disease from animals to humans. Which type of animal operations usually have the best set up for handwashing? Beef cattle and pig Goats and sheep Sheep and dairy cattle Dairy cattle and pigs Correct! Select "NEXT" to continue. USDA Questions ‹BACK NEXT›
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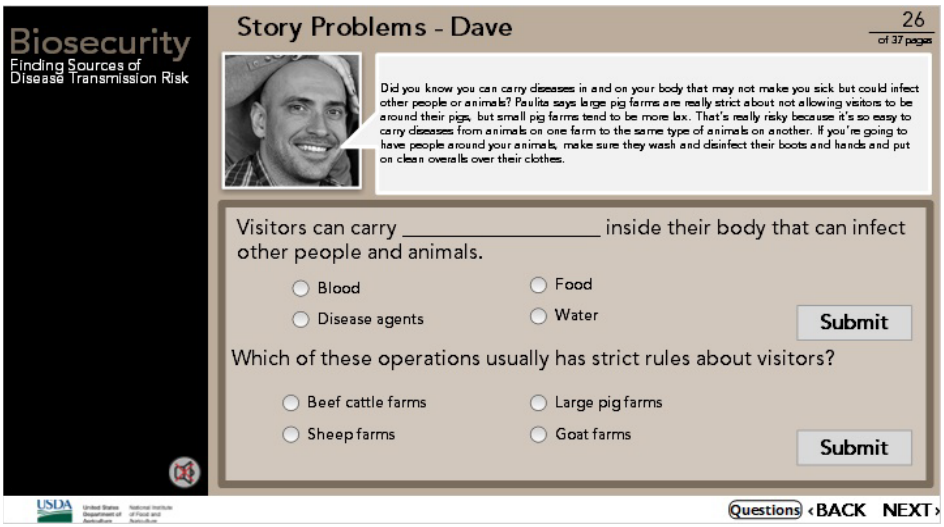
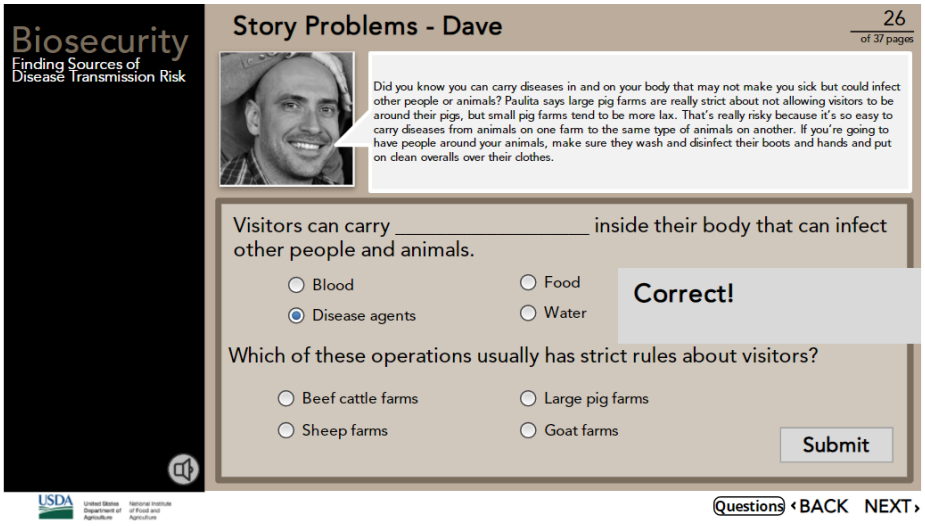
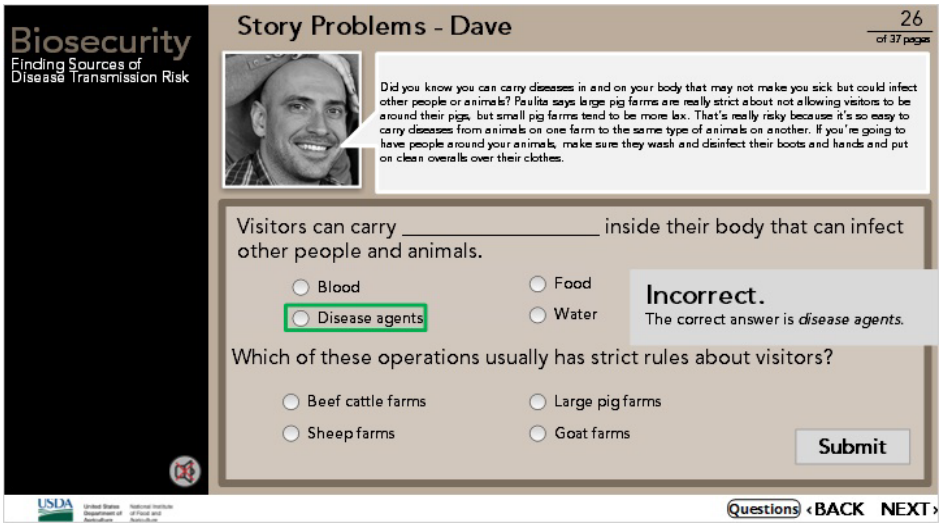
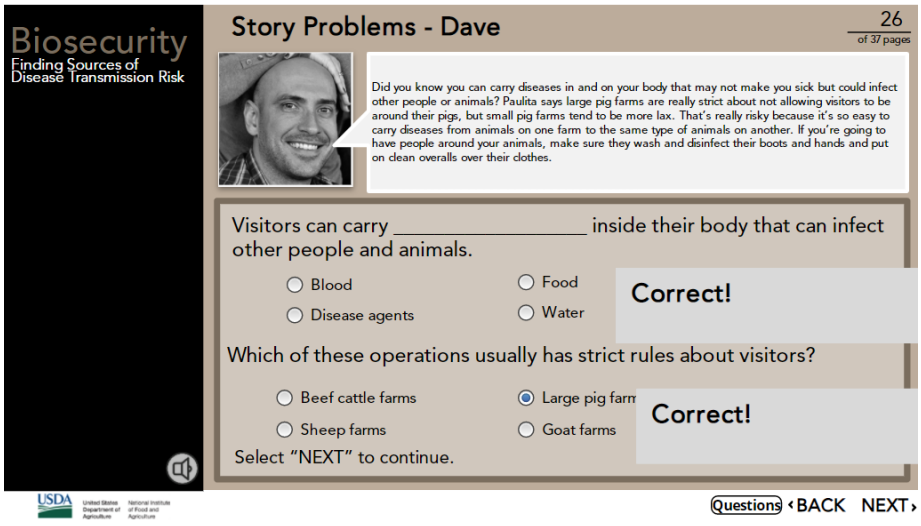
26	

