

Biosafety Basics

68-MINUTE ONLINE CLASS | LEVEL 1

OVERVIEW

Biosafety Basics provides the introductory framework to the practices and principles when working with infectious biological agents. Focus is placed on an introduction to infectious agents, assessment of biological hazards and risks, overview of laboratory safety, risk mitigation via personal protective equipment and biosafety cabinets, program management, and biosafety guidelines and regulations.

Five Takeaways:

1. Explain the risk factors involved in working with a biological agents.
2. Explain why personal protective equipment (PPE) is used, and what PPE is appropriate for the work area.
3. Describe the differences between a biological safety cabinet (BSC), a fume hood, and a laminar flow clean air center.
4. List the basic design differences between Biosafety Labs (BSL)-1, 2, 3,
5. Explain how the various Federal regulatory agencies affect the practice of biosafety.

AGENDA

- **Introduction to Infectious Agents** identifies certain diseases caused by prions, viruses, bacteria, fungi, and parasites and explains the different ways that diseases can be transmitted.
- **Assessing Biological Hazards and Biorisks** explains the risk factors involved when working with a biological agent and discusses how an infection can be prevented by modifying the agent itself or how that agent is handled.
- **Laboratory Safety Overview: Common Lab Hazards and Basic Safety** Thinking identifies the hierarchy of controls for working with biological hazards, underlines the difference between engineering controls and work practice controls, and explains how to eliminate or replace sharps in the workplace.
- **Biorisk Mitigation: Personal Protective Equipment (PPE)** first explains why personal protective equipment is used. Next, it discusses the limitations of each PPEs, and discusses how to select appropriate PPE based on tasks, work area, temperature, organisms, and chemicals used. Lastly, this section explains the difference between masks and respirators and which respirator is appropriate for a certain application.

continued



- **Biorisk Mitigation: Biological Safety Cabinets (BSC)** defines the term primary containment and explains the difference between a biological safety cabinet (BSC), a fume hood, and a laminar flow clean air center.
- **Biorisk Mitigation: Laboratory Facility Considerations** explains how the risk group of an organism influences the design of the laboratory where it will be handled, describes how a risk group corresponds to the biosafety level of a facility, and finally elucidates the design differences between Biosafety Labs (BSL) – 1, 2, 3, and 4.
- **Biorisk of Bioaerosols** first explain bioaerosols, how they can be present in the workplace, and the types of laboratory manipulation that can produce an aerosol. Next, the section discussed why aerosols present a high risk to workers, and lastly compares the differences between a disease spread by droplets and one spread by the aerosol or droplet nuclei route.
- **Biosafety Program Management** first lists the elements of a good biosafety program and the basic topics that a biosafety manual should cover. Second, the section discusses why an occupational health program is important and what types of concerns should be addressed by this program. Third the section lists the responsibilities of the Institutional Biosafety Committee (IBC). Lastly, the section explains when a biosafety officer is required per NIH guidelines and what procedures an emergency response plan should cover.
- **Biosafety Regulations and Guidelines** lists some of the primary US biosafety-related regulations and explains how the various federal regulatory agencies affect the practice of biosafety.

