SAND2012-6697P

Hazard & Risk Communication in the Laboratory

Student Guide

Welcome & Introductions

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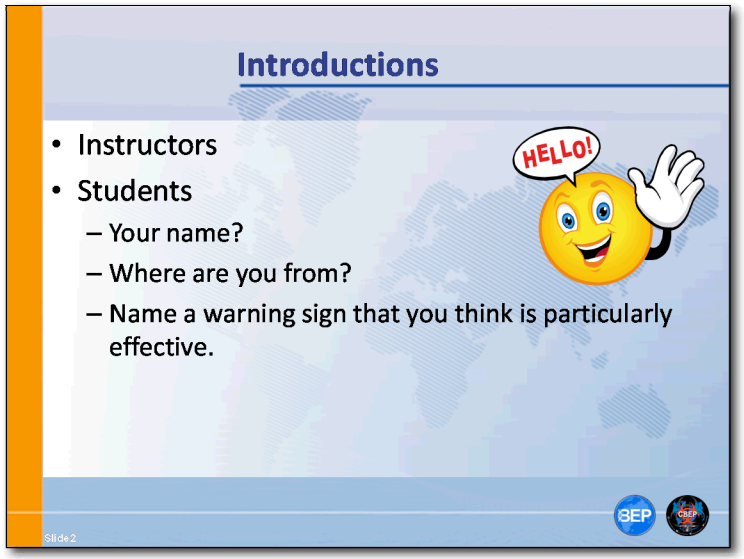


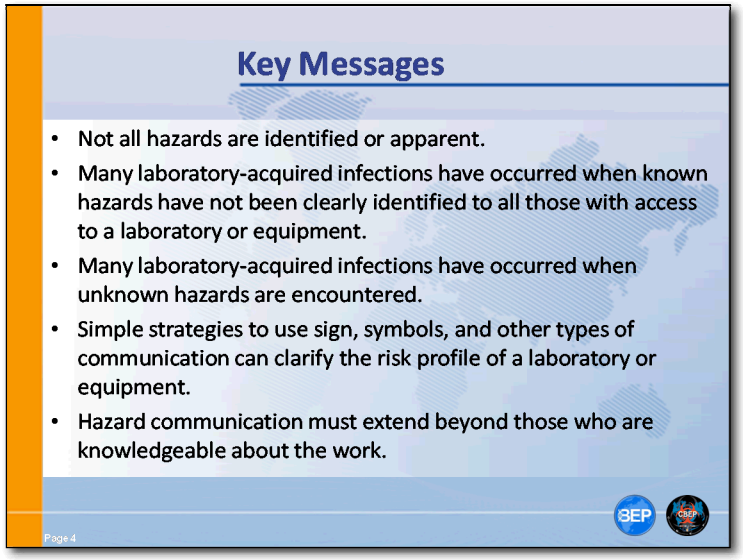
Action Plan

By the end of this lesson, I would like to:					
KNOW		FEEL		BE ABLE TO DO	

Your learning doesn't stop with this lesson. Use this space to think about what else you need to do or learn to put the information from this lesson into practice.

What more do I need to know or do?	How will I acquire the knowledge or skills?	How will I know that I've succeeded?	How will I use this new learning in my job?