26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Dave 26 of 37 pages Did you know you can carry diseases in and on your body that may not make you sick but could infect other people or animals? Paulita says large pig farms are really strict about not allowing visitors to be around their pigs, but small pig farms tend to be more lax. That's really risky because it's so easy to carry diseases from animals on one farm to the same type of animals on another. If you're going to have people around your animals, make sure they wash and disinfect their boots and hands and put on clean overalls over their clothes. Visitors can carry _____ inside their body that can infect other people and animals. Blood Food Disease agents Water Correct! Which of these operations usually has strict rules about visitors? Beef cattle farms Large pig farms Sheep farms Goat farms Submit Questions ‹BACK NEXT›
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Dave 26 of 37 pages Did you know you can carry diseases in and on your body that may not make you sick but could infect other people or animals? Paulita says large pig farms are really strict about not allowing visitors to be around their pigs, but small pig farms tend to be more lax. That's really risky because it's so easy to carry diseases from animals on one farm to the same type of animals on another. If you're going to have people around your animals, make sure they wash and disinfect their boots and hands and put on clean overalls over their clothes. Visitors can carry _____ inside their body that can infect other people and animals. Blood Food Disease agents Water Incorrect. The correct answer is *disease agents.* Which of these operations usually has strict rules about visitors? Beef cattle farms Large pig farms Sheep farms Goat farms Submit Questions ‹BACK NEXT›
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Dave 26 of 37 pages Did you know you can carry diseases in and on your body that may not make you sick but could infect other people or animals? Paulita says large pig farms are really strict about not allowing visitors to be around their pigs, but small pig farms tend to be more lax. That's really risky because it's so easy to carry diseases from animals on one farm to the same type of animals on another. If you're going to have people around your animals, make sure they wash and disinfect their boots and hands and put on clean overalls over their clothes. Visitors can carry _____ inside their body that can infect other people and animals. Blood Food Disease agents Water Correct! Which of these operations usually has strict rules about visitors? Beef cattle farms Large pig farm Sheep farms Goat farms Correct! Select "NEXT" to continue. Questions ‹BACK NEXT›

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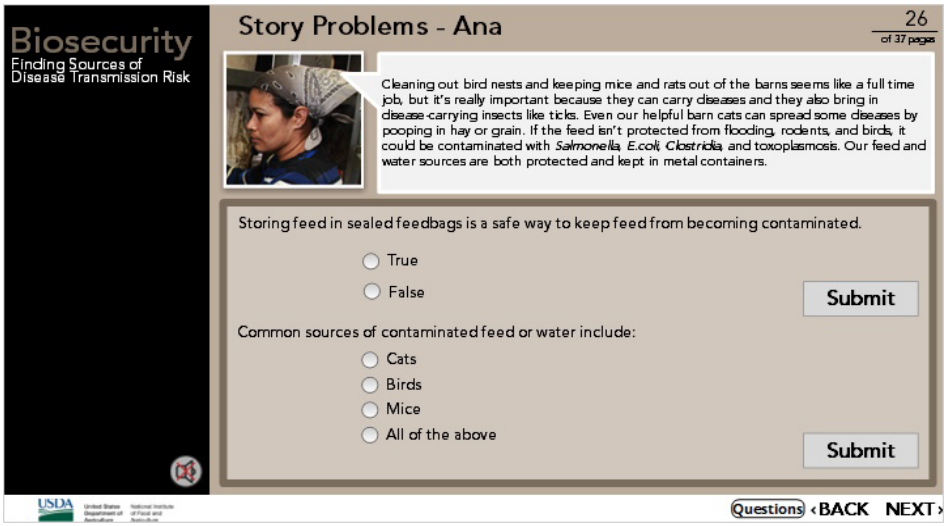
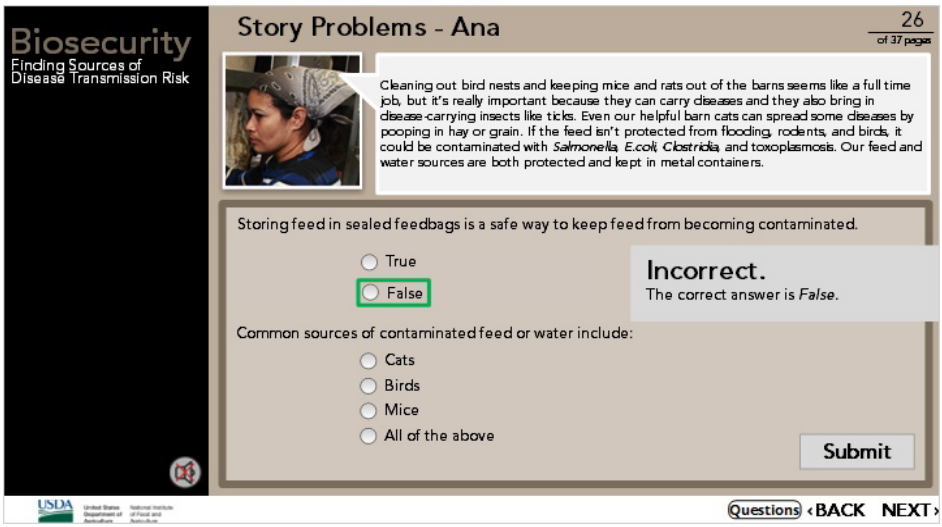
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Ana 26 of 37 pages Cleaning out bird nests and keeping mice and rats out of the barns seems like a full time job, but it's really important because they can carry diseases and they also bring in disease-carrying insects like ticks. Even our helpful barn cats can spread some diseases by pooping in hay or grain. If the feed isn't protected from flooding, rodents, and birds, it could be contaminated with Salmonella, E.coli, Clostridia, and toxoplasmosis. Our feed and water sources are both protected and kept in metal containers. Storing feed in sealed feedbags is a safe way to keep feed from becoming contaminated. True False Submit Common sources of contaminated feed or water include: Cats Birds Mice All of the above Submit USDA Questions ‹BACK NEXT›
26	 Biosecurity Finding Sources of Disease Transmission Risk Story Problems - Ana 26 of 37 pages Cleaning out bird nests and keeping mice and rats out of the barns seems like a full time job, but it's really important because they can carry diseases and they also bring in disease-carrying insects like ticks. Even our helpful barn cats can spread some diseases by pooping in hay or grain. If the feed isn't protected from flooding, rodents, and birds, it could be contaminated with Salmonella, E.coli, Clostridia, and toxoplasmosis. Our feed and water sources are both protected and kept in metal containers. Storing feed in sealed feedbags is a safe way to keep feed from becoming contaminated. True False Incorrect. The correct answer is False. Common sources of contaminated feed or water include: Cats Birds Mice All of the above Submit USDA Questions ‹BACK NEXT›

