# CDC/APHL Laboratory Biosafety Competencies for the BSL-2, BSL-3 and BSL-4 Laboratories

CDC and APHL have convened an expert panel to define biosafety competencies for laboratorians working in BSL-2, BSL-3, and BSL-4 facilities. This panel has representation from federal governmental labs, private, clinical, research and academic laboratories, as well as from professional associations. These experts represented work at all three levels of laboratory containment.

The panel was convened by Judy Delany, M.S. MPH, MT(ASCP) from the Office of Surveillance, Epidemiology and Laboratory Services (proposed) at the Centers for Disease Control and Prevention. Pandora Ray, MPH, of the Association of Public Health Laboratories (APHL) facilitated the meetings, and Kajari Shah, MPH, of APHL was the project manager for the workgroup.

Intended Users:

*All Laboratory professionals are encouraged to participate, regardless of experience.*

Although these competencies are written specifically for the laboratory professional. Biosafety professionals are also encouraged to respond. Please answer the questions in the table for each competency. The laboratory biosafety competency set was developed in three sections, with each section focused on laboratory workers with a different level of experience and responsibility.

Entry Level Laboratorian:

- Education with no hands-on experience at a given BSL level
- Works under direct observation until proficient then works under direct supervision
- Not working independently—limited discretion to make decisions
- Understanding of life sciences

Mid Level Laboratorian:

- Mastered the competencies of introductory level
- Has some hands-on experience at given BSL level
- Performs work tasks independently
- Works under supervision
- Provides inputs and possible solutions to make decisions
- Ability to trouble shoot problems and report to supervisor
- Escort support staff into lab
- May train, mentor or oversee the work of introductory-level staff in the lab

Senior Level Laboratorian:

- Mastered the competencies of mid-level knowledge
- Has extensive experience at given BSL level
- Works under minimal supervision
- Will train, mentor and oversee the work of introductory and mid-level staff in the lab
- Discretion to make decisions
- Provide input for risk assessment
- May serve as the PI, would then be responsible for PI tasks
- Manages directly staff

- Coordinate with facility personnel
- Responsible for maintaining regulatory compliance
- Input into selection of outside contractors
- Should have understanding of the facility operations

For additional definitions and clarifications of terms, please refer to the Lexicon included with this survey. We strongly urge you to print the Lexicon prior to offering your feedback.

Most of these competencies reflect those needed for the laboratorian working at any level of laboratory biocontainment. In selected domains, additional competencies were developed for the worker in the BSL-4 laboratory.

The competencies were placed in the following domains to correspond to the organization of the BMBL to create the greatest usability for the laboratorian:

1. Identification of Potential Hazards with Subdomains: Biological agents, Research Animals, chemical Hazards, Physical Hazards, Radiological Hazards
2. Hazard Controls with subdomains: Personal Protective Equipment, Engineering Controls, Decontamination and Laboratory Waste Management
3. Administrative Controls with subdomains: Hazard Signage and Communication, Guideline and Regulation Compliance, safety Program Management, Medical Surveillance, Risk Assessment, Risk Associated with Laboratory Procedures
4. Emergency Preparedness and Response with subdomains: Emergencies and Incident Response, Exposure Prevention and Hazard Mitigation, Emergency Response Exercises and Drills.

Further questions and comments about the Laboratory Competencies may be directed to Kajari Shah, Senior Specialist, National Center for Public Health Laboratory Leadership, at 704.771.9604 or kajari.shah@aphl.org.

# Definitions of terms used in the Skill Domains

General: The institution/facility has an established culture of safety (top to bottom commitment), supervisory personnel utilize good management practices, etc.

## Skill Domain: Identifying Sources of Potential Hazards

1. Biological Materials—any microorganism (including but not limited to bacteria, viruses, fungi, helminths, protozoa); material derived from a living source (including but not limited to cell lines [human or animal, natural or cultured]; genomic materials; clinical material (tissues/organs; body fluids) biological toxins, or allergens; or any naturally occurring, bio-engineered or synthesized component of any such microorganism/material as mentioned above. May or may not be infectious (e.g. prions, recombinant DNA, etc.).
2. Chemical Materials—solids, liquids, mists, vapors, gases need a better definition here
3. Radiological Materials—includes radioisotopes, radioactive waste products, and chemical/biological materials that have been modified to include isotope labels
4. Physical Hazards—includes by not limited to ergonomic issues; exposure to hot and cold; electrical, compressed gas cylinders, equipment and sharps
5. Research Animals—includes not only the risks associated with handling animals (bites, scratches and allergens), but also risks with handling their bedding and other associated waste products

## Skill Domain: Physical Hazard Controls

1. Primary Barriers—engineering controls to include by not limited to biological safety cabinets, chemical fume hoods, enclosed containers, bench shields, animal cages, engineered sharps injury protection devices (safer device syringes and sharps containers) and personal protective equipment
2. Secondary Barriers—facility design and construction features to include but not limited to directional air flow exhaust, entrance airlocks controlled access zones, HEPA-filtered exhaust air, facility controls, decontamination equipment eyewash stations, protective showers and sinks for hand washing
3. Decontamination and Laboratory Waste Management Practices—includes the use of methods for sterilization, decontamination and disinfection

## Skill Domain: Administrative Hazard Controls (work practices, written procedures, SOPs, programs, training)

1. Hazard Communication Program—provides a process for ensuring that information concerning hazards is appropriately transmitted to personnel to include (but is not limited to the use of signage, symbols, container labels, Material Safety Data Sheets and other written sources describing hazards of a material or space
2. Guidelines and Regulatory Compliance—safety information and practices from federal state and local regulatory sources
3. Safety Program Management—includes institutional general safety, biosafety, biosecurity, chemical, radiological and emergency response programs and plans that all staff are required to follow to manage possible workplace hazards
4. Medical Surveillance Program—includes a program for pre-employment screening, ongoing monitoring, and post-exposure management of employees as pertaining to health
5. Risk Assessment—a process to evaluate the probability and consequences of exposure to a given hazard with the intent to reduce the risk by ensuring appropriate hazard controls are used
6. Personnel Training Program—the required training and follow up evaluation to ensure staff are capable to perform their duties in accordance with the institution's safety program to include such areas as biosafety, biosecurity, hazardous waste management, emergency response, sample and specimen receipt and accessioning, specimen packaging and shipping, testing procedures and hazard communication
7. Standard Operating Procedures—Procedures developed based on both good laboratory practices guidelines and regulatory compliance by both the institution and the individual labs that describe how various operations and processes will be carried out