Use space on back, if needed


Key Messages
• Not all hazards are identified or apparent.
• Many laboratory-acquired infections have occurred when known hazards have not been clearly identified to all those with access to a laboratory or equipment.
• Many laboratory-acquired infections have occurred when unknown hazards are encountered.
• Simple strategies to use sign, symbols, and other types of communication can clarify the risk profile of a laboratory or equipment.
• Hazard communication must extend beyond those who are knowledgeable about the work.
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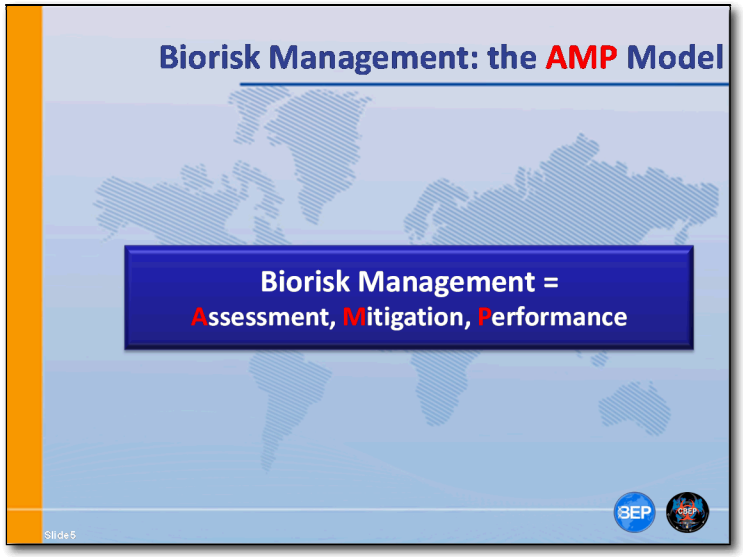
Biorisk Management: the AMP Model
Biorisk Management =
Assessment, Mitigation, Performance
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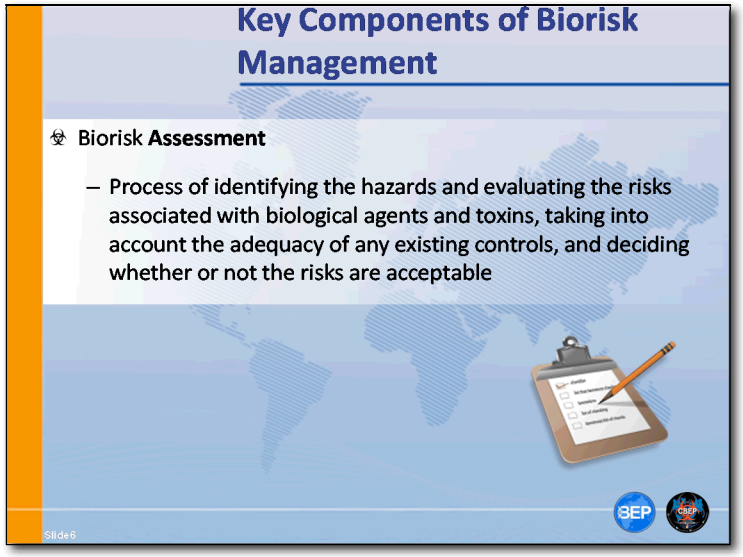
Key Components of Biorisk Management
Biorisk Assessment