26

Biosecurity
Finding Sources of Disease Transmission Risk

Story Problems - Ana

26 of 37 pages

Cleaning out bird nests and keeping mice and rats out of the barns seems like a full time job, but it's really important because they can carry diseases and they also bring in disease-carrying insects like ticks. Even our helpful barn cats can spread some diseases by pooping in hay or grain. If the feed isn't protected from flooding, rodents, and birds, it could be contaminated with *Salmonella*, *E.coli*, *Clostridia*, and toxoplasmosis. Our feed and water sources are both protected and kept in metal containers.

Storing feed in sealed feedbags is a safe way to keep feed from becoming contaminated.

- ○ True
- ○ False

Incorrect.
The correct answer is *False*.

Common sources of contaminated feed or water include:

- ○ Cats
- ○ Birds
- ○ Mice
- ◉ All of the above

Correct!

Select "NEXT" to continue.

Questions ‹BACK NEXT›

26

Biosecurity
Finding Sources of Disease Transmission Risk

Let's explore the risks: Story Problems

26 of 37 pages

To explore the risks shown in the calf hutch area, click on each picture and listen to what each person has to say. Then, see if you can answer the questions based on the information you've been given.

Good Job!!

Select "Next" to continue

Questions ‹BACK NEXT›

27

Biosecurity
Finding Sources of Disease Transmission Risk

Here is your Biosecurity Risk Report so far.

27 of 37 pages

Biosecurity Risk Report

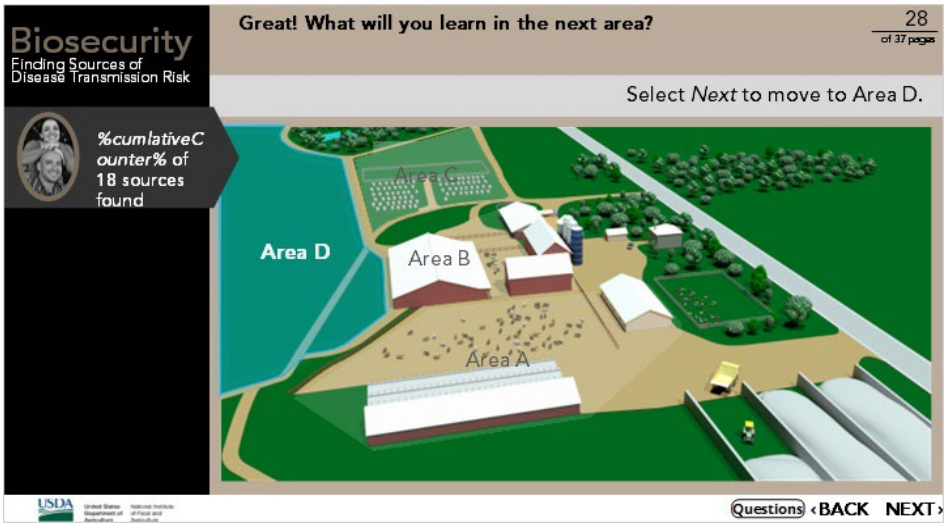
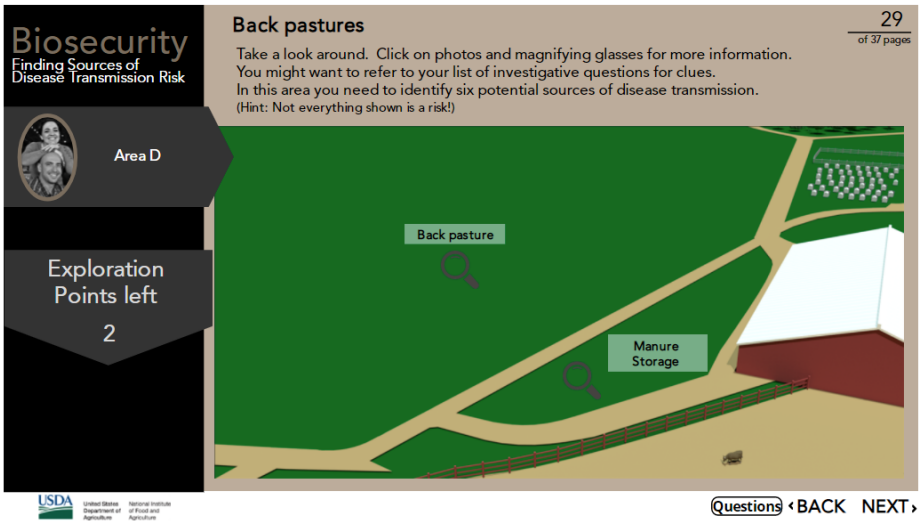
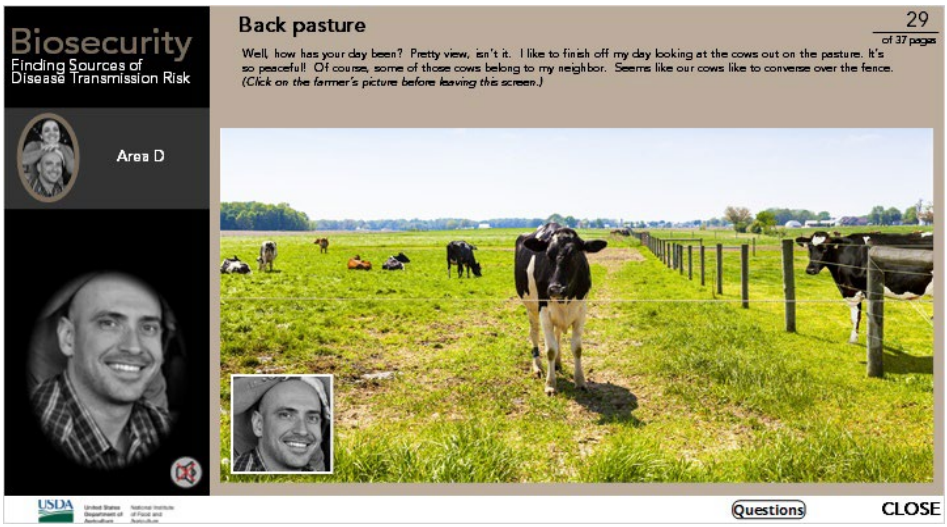
Farm Owner: Dave and Debbie Olson Date %TextEntry219%