## Skill Domain: Emergency Preparedness and Response

1. Exposure Prevention and Hazard Mitigation—this process involves the post exposure response to include an investigation to determine root causes and a follow up response to prevent current and future exposures
2. Laboratory Emergencies—any incidents that have the potential to lead to exposures, injuries, equipment damage, illness or other adverse event
3. Personnel training and drills—involves providing information to workers on how to respond to an emergency, specifically what each person's role is and to practice those roles
4. Standard Operating Procedures for Emergency Response—these can include Facility Emergency Response Plan, continuity of operations plan and other institutional procedures as appropriate.

# Other terms needing definitions

1. Aerosolization—the generation of liquid droplets or particles 5 microns in diameter or less, that can be inhaled and retained in the lungs.
2. ALARA (As Low As Reasonably Achievable)—terminology most often used in relation to radiation exposure levels, designating a work principle or philosophy intended to protect the worker from unnecessary exposure to workplace hazards. This practice involves using/modifying a procedure or workplace element to reduce or eliminate the degree of exposure, where reasonable and economically feasible to do so.
3. Barriers—any method used to separate workers, the outside community and the environment from any hazardous material utilized. Can include primary or secondary barriers.
4. Biological Waste—include but not limited to blood/blood products, clinical specimens, pathological waste, contaminated animal carcasses/bedding, cultures/stocks of microbial materials, sharps and other items that had contact with biohazardous materials, and biotechnology by-product effluents designated for disposal according to applicable institutional, state and federal regulations.
5. Biosafety Manual—laboratory manual that gives practical guidance on overall laboratory operation to provide a safe environment for the use of biological materials/recombinant DNA.
6. Biosafety Records—records that are retained as required by regulatory and institutional policies for documentation of employee training, medical surveillance, equipment maintenance/certification accidents and exposure, inspection and audits, and inventories for chemical and other hazardous agents.
7. Biosecurity—the system to prevent unauthorized entry to laboratory areas and access to dangerous pathogens.
8. Containment—methods used to shield or protect personnel, the immediate work environment and the community from exposure to hazardous materials
9. Decontamination—the removal of microorganisms or other contaminants from surfaces for the purpose of making the object safe for handling.
10. Disinfection—the process of reducing or eliminating pathogens from a surface.
11. Emergency Equipment—items used in communication and response to an emergency or incident event.
12. Engineering Controls—refers to methods to remove a hazard or place a barrier between the worker and the workplace hazard which usually involves building design elements and specialized equipment.
13. Hazard Control—methods used to eliminate or reduce the potential for exposures to a hazard Incident—an unexpected event that causes or has the potential to cause loss (of what??), injury, illness, unsafe conditions, or disruptions to normal procedures.
14. Institutional Safety Committees—give a definition of these committees, not just examples? To include such local committees as the Safety Committee, Radiation safety Committee, Institutional Animal Care and Use Committee, Institutional Biosafety Committee, Chemical Safety Committee, Institution Review Board, and Environmental Programs Advisory Board
15. Inventory Records—records which track the quantity, form, location, and disposition of any biological, chemical, or radiological material in use, stored or disposed in a laboratory.
16. Mitigate—to correct identified deficiencies and to make a hazard less severe which includes a corrective action taken as a result of an inspection, audit or after an incident.
17. Non-routine samples/specimens—samples/specimens received that are not normally handled by the facility and include such items as environmental samples of “white powder” or samples that potentially pose a greater hazard.

18. Records Management System—a paper or electronic system for tracking the creation, receipt, revision and retention of laboratory records in accordance with applicable regulatory standards and guidelines and in accordance with any applicable quality assurance/quality control standard for the laboratory. Records can include (but are not limited to) audio/video recordings, photographs or other graphic images, and e-mail messages.
19. Safety Manuals—collections of policies, procedures, and standard operating procedures intended for guidance in protection against possible workplace hazards.
20. Sample—a non-biological material such as water or soil submitted for analysis to an environmental or research laboratory.
21. Specimen—biological material such as blood or tissue submitted for analysis to a clinical, public health or research laboratory.
22. Sterilization—the use of physical and/or chemical methods to completely eliminate all forms of microbial life.
23. Target Audience—personnel associated with or working in a laboratory environment.
24. Workplace—the location and its components (building, tools, furniture, equipment and other physical objects) needed to perform specific job task.

## Within the Laboratory Safety Program—Examples of plans, manuals and procedures

1. Biosafety Manual—see #5 in Terms above.
2. Biosecurity Plan—details how to secure biological materials against unauthorized access; required by the Select Agent Program.
3. Chemical Hygiene Plan—chemical inventory, hazards, safe practices to minimize exposure. Required by OSHA 29 CFR 1910.1450.
4. Exposure Control Plan—identifies the procedures that have the potential of worker exposure to bloodborne pathogens, and measures to take to prevent/mitigate any such exposure (can include any other infectious material such as TB).
5. Hazard Communication Plan—identifies and informs the worker of the hazards of chemicals used in the workplace, by labeling, symbols, Material Safety Data Sheets (MSDS) and appropriate signage.
6. Incident Response Plan—how personnel should react to incidents/emergencies at their facility.
7. Radiation Safety Manual—details how the laboratory handles, stores and disposes of radioactive material in a safe manner per their User License with the Nuclear Regulatory Commission.
8. Select Agent Inventory Verification Plan—procedure for verifying the laboratory's inventory of Select Agents.
9. Select Agent Transportation Plan—procedures for shipping, receiving, and transferring Select Agents.
10. Standard Operating Procedures (SOPs)—the routine procedures used to perform laboratory tasks. Examples: sample processing, analytical procedures (testing), preparation of reagents/reference materials, decontamination procedures, CLIA requirements, etc.
11. Training/Drills/Exercises Manual—training for personnel working in a particular area; one use is with Select Agents.

