Objectives

At the end of this lesson you will know the answers to all of these topics:

- Explain what biosecurity means.
- Describe why biosecurity is important.
- Identify what kinds of disease agents we try to prevent or control with biosecurity.
- Demonstrate disease agent-host-environmental interactions that result in disease.
Before you begin, let's talk!

- We're going to ask you to read, think, and try to figure out answers to complete some activities. We don't expect you to know the answers. The glossary has additional information to help you.
- We're going to use lots of diseases as examples. Don't worry! You don't need to know about the diseases to complete the activities. (But if you want to know more about them, check the glossary.)
- If you don't get the answers right the first time, keep trying! No harm, no foul.

Now, go explore, have fun, and learn something!
What is biosecurity?

Think about the word. It's kind of two words put together: "bio" and "security."

Bio comes from the Greek word for "life"
Security comes from the Latin word for secure or safe.

What do you think it might mean?

Please type in your answer here and press submit.
There are a number of definitions for biosecurity, some simple and some more complicated.

Try putting this definition together.

Create a definition for “biosecurity” by dragging phrases into the upper box in the correct order.

“to prevent animals, and plants. Actions we take diseases of humans, or control”
Let's look at some examples of how we can prevent or control diseases.

Drag and drop the pop-up text boxes into the correct column for our definition of biosecurity. *(Click on underlined words for more information.)*
Why should we care?

Listen to each person's story to find out.
Let’s think about diseases

Put your cursor on the words below to see what they mean. Then drag the word to complete the correct sentence.

Non-infectious Infectious Host Agent Zoonotic

Some diseases are caused by a disease and can pass from person to person or animal to animal. These are called diseases.

Other conditions can be caused by poor nutrition, injury, cancer, genetics, etc.; these are causes.

Diseases that can pass from animals to humans or humans to animals are called diseases.

Infectious agents get inside the (person, animal, or plant) and multiply or produce toxins, causing disease.
For biosecurity, we are most concerned with infectious agents.

With the use of a microscope you, can see that they are all around us.

Draw lines connecting each word to a picture.
Roll over the images and words to learn more.
Agents and diseases

Roll over all the images to learn more.

But when and how does this agent...

...cause this disease?

You must roll over both images before you can go to the next slide.
Diseases are like accidents...

They both involve three factors.

Listen to the narration as you watch the slideshow.
Diseases are like accidents...

They both involve three factors.
Diseases are also accidents.

The severity of the disease depends on interactions between the host, agent, and environment.
Diseases are also accidents.

When we try to prevent agents from making animals or humans sick, we call it **BIOSECURITY**.
Let's review!

Complete the crossword puzzle using key terms from today's lesson.

**Word Bank**

- PRION
- BACTERIA
- NUCLEUS
- HOST
- BIOSECURITY
- FUNGUS
- VIRUS
- AGENTS
- ORGANISM
- ZOONOTIC
- INFECTIOUS
- CELL
- DNA

- Across
  4. An internal cell structure containing chromosomes that determine heredity.
  5. Abnormal protein that can cause a fatal brain disease.
  6. Actions to prevent or control disease.
  9. Living organism such as mold that lives on decaying material or a host.
  10. One-celled organisms that can be found anywhere.
  11. Very small particle consisting of a protein coat surrounding DNA or RNA that can only replicate in living cells and may or may not cause disease.
  13. A living thing with many parts that work together.

- Down
  1. Disease that can be passed between animals and humans.
  2. Things capable of causing disease.
  3. A living thing that can be affected by disease-causing agents.
  7. Spread by a disease-causing agent.
  8. Very small structure with a nucleus surrounded by a wall, the basic building block of tissues.
  12. Chains of chemical units in a twisted ladder arrangement that determine heredity.
Here are the main points we want you to remember.

Can you answer these questions?

- **What is biosecurity anyway?**
  - Please type in your answer here and press the submit button to the right.

- **Six reasons why we should care**
  - Please type in your answer here and press the submit button to the right.

- **What kinds of disease agents do we try to prevent or control with biosecurity?**
  - Please type in your answer here and press the submit button to the right.
What is Biosecurity and Why Should We Care?

Glossary:
- **Agents**: Things capable of causing disease
- **Bacteria**: One-celled organisms that can be found anywhere
- **Biosecurity**: Actions to prevent or control diseases
- **Cell**: Very small structure with a nucleus surrounded by a wall, the basic building block of tissue
- **DNA**: Chains of chemical units in a twisted ladder arrangement that determines heredity
- **Fungi**: Living organisms such as molds that live on decaying materials or a host
- **Host**: A living thing that can be affected by disease-causing agents
- **Infectious**: Spread by a disease-causing agent
- **Non-infectious**: Disease conditions caused by poor nutrition, injury, cancer, genetics, etc., and are not spread to other individuals
- **Nucleus**: An internal cell structure consisting of chromosomes that determines heredity
- **Organism**: A living thing with many parts that work together
- **Parasite**: An organism that lives in or on another organism (its host) and benefits by deriving nutrients at the host's expense
- **Prions**: Abnormal proteins that can cause a fatal brain disease
- **Virus**: Very small particle consisting of a protein coat surrounding DNA or RNA that can only replicate in living cells and may or may not cause disease
- **Zoonotic**: Disease that can be passed between animals and humans

What is animal biosecurity?

Actions we take to prevent or control diseases of animals and humans.

Why should we care?
- Prevent animal illness and suffering
- Prevent zoonotic diseases
- Prevent economic loss
- Keep food prices low for consumers
- Keep good public opinion
- Keep interests and international trade open

What types of diseases do we try to prevent or control with biosecurity?
- Infectious diseases caused by bacteria, fungi, parasites, virus, etc.
- Disease occurs when the right agent and host are together in just the right environment
- We use biosecurity to prevent disease accidents

You're all done! This was the last activity!!!
Certificate of Completion

type your name here

Signature ____________________________

type leader, parent, or guardian name here

type date here

Date

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References

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