– Process of identifying the hazards and evaluating the risks associated with biological agents and toxins, taking into account the adequacy of any existing controls, and deciding whether or not the risks are acceptable
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Key Components of Biorisk Management
Biorisk **Mitigation**
– Actions and control measures that are put into place to reduce or eliminate the risks associated with biological agents and toxins
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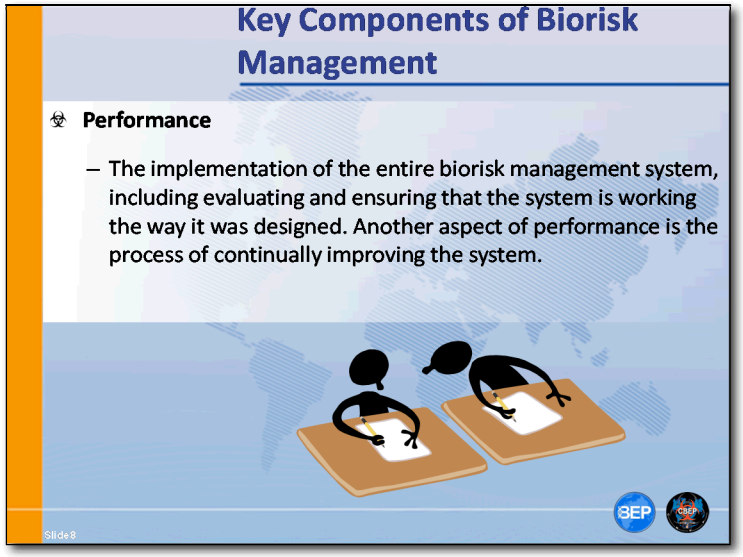
Key Components of Biorisk Management
Performance
– The implementation of the entire biorisk management system, including evaluating and ensuring that the system is working the way it was designed. Another aspect of performance is the process of continually improving the system.
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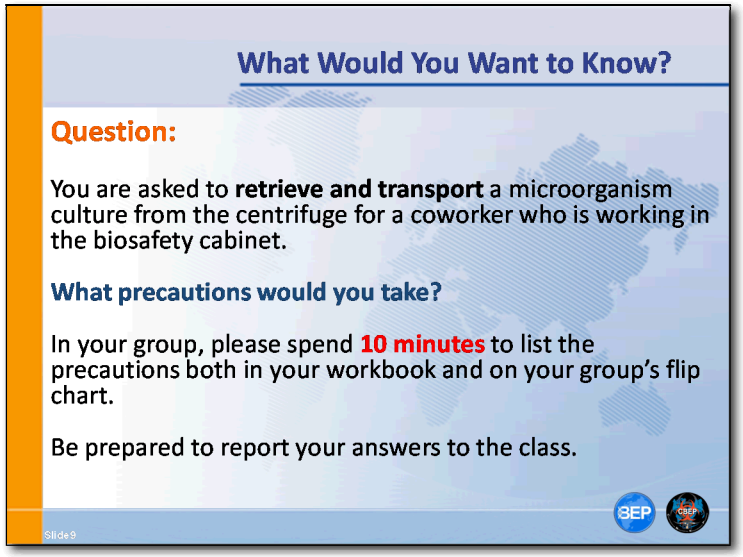
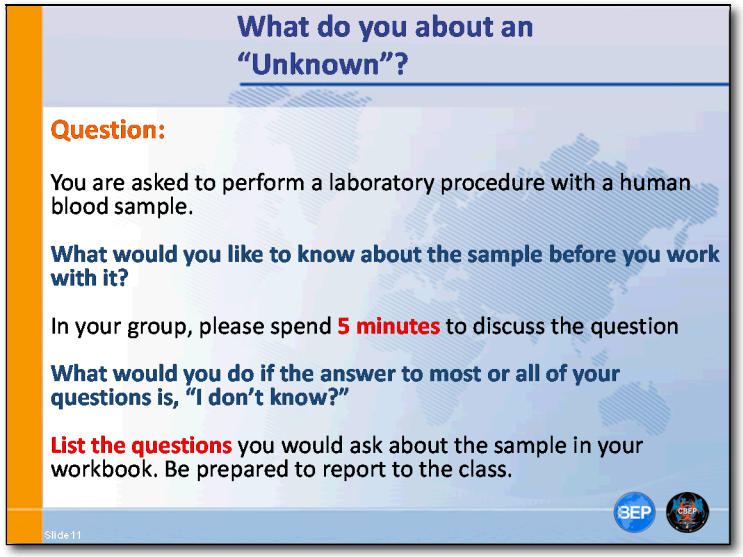