## 3. Demographics

Please complete the contact information below:

Name:

Organization:

Title(s):

Deparment:

State:

Email:

Phone Number:

* According to the definitions on the previous page, I consider myself a:

- ◯ Entry level laboratorian
- ◯ Mid level laboratorian
- ◯ Senior level laboratorian
- ◯ Biosafety professional

* I conduct or have conducted work primarily in which level of biocontainment:

- ◯ BSL-2
- ◯ BSL-3
- ◯ BSL-4
- ◯ All of the above

* Domain of Practice:

- ☐ Local or State Public Health Laboratory
- ☐ Federal agency laboratory
- ☐ Clinical laboratory
- ☐ Academic research laboratory
- ☐ Private laboratory
- ☐ Other (please specify):

# Instructions

To view a PDF of this feedback form, please click here.

The PDF copy is for reference purposes only and we will only accept feedback submitted through this survey.

The survey will automatically save your progress if you exit before finishing, so you may return to at any time to provide further comments and/or review what you have already written.

As you review the competencies and provide comments, please keep two questions in mind:

1. Why do you agree with these competencies?
2. How would you reword/revise these competencies?

# 5. POTENTIAL HAZARDS: General

## POTENTIAL HAZARDS: General

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

### Entry level

| | Disagree? |
|---|---|
| 1. Adhere to a culture of safety | ☐ |
| 1a. Recognize personal responsibility in the culture of safety and security, and standard operating procedures | ☐ |
| 1b. Describe incident reporting requirements | ☐ |
| 1c. N/A | ☐ |
| 2. Adhere to institutional security, privacy, and liability policies | ☐ |
| 2a. N/A | ☐ |
| 3. Recognize potential hazards in the workplace | ☐ |

### Mid level

| | Diagree? |
|---|---|
| 1. Implement a culture of safety | ☐ |
| 1a. Demonstrate a positive attitude toward measures of safety and security, and standard operating procedures | ☐ |
| 1b. Ensure staff incidents are reported | ☐ |
| 1c. N/A | ☐ |
| 2. Implement institutional security, privacy, and liability policies | ☐ |
| 2a. N/A | ☐ |
| 3. Investigate hazards in the workplace | ☐ |

## Senior level

| | Disagree? |
|---|---|
| 1. Develop a culture of safety | ☐ |
| 1a. Provide leadership on safety-related committees | ☐ |
| 1b. Ensure staff incident reports are documented without reprisal | ☐ |
| 1c. Ensure adherence to safety practices | ☐ |
| 2. Ensure adherence to institutional security, privacy, and liability policies | ☐ |
| 2a Collaborate in development of institutional security, privacy, and liability policies | ☐ |
| 3. Assess hazards in the workplace | ☐ |

### What competencies are missing from this domain?

### How would you revise the competencies you selected above?

# POTENTIAL HAZARDS: Research Animals

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe hazards associated with the animal species to be handled | ☐ |
| 2. Describe hazards associated with experimentally infected animals | ☐ |
| 3. Describe possible route of exposures to personnel in relation to the animal procedures used | ☐ |
| 4. Describe control measures and work practices to mitigate the risks associated with research animals | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Identify hazards associated with the animal species to be handled | ☐ |
| 2. Same as Entry | ☐ |
| 3. Same as Entry | ☐ |
| 4. Implement control measures and work practices to mitigate risks associated with research animals | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Assess the hazards associated with the animal species to be handled | ☐ |
| 2. Assess hazards associated with experimentally infected animals | ☐ |
| 3. Assess possible routes of exposures to personnel in relation to the animal procedures used | ☐ |
| 4. Develop control measures and work practices to mitigate risks associated with research animals | ☐ |

## What competencies are missing from this domain?

## What competencies are missing from this domain?

How would you revise the competencies you selected above?

# POTENTIAL HAZARDS: Biological Agents

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry Level

| | Disagree |
|---|---|
| 1. Describe concept of biohazardous materials | ☐ |
| 1a. List biohazardous materials present in the laboratory | ☐ |
| 2. Recognize potential hazards associated with biohazardous materials handled in the laboratory | ☐ |
| 2a. Describe relationship of infectious agents and toxins to disease | ☐ |
| 2b. Describe the virulence and pathogenicity of the organisms | ☐ |
| 2c. Describe the principle routes of laboratory-acquired infections | ☐ |
| 2d. Recognize potential hazards of unknown/non routine samples | ☐ |
| 3. Recognize when biological materials should be considered for transfer to different hazard controls | ☐ |
| 4. Recognize hazards associated with different procedures | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Distinguish biohazardous from nonhazardous materials | ☐ |
| 1a. Same as Entry | ☐ |
| 2. Same as Entry | ☐ |
| 2a. Same as Entry | ☐ |
| 2b. Same as Entry | ☐ |
| 2c. Same as Entry | ☐ |
| 2d. Mitigate hazards of unknown/non routine samples | ☐ |
| 3. Apply procedures for the appropriate transfer of biological materials to different hazard controls | ☐ |
| 4. Discuss hazards associated with different procedures | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Ensure personnel's knowledge of biohazardous materials | ☐ |
| 1a. Ensure personnel have knowledge of biohazardous materials handled in the laboratory | ☐ |
| 2. Manage biohazardous materials | ☐ |
| 2a. Assess personnel's knowledge of infectious agents and toxin risk group classifications | ☐ |
| 2b. Assess personnel's knowledge of the virulence and pathogenicity of the organisms handled in the laboratory | ☐ |
| 2c. Assess personnel's knowledge of the principle routes of laboratory-acquired infections | ☐ |
| 2d. Manage mitigation of hazards of unknown/non routine samples | ☐ |
| 3. Evaluate laboratory's procedures for transfer of biological materials that require different hazard controls | ☐ |
| 4. Assess procedures for hazardous components | ☐ |

## What competencies are missing from this domain?

How would you revise the competencies you selected above?