Biosecurity Investigator: %TextEntry220% Livestock type: Dairy

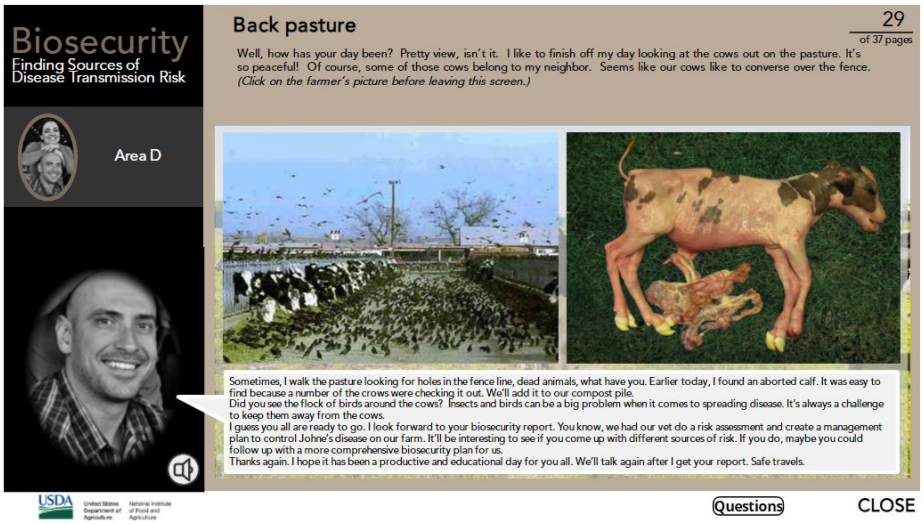
Sources of Potential Disease Transmission	What is the risk?
Heifer barn, old barn, and barnyard: **Freestall barn and parlor:** **Calf hutches:**	
1. Visitors (dirty boots and clothes)	• Can spread disease agents directly. • Can carry disease agents on boots and clothes. • May have disease agents from manure.
2. Contaminated feed or water	• Birds and rodents can contaminate feed or water with urine and feces.
3. Wild/domestic animals around livestock	• Many diseases are shared between wild and domestic animals with livestock.
4. Lack of handwashing facilities	• Diseases can spread between animals and humans by contaminated hands.
5. Cull animal pickup too close to livestock	• Cull vehicles can stop at multiple farms a day, transporting disease agents from one to another. • The cull animals themselves can spread disease agents to healthy animals.

You will be able to print the Biosecurity Risk Report later on in the module to review.

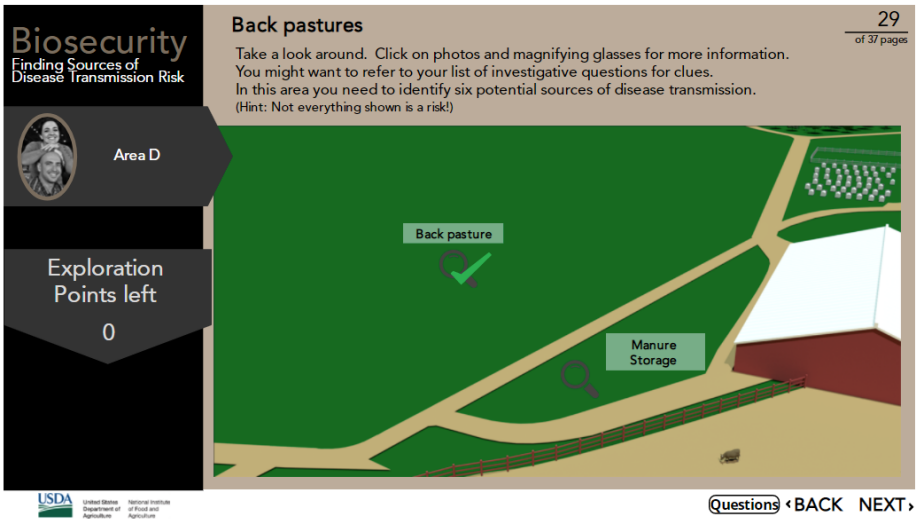
Questions ‹BACK NEXT›

28	 Biosecurity Finding Sources of Disease Transmission Risk Great! What will you learn in the next area? 28 of 37 pages Select *Next* to move to Area D. %cumlativeCounter% of 18 sources found Area D Area B Area A Questions ‹BACK NEXT›
29	 Biosecurity Finding Sources of Disease Transmission Risk Back pastures 29 of 37 pages Take a look around. Click on photos and magnifying glasses for more information. You might want to refer to your list of investigative questions for clues. In this area you need to identify six potential sources of disease transmission. (Hint: Not everything shown is a risk!) Area D Exploration Points left 2 Back pasture Manure Storage Questions ‹BACK NEXT›
29	 Biosecurity Finding Sources of Disease Transmission Risk Back pasture 29 of 37 pages Well, how has your day been? Pretty view, isn't it. I like to finish off my day looking at the cows out on the pasture. It's so peaceful! Of course, some of those cows belong to my neighbor. Seems like our cows like to converse over the fence. (Click on the farmer's picture before leaving this screen.) Area D Questions CLOSE