Why is hazard communication important?

List the precautions necessary for someone who is transporting a sample of microorganism from the centrifuge to the biosafety cabinet, and explain *why* you chose each precaution.

Why is hazard communication important?

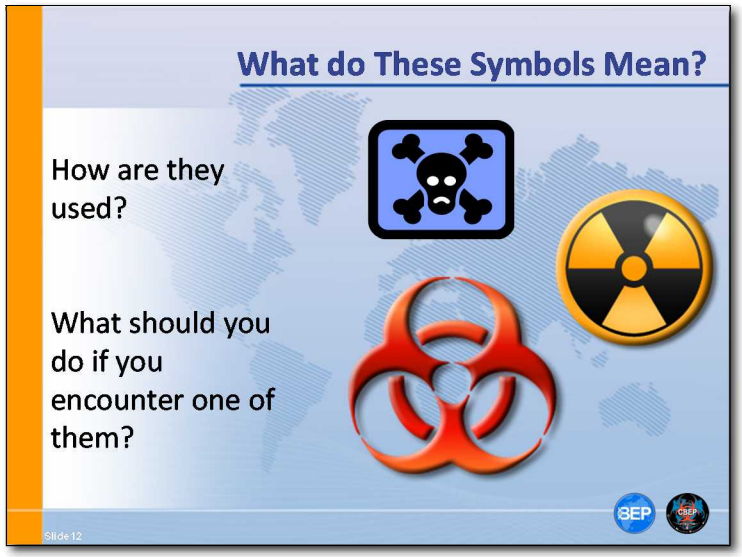
Lack of information or even basic knowledge about other agents present in the same lab has caused laboratory-acquired infections. A majority of LAIs have a declared unknown source. While some of the sources of infection may legitimately be unknown, many of these might be able to be tracked if appropriate hazard communication were used in the laboratory.



What did you group determine as important to know about a human blood sample?

How would you respond if the answer to the above questions was "I don't know"?

Why is it always safest to treat the sample as contaminated to the greatest extent?



International Warning Symbols

What does each of these symbols indicate, and how are they used?

What should you do if you encounter one of these symbols?

International Biohazard Symbol

*"Biological hazards are usually impossible to detect by cursory examination only. * * * It seems logical, then, to mark the location of biohazards with a suitable warning sign that is readily noticed and easily recognized."* Baldwin & Runkle, 1967, *Science*, pg 264

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Use of Biohazard Warning Symbol

From the *Science* article:

The symbol *"shall be used to signify the actual or potential presence of a biohazard and shall identify equipment, containers, rooms, materials, experimental animals, or combinations thereof which contain or are contaminated with viable hazardous agents."*

Biohazard = *"those infectious agents presenting a risk or potential risk to the well-being of man, either through his infection or indirectly through disruption of his environment."*

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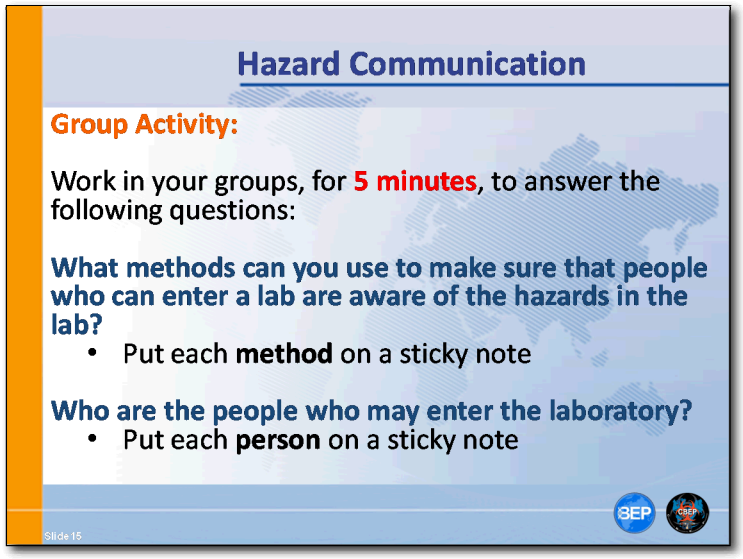
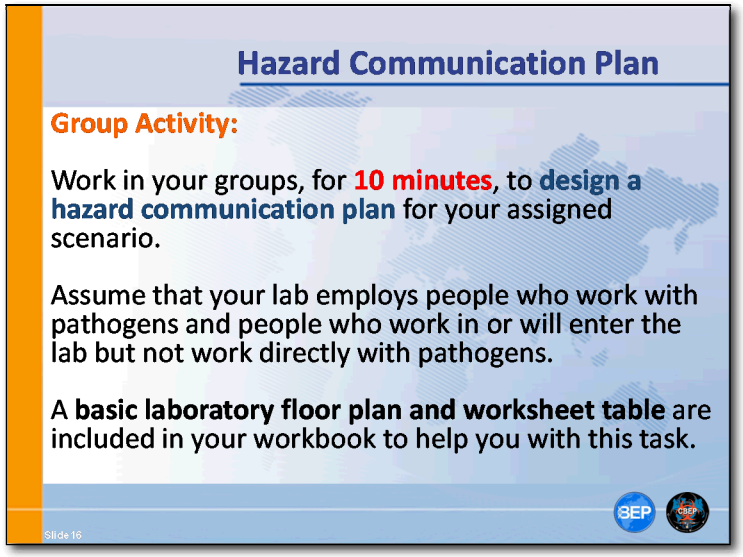