# POTENTIAL HAZARDS: Chemical Hazards

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe hazards associated with chemicals used in laboratory procedures | ☐ |
| 1a. Explain the use of Material Safety Data Sheets and other sources of information regarding chemicals used in laboratory procedures | ☐ |
| 2. Be aware of hazard controls for chemicals used in laboratory procedures | ☐ |
| 2a. Describe PPE that should be used when handling these chemicals | ☐ |
| 2b. Explain storage and handling requirements for the hazardous chemicals | ☐ |
| 3. Describe routes of exposure to chemical hazards | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Demonstrate hazards associated with chemicals used in laboratory procedures | ☐ |
| 1a. Apply safety data and information | ☐ |
| 2. Utilize hazard controls for chemicals used in laboratory procedures | ☐ |
| 2a. Demonstrate PPE that should be used when handling these chemicals | ☐ |
| 2b. Utilize knowledge of storage and handling requirements for the hazardous chemicals | ☐ |
| 3. Identify routes of exposure to chemical hazards | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Assess hazards associated with chemicals used in laboratory procedures | ☐ |
| 1a. Develop safety data and information | ☐ |
| 2. Recommend hazard controls for chemicals used in laboratory procedures | ☐ |
| 2a. Evaluate PPE that should be used when handling these chemicals | ☐ |
| 2b. Formulate storage and handling requirements for the hazardous chemicals | ☐ |
| 3. Assess routes of exposure to chemical hazards | ☐ |

### What competencies are missing from this domain?

### How would you revise the competencies you selected above?

# POTENTIAL HAZARDS: Radiological Hazards

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Be aware of hazard controls for radiologic chemicals used in laboratory procedures | ☐ |
| 2. Explain hazards associated with radio isotopes used in laboratory procedures | ☐ |
| 3. Describe storage, handling, and inventory of radioisotopes in the laboratory | ☐ |
| 4. List potential radiologic hazards that may be encountered in the BSL 3 laboratory | ☐ |
| 5. Describe routes of exposure radiologic chemicals | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Utilize hazard controls for radiologic chemicals used in laboratory procedures | ☐ |
| 2. Identify hazards associated with radio isotopes used in laboratory procedures | ☐ |
| 3. Demonstrate knowledge of storage, handling, and inventory of radioisotopes in the laboratory | ☐ |
| 4. Identify potential radiologic hazards that may be encountered in the BSL 3 laboratory | ☐ |
| 5. Demonstrate routes of exposure to radiologic chemicals | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Evaluate hazard controls for radiologic chemicals used in laboratory procedures | ☐ |
| 2. Assess hazards associated with radio isotopes used in laboratory procedures | ☐ |
| 3. Develop procedures for storage, handling, and inventory of radioisotopes in the laboratory | ☐ |
| 4. Evaluate potential radiologic hazards that may be encountered in the BSL 3 laboratory | ☐ |
| 5. Assess information regarding routes of exposure to radiologic chemicals | ☐ |

## What competencies are missing from this domain?

## How would you revise the competencies you selected above?

# POTENTIAL HAZARDS: Physical Hazards

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe hazards and exposure controls for other materials, conditions or equipment that may be found in the laboratory (e.g., electrical, ergonomic, temperature) | ☐ |
| 2. Be aware of proper use and disposal of laboratory sharps | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Identify hazards and exposure controls for other materials, conditions or equipment that may be found in the laboratory (e.g., electrical, ergonomic, temperature) | ☐ |
| 2. Apply proper use and disposal of laboratory sharps | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Evaluate hazards and exposure controls for other materials, conditions or equipment that may be found in the laboratory (e.g., electrical, ergonomic, temperature) | ☐ |
| 2. Promote proper use and disposal of laboratory sharps | ☐ |

## What competencies are missing from this domain?

## How would you revise the competencies you selected above?

## 11. POTENTIAL HAZARDS: Other comments

### Additional Feedback

Please provide any additional feedback on the Potential Hazards skill domain below.

# HAZARD CONTROLS: Personal Protective Equipment (Primary Barrier)

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. List PPE required for general laboratory entry | ☐ |
| 2. Describe specific PPE for each laboratory procedure | ☐ |
| 3. Practice proper use of PPE | ☐ |
| 3a. Demonstrate donning and doffing sequence | ☐ |
| 3b. Describe limitations of the PPE | ☐ |
| 3c. Demonstrate cleaning/disinfection disposal/procedure | ☐ |
| 4. Assess integrity and functionality of PPE | ☐ |
| 4a. Describe pre/post-use inspection protocol | ☐ |
| 4b. Identify compromised PPE | ☐ |
| 5. Describe response to compromised PPE | ☐ |
| 5a. N/A | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Monitor availability of PPE for general laboratory entry | ☐ |
| 2. Demonstrate specific PPE required for each laboratory procedure | ☐ |
| 3. Implement proper use of PPE | ☐ |
| 3a. Same as Entry Level | ☐ |
| 3b. Same as Entry Level | ☐ |
| 3c. Implement cleaning/disinfection/disposal procedures | ☐ |
| 4. Implement assessment procedures for integrity and functionality of all PPE in use. | ☐ |
| 4a. Implement pre/post-use inspection protocols | ☐ |
| 4b. Monitor personnel's ability to identify compromised PPE | ☐ |
| 5. Implement appropriate response procedures to compromised PPE | ☐ |
| 5a. N/A | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Determine PPE required for general laboratory entry | ☐ |
| 2. Determine specific PPE required for each laboratory procedure | ☐ |
| 3. Ensure personnel's compliance with proper use of PPE | ☐ |
| 3a. Develop procedures for personnel to follow proper donning and doffing sequence | ☐ |
| 3b. Ensure personnel's knowledge of limitations of the PPE | ☐ |
| 3c. Develop cleaning/disinfection/disposal procedures | ☐ |
| 4. Establish assessment procedures for the proper integrity and functionality of PPE. | ☐ |
| 4a. Establish pre/post-use inspection protocol | ☐ |
| 4b. Ensure personnel can identify compromised PPE | ☐ |
| 5. Develop procedures for appropriate response to compromised PPE | ☐ |
| 5a. Ensure personnel's knowledge of procedures for appropriate response to compromised PPE | ☐ |

What competencies are missing from this domain?

How would you revise the competencies you selected above?