29


Biosecurity
Finding Sources of Disease Transmission Risk
Area D
Back pasture
29
of 37 pages
Well, how has your day been? Pretty view, isn't it. I like to finish off my day looking at the cows out on the pasture. It's so peaceful! Of course, some of those cows belong to my neighbor. Seems like our cows like to converse over the fence.
(Click on the farmer's picture before leaving this screen.)
Sometimes, I walk the pasture looking for holes in the fence line, dead animals, what have you. Earlier today, I found an aborted calf. It was easy to find because a number of the crows were checking it out. We'll add it to our compost pile.
Did you see the flock of birds around the cows? Insects and birds can be a big problem when it comes to spreading disease. It's always a challenge to keep them away from the cows.
I guess you all are ready to go. I look forward to your biosecurity report. You know, we had our vet do a risk assessment and create a management plan to control Johne's disease on our farm. It'll be interesting to see if you come up with different sources of risk. If you do, maybe you could follow up with a more comprehensive biosecurity plan for us.
Thanks again. I hope it has been a productive and educational day for you all. We'll talk again after I get your report. Safe travels.
USDA
Questions
CLOSE

28


Biosecurity
Finding Sources of Disease Transmission Risk
Area D
Exploration Points left
0
Back pastures
29
of 37 pages
Take a look around. Click on photos and magnifying glasses for more information.
You might want to refer to your list of investigative questions for clues.
In this area you need to identify six potential sources of disease transmission.
(Hint: Not everything shown is a risk!)
Back pasture
Manure Storage
USDA
Questions
‹BACK
NEXT›

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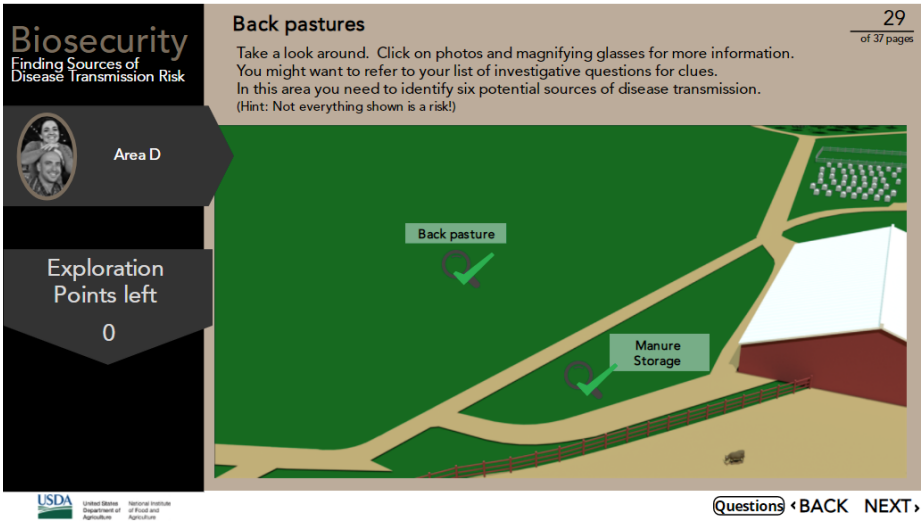
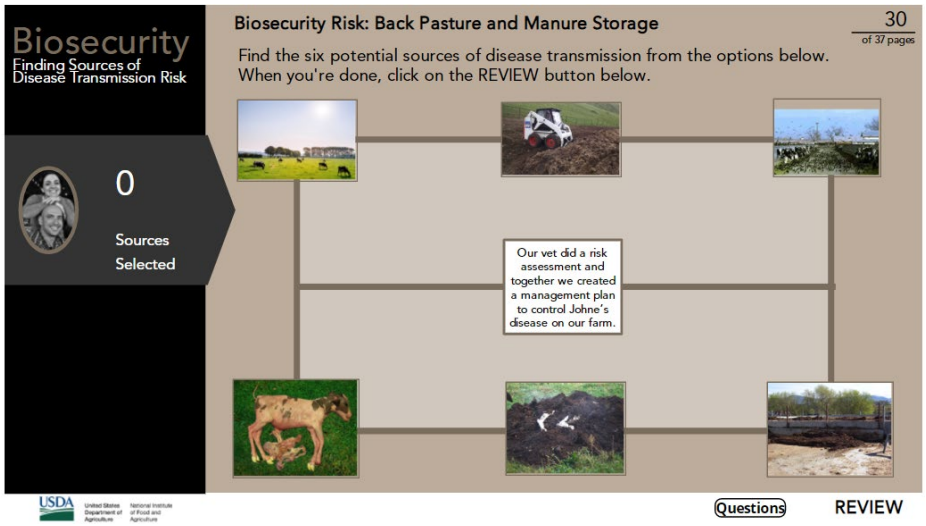
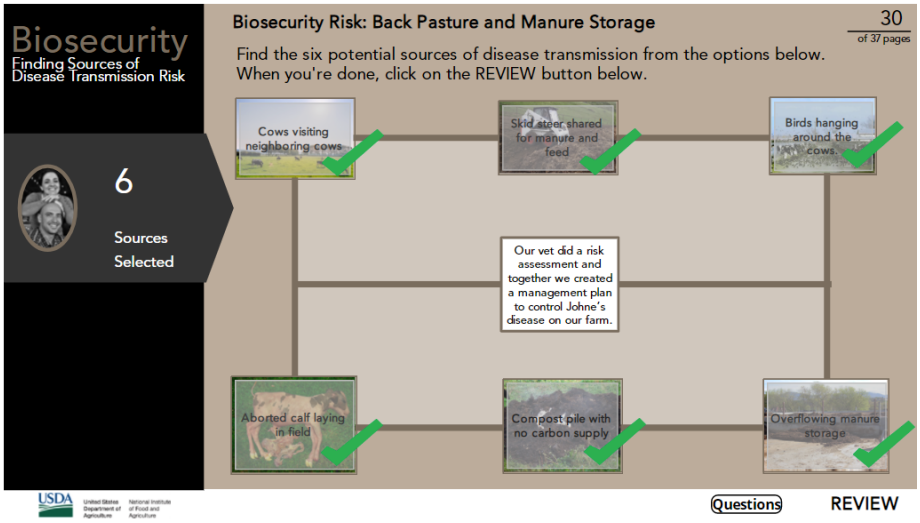
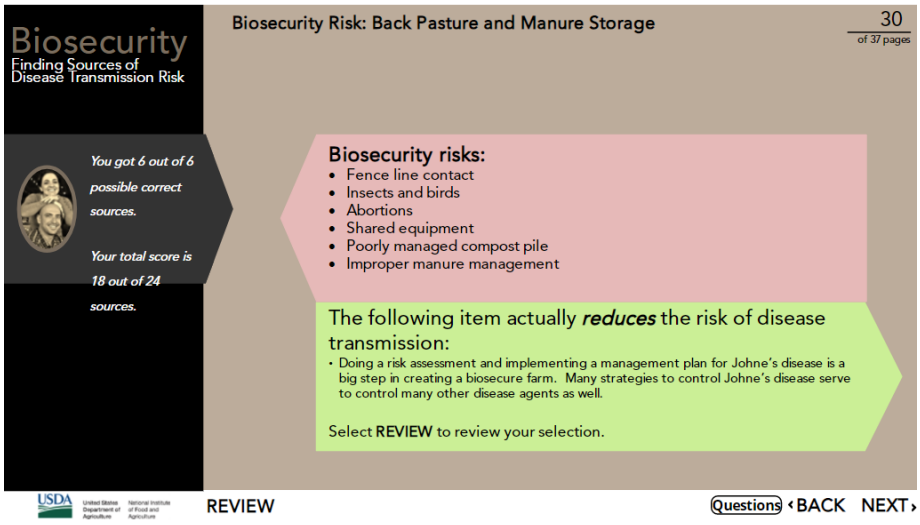
Biosecurity
Finding Sources of Disease Transmission Risk
Area D
Manure compost
29
of 37 pages
Ah. You must be the kid doing the 4-H project. I didn't know you were going to have others with you. I'm Carlos. How's it going? Bet you're wondering what am I doing. As you can see, our manure pile is overflowing, so I'm using this skid steer to move some of it to the compost area. Right now there's just nowhere else to put all this manure!
Like a lot of our neighbors, we've started to compost our dead calves instead of paying to have them hauled off. Just thought I'd use this extra manure to cover them up a bit.
Sorry. I cannot really talk now. I need to finish up. Someone else needs this skid steer to feed the cows.
USDA
Questions
CLOSE