Methods of Hazard Communication

List as many methods as possible that ensure that those entering the lab are fully informed of the hazards:

Consider the earlier discussion of meaningfulness and memorability – is there a risk to labeling everything as hazardous?



Any questions before you get started?

Remember, assumed that your lab employs people that work directly with pathogens and people that will simply enter the lab but not work directly with pathogens!

Worksheet Table

Communication Method?	Where and/or When Used?	Communicates to Whom?

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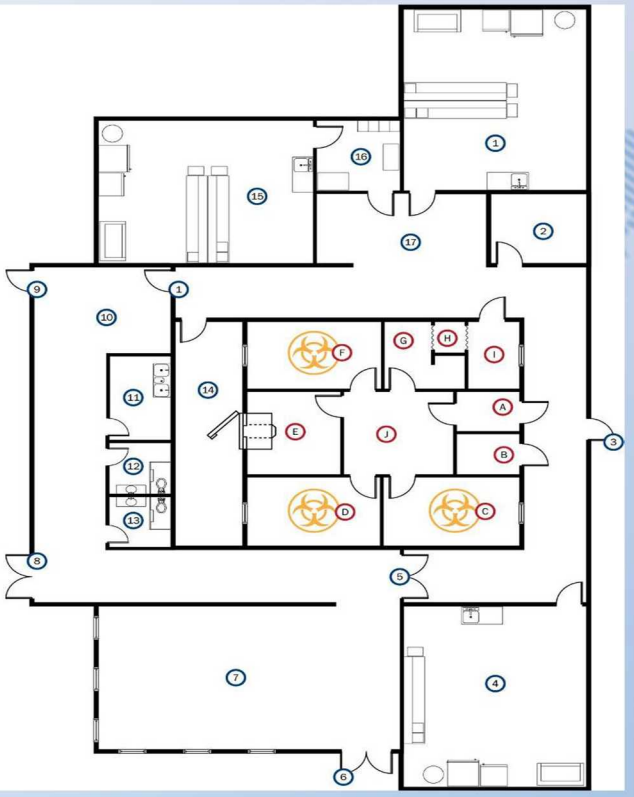
Laboratory Layout

General Facility Callouts

1. Lab 2 (BSL II)
2. Freezer
3. East emergency exit
4. Lab 3 (BSL II)
5. Limited Area entrance
6. Main building entrance
7. Offices and work areas
8. Delivery entrance / West emergency exit 1
9. West emergency exit 2
10. Break area
11. Utility closet
12. Men's restroom
13. Women's restroom
14. Autoclave access area
15. Lab 4 (BSL II)
16. Dressing room
17. Anteroom

Lab 1 (BSL III) Callouts

A. Airlock
B. Mechanical room
C. Lab 1a
D. Lab 1b
E. Autoclave
F. Lab 1c
G. Change room
H. Shower
I. Entry
J. Central area