# HAZARD CONTROLS: (Facilities—Secondary Barrier) BS- 2 & BSL-3

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe facility engineering controls to prevent exposure or release from the laboratory | ☐ |
| 1a. Describe containment facility design and operation controls | ☐ |
| 1b. Describe facility safeguards that prevent accidental release of an infectious agent from the laboratory | ☐ |
| 1c. N/A | ☐ |
| 2. Recognize when facility engineering controls are compromised or not functioning properly | ☐ |
| 2a. List specific procedures that must cease | ☐ |
| 2b. Adhere to response procedures when facility engineering controls are compromised | ☐ |
| 2c. Adhere to proper reporting procedures | ☐ |
| 3. Describe process for routine monitoring of facility and facilities systems | ☐ |
| 4. Describe controlled access system (confirm in Admin. Controls domain) | ☐ |
| 5. Adhere to facility security rules (Confirm in Admin Control domain) | ☐ |
| 6. Describe facility design differences between BSL 2 and BSL 3 laboratories | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Demonstrate knowledge of facility engineering controls to prevent exposure or release from the laboratory | ☐ |
| 1a. Same as Entry | ☐ |
| 1b. Same as Entry | ☐ |
| 1c. Identify need for upgrades in engineering controls | ☐ |
| 2. Coordinate response to any compromise in facility engineering controls | ☐ |
| 2a. Same as Entry | ☐ |
| 2b. Same as Entry | ☐ |
| 2c. Same as Entry | ☐ |
| 3. Implement process for routine monitoring of facility and facilities systems | ☐ |
| 4. Same as entry level | ☐ |
| 5. Same as entry level | ☐ |
| 6. Same as entry level | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Ensure personnel's knowledge facility engineering controls to prevent exposure or release from the laboratory | ☐ |
| 1a. Ensure personnel's knowledge of containment facility design and operation controls | ☐ |
| 1b. Ensure upgrades engineering controls are appropriate | ☐ |
| 1c. Ensure facility safeguards that prevent accidental release of an infectious agent from the laboratory are functional | ☐ |
| 2. Develop response procedures to any compromise in facility engineering control | ☐ |
| 2a. Determine the specific procedures that must cease when facility engineering controls are compromised | ☐ |
| 2b. Ensure adherence to response procedures when facility engineering controls are compromised | ☐ |
| 2c. Ensure proper reporting | ☐ |
| 3. Ensure maintenance and recertification of facility and facilities systems | ☐ |
| 4. Collaborate in the development of controlled access system | ☐ |
| 5. Ensure adherence to facility security rules | ☐ |
| 6. Advise personnel on facility design differences between BSL 2 & BSL 3 laboratories | ☐ |

### What competencies are missing from this domain?

### How would you revise the competencies you selected above?

# HAZARD CONTROLS: Engineering Controls—Equipment (Primary Barriers)

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe engineering controls used in the laboratory to contain hazardous materials | ☐ |
| 2. Describe proper functioning of laboratory engineering controls | ☐ |
| 2a. Demonstrate how to use the engineering control | ☐ |
| 2b. Describe method to verify control is functioning properly | ☐ |
| 2c. Describe limitations to engineering controls | ☐ |
| 2d. Determine engineering controls inspection/certification status | ☐ |
| 2e. Recognize when engineering control is compromised, malfunctioning and non-functioning | ☐ |
| 2f. Describe procedure for reporting compromised, malfunctioning and non-functioning engineering controls | ☐ |
| 3. Adhere to appropriate work practices when using the engineering control | ☐ |
| 3a. Describe pre-use, use and post-use protocols | ☐ |
| 3b. Describe cleaning/disinfection procedure | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Monitor availability of engineering controls used to contain hazardous materials in the laboratory | ☐ |
| 2. Demonstrate proper functioning of laboratory engineering controls | ☐ |
| 2a. Same as entry | ☐ |
| 2b. Demonstrate method to verify engineering control is functioning properly | ☐ |
| 2c. Same as entry | ☐ |
| 2d. Monitor current inspection/certifications of engineering controls | ☐ |
| 2e. Implement methods that determine if engineering controls are compromised, malfunctioning or non-functioning | ☐ |
| 2f. Report improperly functioning engineering controls to senior level | ☐ |
| 3. Monitor adherence to appropriate work practices while using engineering controls | ☐ |
| 3a. Monitor adherence to pre-use, use and post-use protocols | ☐ |
| 3b. Monitor adherence to cleaning/disinfection protocols | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Determine the appropriate engineering controls needed to contain hazardous materials worked within the laboratory | ☐ |
| 2. Ensure proper functioning of laboratory engineering controls | ☐ |
| 2a. Ensure personnel's knowledge on the use of engineering controls | ☐ |
| 2b. Establish method to verify proper functioning of engineering controls | ☐ |
| 2c. Ensure personnel's knowledge on the limitations of engineering controls | ☐ |
| 2d. Ensure current inspection/certifications of engineering controls | ☐ |
| 2e. Establish response protocol to compromised, malfunctioning and non-functioning engineering controls | ☐ |
| 2f. Ensure improperly functioning engineering controls are remediated | ☐ |
| 3. Establish appropriate work practices for engineering controls | ☐ |
| 3a. Establish pre-use, use and post-use protocols | ☐ |
| 3b. Establish cleaning/disinfection protocols | ☐ |

What competencies are missing from this domain?

How would you revise the competencies you selected above?