29	 Biosecurity Finding Sources of Disease Transmission Risk Back pastures 29 of 37 pages Take a look around. Click on photos and magnifying glasses for more information. You might want to refer to your list of investigative questions for clues. In this area you need to identify six potential sources of disease transmission. (Hint: Not everything shown is a risk!) Area D Exploration Points left 0 Back pasture Manure Storage Questions ‹BACK NEXT›
30	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Back Pasture and Manure Storage 30 of 37 pages Find the six potential sources of disease transmission from the options below. When you're done, click on the REVIEW button below. 0 Sources Selected Our vet did a risk assessment and together we created a management plan to control Johne's disease on our farm. Questions REVIEW
30	 Biosecurity Finding Sources of Disease Transmission Risk Biosecurity Risk: Back Pasture and Manure Storage 30 of 37 pages Find the six potential sources of disease transmission from the options below. When you're done, click on the REVIEW button below. 6 Sources Selected Cows visiting neighboring cows Skid steer shared for manure and feed Birds hanging around the cows. Our vet did a risk assessment and together we created a management plan to control Johne's disease on our farm. Aborted calf laying in field Compost pile with no carbon supply Overflowing manure storage Questions REVIEW

30


Biosecurity
Finding Sources of Disease Transmission Risk
Biosecurity Risk: Back Pasture and Manure Storage
30
of 37 pages
You got 6 out of 6 possible correct sources.
Your total score is 18 out of 24 sources.
Biosecurity risks:
• Fence line contact
• Insects and birds
• Abortions
• Shared equipment
• Poorly managed compost pile
• Improper manure management
The following item actually reduces the risk of disease transmission:
• Doing a risk assessment and implementing a management plan for Johne's disease is a big step in creating a biosecure farm. Many strategies to control Johne's disease serve to control many other disease agents as well.
Select REVIEW to review your selection.
REVIEW
Questions
BACK
NEXT

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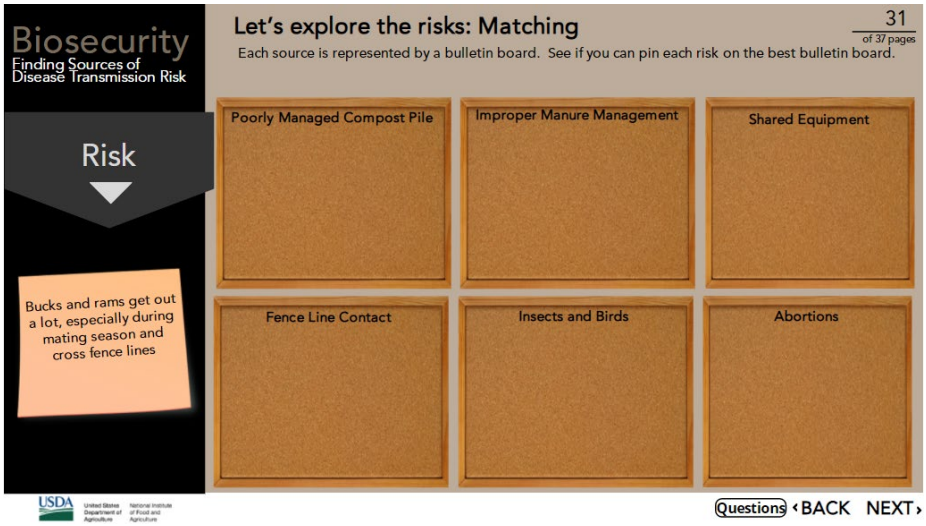
Biosecurity
Finding Sources of Disease Transmission Risk
Let's explore the risks: Matching
31
of 37 pages
Each source is represented by a bulletin board. See if you can pin each risk on the best bulletin board.
Risk
Bucks and rams get out a lot, especially during mating season and cross fence lines
Poorly Managed Compost Pile
Improper Manure Management
Shared Equipment
Fence Line Contact
Insects and Birds
Abortions
Questions
BACK
NEXT