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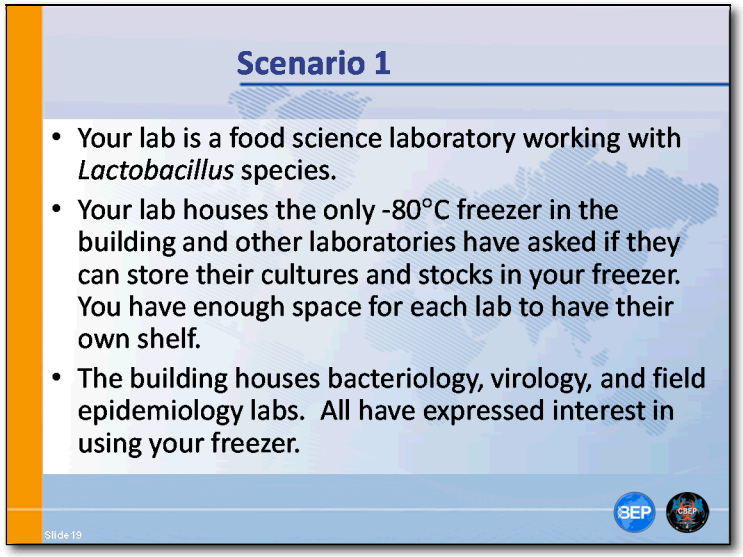
Scenario 1
• Your lab is a food science laboratory working with *Lactobacillus* species.
• Your lab houses the only -80°C freezer in the building and other laboratories have asked if they can store their cultures and stocks in your freezer. You have enough space for each lab to have their own shelf.
• The building houses bacteriology, virology, and field epidemiology labs. All have expressed interest in using your freezer.
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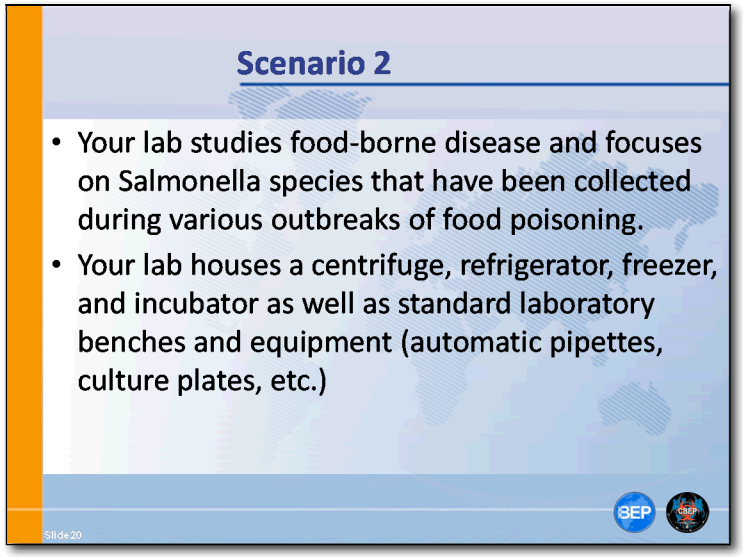
Scenario 2
• Your lab studies food-borne disease and focuses on Salmonella species that have been collected during various outbreaks of food poisoning.
• Your lab houses a centrifuge, refrigerator, freezer, and incubator as well as standard laboratory benches and equipment (automatic pipettes, culture plates, etc.)
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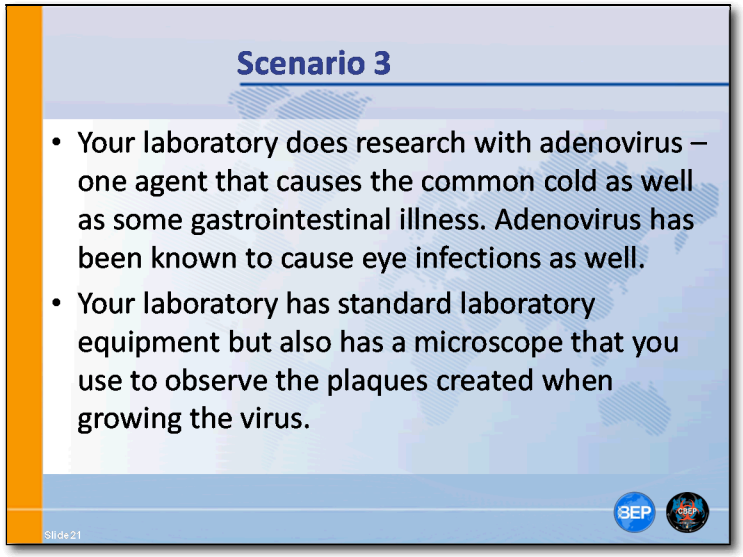
Scenario 3
• Your laboratory does research with adenovirus – one agent that causes the common cold as well as some gastrointestinal illness. Adenovirus has been known to cause eye infections as well.