# HAZARD CONTROLS: Decontamination & Laboratory Waste Management

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe laboratory waste segregation procedures | ☐ |
| 2. Describe laboratory waste procedures for biological materials | ☐ |
| 2a. Describe proper disposal of different types of biological waste | ☐ |
| 2b. Describe packaging procedure for transport to remote treatment location | ☐ |
| 3. Describe disinfection, decontamination and sterilization methods | ☐ |
| 3a. Describe how to prepare items for decontamination | ☐ |
| 3b. Describe proper disposal of laboratory sharps | ☐ |
| 3c. Describe proper use of any specific equipment, e.g.: autoclave, vapor phase decontamination equipment | ☐ |
| 3d. Describe process validation procedures | ☐ |
| 3e. Describe routine surface decontamination procedures | ☐ |
| 3e.i List name and proper use of surface disinfectants and chemical sterilants | ☐ |
| 4. Describe procedures for hazardous chemical waste collection and disposal | ☐ |
| 4a. Describe satellite accumulation area requirements | ☐ |
| 4b. Describe waste container labeling requirements | ☐ |
| 4c. Describe routine surface decontamination protocols | ☐ |
| 5. Describe procedures for radioactive waste collection and disposal | ☐ |
| 5a. Describe security requirements for radioactive waste | ☐ |
| 5b. Describe waste container labeling requirements | ☐ |
| 5c. Describe routine surface decontamination protocols | ☐ |
| 6. Adhere to procedures for removing equipment and instruments from the laboratory | ☐ |
| 6a. Adhere to procedures for discarding, servicing, or transferring equipment and instruments | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Implement laboratory waste segregation procedures. | ☐ |
| 2. Monitor adherence to laboratory waste management procedures for biological materials | ☐ |
| 2a. Demonstrate proper disposal of different types of biological waste | ☐ |
| 2b. Implement packaging procedures for transporting waste to remote treatment location | ☐ |
| 3. Implement disinfection, decontamination and sterilization methods | ☐ |
| 3a. Demonstrate preparation of items for decontamination | ☐ |
| 3b. Demonstrate proper disposal of laboratory sharps | ☐ |
| 3c. Implement procedures for proper use of specific equipment, e.g.: autoclave , vapor phase decontamination equipment | ☐ |
| 3d. Implement process validation procedures | ☐ |
| 3e. Implement routine surface decontamination procedures | ☐ |
| 3e.i Demonstrate proper use of surface disinfectants and chemical sterilants | ☐ |
| 4. Monitor compliance with procedures for hazardous chemical waste collection and disposal | ☐ |
| 4a. Ensure satellite accumulation area protocol followed | ☐ |
| 4b. Ensure waste containers properly labeled | ☐ |
| 4c. Implement routine surface decontamination protocols | ☐ |
| 5. Monitor compliance with procedures for radioactive waste collection and disposal | ☐ |
| 5a. Monitor radioactive waste is secured | ☐ |
| 5b. Monitor waste containers properly labeled | ☐ |
| 5c. Same as Entry Level | ☐ |
| 6. Monitor compliance with procedures for removing equipment and instruments from the laboratory | ☐ |
| 6a. Implement procedures for discarding, servicing, or transferring equipment and instruments | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Establish facility waste segregation procedures | ☐ |
| 2. Establish facility waste management procedures for biological materials | ☐ |
| 2a. Develop protocols for biological waste disposal | ☐ |
| 2b. Establish packaging procedures for transporting waste to remote treatment location | ☐ |
| 3. Establish methods of disinfection, decontamination and sterilization | ☐ |
| 3a. Ensure proper preparation of items for decontamination | ☐ |
| 3b. Ensure proper disposal of laboratory sharps | ☐ |
| 3c. Establish procedures for use of specific equipment, e.g.: autoclave, vapor phase decontamination equipment | ☐ |
| 3d. Ensure compliance with process validation procedures | ☐ |
| 3e. Establish routine surface decontamination procedures | ☐ |
| 3e.i Determine surface disinfectants and chemical sterilants to be used | ☐ |
| 4. Establish regulatory compliant procedures for hazardous chemical waste collection and disposal | ☐ |
| 4a. Establish satellite accumulation area protocols | ☐ |
| 4b. Establish waste container labeling requirements | ☐ |
| 4c. Establish routine surface decontamination protocols | ☐ |
| 5. Establish procedures for radioactive waste collection and disposal (collaborate with radiation safety professionals as needed). | ☐ |
| 5a. Establish security protocol for radioactive waste | ☐ |
| 5b. Establish waste container labeling requirements | ☐ |
| 5c. Same as Entry Level | ☐ |
| 6. Establish procedures for removing equipment and instruments from the laboratory | ☐ |
| 6a. Establish procedures for discarding, servicing, or transferring equipment and instruments | ☐ |

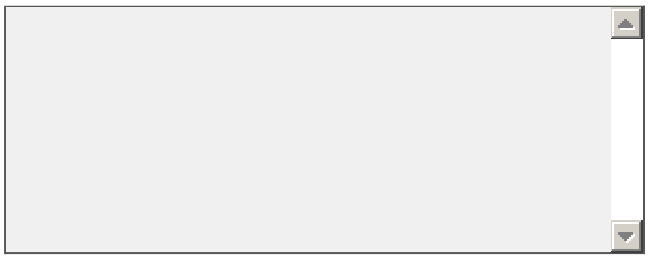
## What competencies are missing from this domain?

How would you revise the competencies you selected above?

## 16. HAZARD CONTROLS: Other comments

### Additional Feedback

Please provide any additional feedback on the Hazard Controls skill domain below.



# ADMINISTRATIVE CONTROLS: Hazard communication and signage

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Explain safety signs, labels and posted information | ☐ |
| 1a. Adhere to safety signs, labels and posted information | ☐ |
| 1b. N/A | ☐ |
| 2. Describe labeling of samples, containers and cultures according to appropriate regulatory requirements | ☐ |
| 3. Describe process to communicate sample-specific hazard information according to SOP | ☐ |
| 3a. N/A | ☐ |
| 3b. Describe procedures to identify hazardous infectious agents in the laboratory | ☐ |
| 4. Describe communication processes for applicable regulatory requirements | ☐ |
| 5. Describe methods of internal communication (BSL 3 & 4 only) | ☐ |
| 6. Recognize signals & alarms | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Implement safety signs, labels and posted information | ☐ |
| 1a. Monitor adherence to safety signs, labels and posted information | ☐ |
| 1b. N/A | ☐ |
| 2. Implement labeling of samples, containers and cultures according to appropriate regulatory requirements | ☐ |
| 3. Implement process to communicate sample-specific hazard information according to SOP | ☐ |
| 3a. Convey information regarding potential infectious agents in non-routine specimens brought into the laboratory | ☐ |
| 3b. Apply procedures to identify hazardous infectious agents in the laboratory | ☐ |
| 4. Implement communication processes for applicable regulatory requirements | ☐ |
| 5. Demonstrate methods of internal communication | ☐ |
| 6. Explain signals and alarms | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Determine required safety signs, labels and posted information | ☐ |
| 1a. Ensure adherence to safety signs, labels and posted information | ☐ |
| 1b. Evaluate effectiveness of safety signs, labels and posted information | ☐ |
| 2. Ensure the implementation of labeling of samples, containers, and cultures is compliant with appropriate regulatory requirements | ☐ |
| 3. Develop procedures to communicate sample-specific hazard information according to SOP | ☐ |
| 3a. Advise laboratory staff regarding potential infectious agents in non-routine specimens brought into the laboratory | ☐ |
| 3b. Ensure personnel's knowledge | ☐ |
| 4. Ensure personnel's knowledge communication processes for applicable regulatory requirements | ☐ |
| 5. Ensure personnel's knowledge of internal communication methods | ☐ |
| 6. Ensure personnel's knowledge of signals and alarms | ☐ |