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Biosecurity
Finding Sources of Disease Transmission Risk
Let's explore the risks: Matching
31
of 37 pages
Each source is represented by a bulletin board. See if you can pin each risk on the best bulletin board.
Correct!
Select "NEXT" to continue.
Risk
Poorly Managed Compost Pile
Composting can be a biosecure way to deal with the bodies of dead animals if a pile is constructed and managed properly.
Improper Manure Management
Manure can be a source of disease pathogens, particularly bacteria and parasites.
Shared Equipment
Vehicles driving on farm roads may be contaminated with dirt and manure and carry disease agents with them.
Fence Line Contact
Many diseases can be spread by nose-to-nose contact.
Insects and Birds
Insect vectors pass diseases from sick animals to healthy ones through biting or breaking through the skin of animals and humans.
Abortions
The fetus, placenta, and birth fluids can contain disease agents and they lie on the ground where other animals can sniff or lick them, spreading the disease.
Questions
BACK
NEXT

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Biosecurity
Finding Sources of Disease Transmission Risk

Here is your Biosecurity Risk Report so far.

32 of 37 pages

Biosecurity Risk Report

Farm Owner: Dave and Debbie Olson Date %TextEntry219%

Biosecurity Investigator: %TextEntry220% Livestock type: Dairy

Sources of Potential Disease Transmission	What is the risk?
Heifer barn, old barn, and barnyard: **Freestall barn and parlor:** **Calf hutches:** **Back pasture and manure storage:**	
1. Fence line contact	• Disease agents can be spread by nose-to-nose contact and fecal contaminated grass and feed.
2. Flies and birds	• Vectors and birds can carry disease agents from sick animals to healthy on their bodies and feces.
3. Abortions	• Animals can pick up disease agents by sniffing and licking aborted tissues and fluids.
4. Shared equipment	• Equipment shared between tasks (like moving manure and moving feed) or between farms can carry and spread disease agents.
5. Poorly managed compost pile	• Scavenger animals can carry pieces of carcasses to other locations, spreading disease agents.
6. Improper manure management	• Manure is a source of disease agents, especially bacteria and parasites. • Poor management puts animals at risk of infection.

You will be able to print the Biosecurity Risk Report later on in the module to review.

Questions ‹BACK NEXT›

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Biosecurity
Finding Sources of Disease Transmission Risk

Congratulations, Investigator cvbxbvx!

You've completed your mission!

33 of 37 pages

18 of 24 total sources found

Area

Junior

Biosecurity Investigator

Congratulations! You've completed your mission and located 18 of the 24 sources of disease transmission on the dairy farm.

We encourage you to go through the module as many times as you'd like in order to master the content.

You have identified many examples of these common means of disease transmission: animal to animal, people on the farm, equipment, vehicles, & facilities, and contaminated feed and water.

Once you find the points of risk, you can develop strategies and practices to minimize the risks of disease transmission. The next module will help you learn do just that!

Questions ‹BACK NEXT›

33

Biosecurity
Finding Sources of Disease Transmission Risk

Congratulations, Investigator %TextEntry220%!

You've completed your mission!

33 of 37 pages

%cumlativeCounter% of 24 total sources found

Area

Rookie

Biosecurity Investigator

Congratulations! You've completed your mission and located %cumlativeCounter% of the 24 sources of disease transmission on the dairy farm.

We encourage you to go through the module as many times as you'd like in order to master the content.

You have identified many examples of these common means of disease transmission: animal to animal, people on the farm, equipment, vehicles, & facilities, and contaminated feed and water.

Once you find the points of risk, you can develop strategies and practices to minimize the risks of disease transmission. The next module will help you learn do just that!

Questions ‹BACK NEXT›

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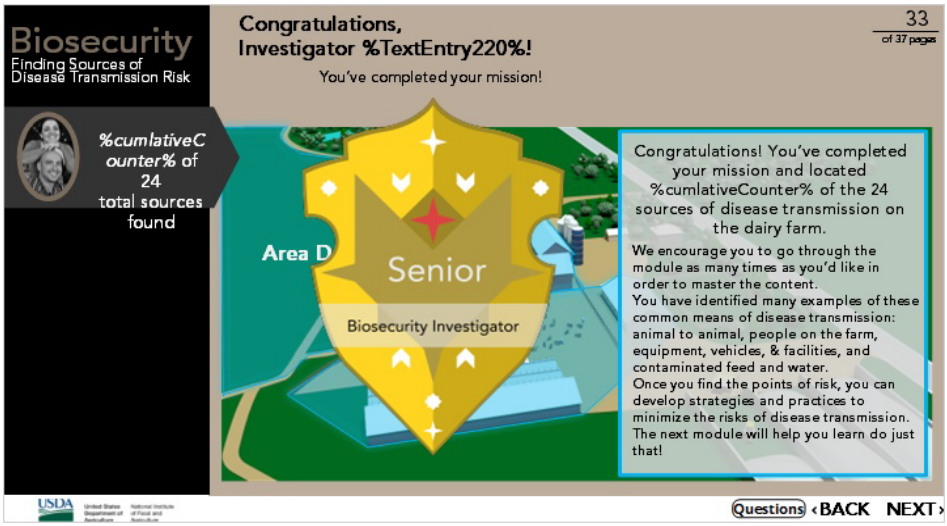
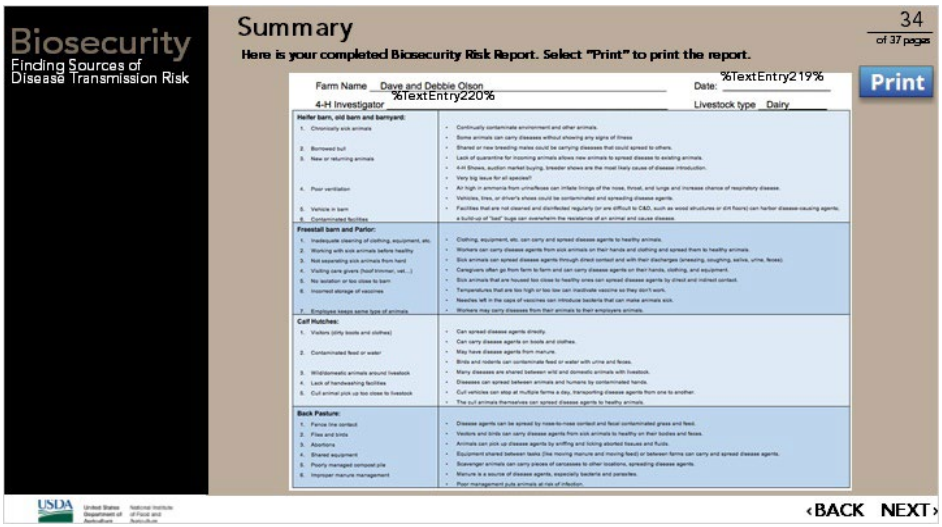
33	
34 Print report appended to this document	