• Your laboratory has standard laboratory equipment but also has a microscope that you use to observe the plaques created when growing the virus.
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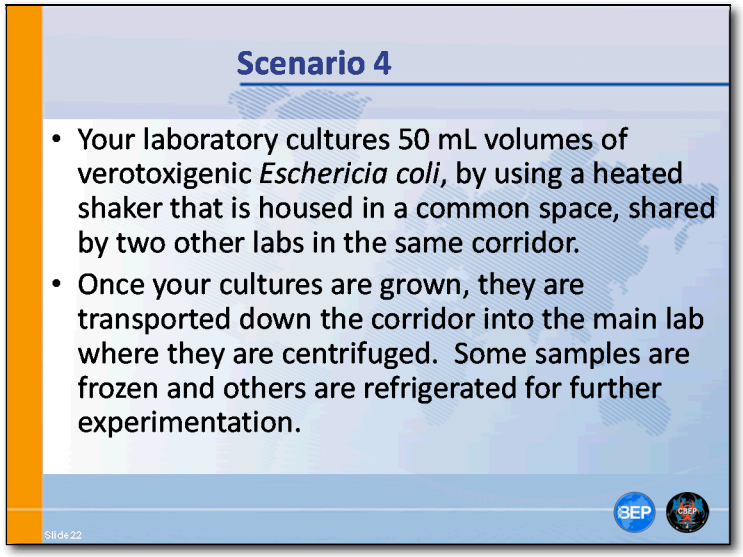
Scenario 4
• Your laboratory cultures 50 mL volumes of verotoxigenic *Eschericia coli*, by using a heated shaker that is housed in a common space, shared by two other labs in the same corridor.
• Once your cultures are grown, they are transported down the corridor into the main lab where they are centrifuged. Some samples are frozen and others are refrigerated for further experimentation.
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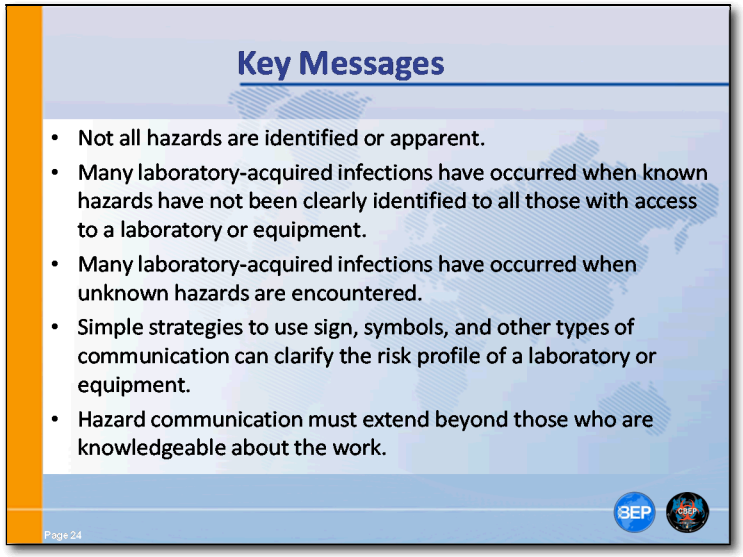
Review & Wrap-Up

What might be some outcomes if a lab does not practice hazard communication?

What aspects of hazard communication could be improved in your lab?

What steps are necessary to make that improvement?

Remember to jot this down on your action plan and try to give yourself a due date for accomplishing these steps!!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Thank You!
Don't forget to complete your evaluation!
BEP
CBEP
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Thank you!