## What competencies are missing from this domain?

How would you revise the competencies you selected above?

# ADMINISTRATIVE CONTROLS: Guideline and regulation compliance

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe regulatory requirements and applicable guidelines that govern appropriate laboratory procedures | ☐ |
| 1a. Adhere to procedures of the records management system | ☐ |
| 1b. Adhere to applicable guidelines and regulations for laboratory procedures | ☐ |
| 2. Follow laboratory manuals and plans | ☐ |
| 2a. Identify location of required laboratory manuals and plans | ☐ |
| 2b. N/A | ☐ |
| 3. Describe applicable institutional committees | ☐ |
| 3a. N/A | ☐ |
| 4. Adhere to security requirements | ☐ |
| 5. Be aware of communication processes for applicable regulatory requirements | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Implement regulatory requirements and applicable guidelines | ☐ |
| 1a. Implement the records management system | ☐ |
| 1b. Implement applicable guidelines and regulations for laboratory procedures | ☐ |
| 2. Apply laboratory manuals and plans | ☐ |
| 2a. Same as entry | ☐ |
| 2b. N/A | ☐ |
| 3. Describe applicable institutional committees | ☐ |
| 3a. N/A | ☐ |
| 4. Implement security requirements | ☐ |
| 5. Practice communication processes in compliance with regulatory requirements | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Ensure personnel has knowledge of regulatory requirements and applicable guidelines | ☐ |
| 1a. Develop the records management system | ☐ |
| 1b. Ensure compliance with applicable guidelines and regulations for laboratory procedures | ☐ |
| 2. Develop laboratory manuals and plans to comply with regulatory requirements and applicable guidelines | ☐ |
| 2a. Same as Entry | ☐ |
| 2b. Ensure manuals and plans are current | ☐ |
| 3. Ensure compliance with applicable institutional committee requirements | ☐ |
| 3a. Communicate with applicable institutional committees | ☐ |
| 4. Ensure compliance with security requirements | ☐ |
| 5. Advise regarding regulatory communications requirements | ☐ |

## What competencies are missing from this domain?

How would you revise the competencies you selected above?

# ADMINISTRATIVE CONTROLS: Safety program management

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Comply with institution's safety program | ☐ |
| 1a. Adhere to work practice requirements | ☐ |
| 1b. Adhere to safety practices and SOPs | ☐ |
| 1c. Describe safety information resources | ☐ |
| 1d. Describe occupational health plan | ☐ |
| 2. Complete required safety training | ☐ |
| 2a. N/A | ☐ |
| 2b. N/A | ☐ |
| 2c. N/A | ☐ |
| 3. Describe routine monitoring process of equipment and facilities | ☐ |
| 4. Recognize deviations from normal operations and procedures | ☐ |
| 4a. Recognize unsafe work practices and conditions | ☐ |
| 5. Describe the Quality Assurance program | ☐ |
| 6. Describe records management system | ☐ |
| 7. Describe occupational health plan | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Implement institution's safety program | ☐ |
| 1a. Apply work practice requirements | ☐ |
| 1b. Monitor compliance with safety practices and SOPs | ☐ |
| 1c. Same as Entry Level | ☐ |
| 1d. Monitor compliance with occupational health plan | ☐ |
| 2. Monitor site specific safety training program | ☐ |
| 2a. Monitor that required safety training is completed | ☐ |
| 2b. Mentor introductory staff on established safety procedures | ☐ |
| 2c. N/A | ☐ |
| 3. Implement routine monitoring process of equipment and facilities | ☐ |
| 4. Investigate deviations from normal operations and procedures | ☐ |
| 4a. Implement reporting of unsafe work practices and conditions | ☐ |
| 5. Implement Quality Assurance Program | ☐ |
| 6. Implement records management system | ☐ |
| 7. Implement occupational health plan | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Collaborate in the development of the institution's safety program | ☐ |
| 1a. Determine work practice requirements | ☐ |
| 1b. Ensure compliance with safety practices and SOPs | ☐ |
| 1c. Ensure access to safety information resources | ☐ |
| 1d. Ensure compliance with occupational health plan | ☐ |
| 2. Develop site specific safety training program | ☐ |
| 2a. Ensure compliance with safety training requirements | ☐ |
| 2b. Develop mentoring program on established safety procedures | ☐ |
| 2c. Assess effectiveness of training program | ☐ |
| 3. Develop procedures for routine monitoring of equipment and facilities | ☐ |
| 4. Resolve investigation of deviations from normal operations and procedures | ☐ |
| 4a. Assess response to unsafe work practices and conditions | ☐ |
| 5. Develop Quality Assurance Program | ☐ |
| 6. Develop records management system | ☐ |
| 7. Develop occupational health plan | ☐ |