35	HFHA | HealthyFarms HealthyAgriculture CERTIFICATE OF COMPLETION Biosecurity Learning Module 3: Finding Sources of Disease Transmission Risk %TextEntry220% Student Name %TextEntry219% Date Healthyagriculture.org ‹BACK NEXT›
36	Biosecurity Finding Sources of Disease Transmission Risk 36 of 37 pages Credits **Photo Credits** Sara-Lee Burton: Risk 2 Michael T Collins: Hutches, Risk 15, 16 Dorothy Elsner: Milking Parlor Brian Holmes: Risk 22 Mark Hutchinson: Risk 21 Susan Kerr: Freestall Parlor Pixabay 216174: Risk 14 Lena Magnochi: Risk 9 Jeanne M Rankin: Risk 20 Julia M Smith: Risk Back Pasture, 3, 8, 11, 12, 13, 18, 23, 25 **Content** Jeannette McDonald, DVM, PhD I TLC Projects, LLC Susan Kerr, DVM, PhD, PAS I Washington State University Extension Jeanne M. Rankin, DVM, FADD I Montana State University Extension Julia M. Smith, DVM, PhD I University of Vermont **Production** Jeannette McDonald, DVM, PhD Learning Innovations Team I FVTC ‹BACK NEXT›
37	Biosecurity Finding Sources of Disease Transmission Risk USDA United States Department of Agriculture National Institute of Food and Agriculture This material is based upon work that was supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2015-69004-23273. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture. RESTART ‹BACK

Biosecurity Risk Report

Farm Name Dave and Debbie Olson Date: _____

4-H Investigator _____ Livestock type Dairy

Heifer barn, old barn and barnyard:	
1. Chronically sick animals	• Continually contaminate environment and other animals. • Some animals can carry diseases without showing any signs of illness
2. Borrowed bull	• Shared or new breeding males could be carrying diseases that could spread to others.
3. New or returning animals	• Lack of quarantine for incoming animals allows new animals to spread disease to existing animals. • 4-H Shows, auction market buying, breeder shows are the most likely cause of disease introduction. • Very big issue for all species!!
4. Poor ventilation	• Air high in ammonia from urine/feces can irritate linings of the nose, throat, and lungs and increase chance of respiratory disease.
5. Vehicle in barn	• Vehicles, tires, or driver's shoes could be contaminated and spreading disease agents.
6. Contaminated facilities	• Facilities that are not cleaned and disinfected regularly (or are difficult to C&D, such as wood structures or dirt floors) can harbor disease-causing agents; a build-up of "bad" bugs can overwhelm the resistance of an animal and cause disease.
Freestall barn and Parlor:	
1. Inadequate cleaning of clothing, equipment, etc.	• Clothing, equipment, etc. can carry and spread disease agents to healthy animals.
2. Working with sick animals before healthy	• Workers can carry disease agents from sick animals on their hands and clothing and spread them to healthy animals.
3. Not separating sick animals from herd	• Sick animals can spread disease agents through direct contact and with their discharges (sneezing, coughing, saliva, urine, feces).
4. Visiting care givers (hoof trimmer, vet…)	• Caregivers often go from farm to farm and can carry disease agents on their hands, clothing, and equipment.
5. No isolation or too close to barn	• Sick animals that are housed too close to healthy ones can spread disease agents by direct and indirect contact.
6. Incorrect storage of vaccines	• Temperatures that are too high or too low can inactivate vaccine so they don't work. • Needles left in the caps of vaccines can introduce bacteria that can make animals sick.
7. Employee keeps same type of animals	• Workers may carry diseases from their animals to their employers animals.
Calf Hutches:	
1. Visitors (dirty boots and clothes)	• Can spread disease agents directly. • Can carry disease agents on boots and clothes.
2. Contaminated feed or water	• May have disease agents from manure. • Birds and rodents can contaminate feed or water with urine and feces.
3. Wild/domestic animals around livestock	• Many diseases are shared between wild and domestic animals with livestock.
4. Lack of handwashing facilities	• Diseases can spread between animals and humans by contaminated hands.
5. Cull animal pick up too close to livestock	• Cull vehicles can stop at multiple farms a day, transporting disease agents from one to another. • The cull animals themselves can spread disease agents to heathy animals.
Back Pasture:	
1. Fence line contact	• Disease agents can be spread by nose-to-nose contact and fecal contaminated grass and feed.
2. Flies and birds	• Vectors and birds can carry disease agents from sick animals to healthy on their bodies and feces.
3. Abortions	• Animals can pick up disease agents by sniffing and licking aborted tissues and fluids.
4. Shared equipment	• Equipment shared between tasks (like moving manure and moving feed) or between farms can carry and spread disease agents.
5. Poorly managed compost pile	• Scavenger animals can carry pieces of carcasses to other locations, spreading disease agents.
6. Improper manure management	• Manure is a source of disease agents, especially bacteria and parasites. • Poor management puts animals at risk of infection.