### What competencies are missing from this domain?

### How would you revise the competencies you selected above?

# ADMINISTRATIVE CONTROLS: Medical Surveillance

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe the medical surveillance plan | ☐ |
| 1a.N/A | ☐ |
| 2. Describe the benefits for monitoring personal health status changes | ☐ |
| 2a. Describe how to report personal health status changes | ☐ |
| 3. Describe incident exposure reporting procedures | ☐ |
| 3a. Describe signs and symptoms following incident exposure | ☐ |
| 3b. N/A | ☐ |
| 4. Recall signs and symptoms in humans following exposure to hazardous materials | ☐ |
| 4a. N/A | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Implement the medical surveillance plan | ☐ |
| 1a. N/A | ☐ |
| 2. Same as Entry Level | ☐ |
| 2a. Same as entry level | ☐ |
| 3. Implement incident exposure reporting procedures | ☐ |
| 3a. Same as entry | ☐ |
| 3b. Illustrate what signs and symptoms to look for in humans following exposure to specific hazardous materials | ☐ |
| 4. Describe signs and symptoms following exposure to hazardous materials | ☐ |
| 4a. Initiate the intervention for a person demonstrating symptoms apparently due to exposure | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Collaborate in the development of the medical surveillance plan | ☐ |
| 1a. Complete periodic assessment of medical surveillance plan | ☐ |
| 2. Ensure personnel's knowledge of the benefits for monitoring personal health status changes | ☐ |
| 2a. Ensure personnel's knowledge on procedures to report personal health status changes | ☐ |
| 3. Collaborate in the development of incident exposure reporting procedures | ☐ |
| 3a. Develop intervention procedures for incident exposures | ☐ |
| 3b. List infectious disease experts to be contacted in event of an accidental exposure | ☐ |
| 4. Ensure personnel's knowledge of signs and symptoms following exposure to hazardous materials | ☐ |
| 4a. Ensure the intervention for a person demonstrating symptoms apparently due to exposure | ☐ |

## What competencies are missing from this domain?

How would you revise the competencies you selected above?

# ADMINISTRATIVE CONTROLS: Risk Assessment

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Demonstrate knowledge of risk assessment | ☐ |
| 2. Demonstrate knowledge of the risk assessment process | ☐ |
| 2a. Recognize potential hazards associated with samples and specimens | ☐ |
| 2b. Participate in a job hazard analysis | ☐ |
| 2c. N/A | ☐ |
| 2d. N/A | ☐ |
| 3. Demonstrate knowledge of risk reduction methods | ☐ |
| 3a. Utilize engineering controls | ☐ |
| 3b. Recognize procedures that minimize risks associated with laboratory hazards | ☐ |
| 4. Demonstrate compliance with new procedures | ☐ |
| 5. N/A | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Same as Entry Level | ☐ |
| 2. Perform a risk assessment | ☐ |
| 2a. Define potential hazards associated with laboratory materials and procedures | ☐ |
| 2b. Perform a job hazard analysis | ☐ |
| 2c. Recognize changes in procedures or scientific data that may require a risk assessment | ☐ |
| 2d. Communicate need for risk assessment to senior level | ☐ |
| 3. Implement risk reduction methods | ☐ |
| 3a. Describe engineering controls that reduce risk | ☐ |
| 3b. Describe procedures that reduce risk | ☐ |
| 4. Implement new procedures based on risk assessment | ☐ |
| 5. N/A | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Ensure personnel's knowledge of the concept of risk assessment | ☐ |
| 2. Ensure risk assessment performed in accordance with institutional policy | ☐ |
| 2a. Ensure potential hazards associated with laboratory materials and procedures are identified | ☐ |
| 2b. Approve a job hazard analysis | ☐ |
| 2c. Evaluate changes in procedures or scientific data that may require a risk assessment | ☐ |
| 2d. Monitor need for risk | ☐ |
| 3. Determine risk reduction methods | ☐ |
| 3a. Identify engineering controls that reduce risk | ☐ |
| 3b. Identify procedures that reduce risk | ☐ |
| 4. Ensure implementation of new procedures in reducing risk | ☐ |
| 5. Assess effectiveness of new procedures in reducing risk | ☐ |

What competencies are missing from this domain?

How would you revise the competencies you selected above?

# ADMINISTRATIVE CONTROLS: Risk associated with laboratory procedures

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Recognize potential unsafe work practices and conditions | ☐ |
| 2. Describe safe work practices and conditions | ☐ |
| 3. Recognize potential tasks within the laboratory's biosafety level that have exposure hazards | ☐ |
| 3a. N/A | ☐ |
| 4. Define differences in work practices between biosafety levels | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Resolve unsafe work practices and conditions | ☐ |
| 2. Implement safe work practices and conditions | ☐ |
| 3. Identify specific tasks within the laboratory's biosafety level that have exposure hazards | ☐ |
| 3a. N/A | ☐ |
| 4. Demonstrate knowledge of the differences in work practices between biosafety levels | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Ensure the recognition and resolution of unsafe work practices and conditions | ☐ |
| 2. Ensure safe work practices and conditions | ☐ |
| 3. Ensure the identification of specific tasks within the laboratory's biosafety level that have exposure hazards | ☐ |
| 3a. Assess the need for enrollment in the medical surveillance program | ☐ |
| 4. Ensure personnel's knowledge in the differences in work practices between biosafety levels | ☐ |

What competencies are missing from this domain?

How would you revise the competencies you selected above?

## 23. ADMINISTRATIVE CONTROLS: Other comments

### Additional Feedback

Please provide any additional feedback on the Administrative Controls skill domain below.

# EMERGENCY PREPAREDNESS AND RESPONSE: Emergencies and Incident Response

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Recognize emergencies and other incidents that need to be reported | ☐ |
| 1a. Recognize significance of alarms | ☐ |
| 2. Describe reporting requirements for emergencies and other incidents according to institutional plans and policies | ☐ |
| 3. Describe assigned role in responding to emergencies, and other incidents | ☐ |
| 3a. Recall emergency response plan | ☐ |
| 3b. Describe emergency disinfection/exposure prevention procedures | ☐ |
| 3c. Describe procedures for responding to spills | ☐ |
| 3d. Describe emergency evacuation routes and assembly areas | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Same as Entry Level | ☐ |
| 1a. Same as Entry | ☐ |
| 2. Implement institutional plans and policies for reporting emergencies and other incidents | ☐ |
| 3. Implement required response actions for emergencies and other incidents | ☐ |
| 3a. Same as Entry Level | ☐ |
| 3b. Same as Entry Level | ☐ |
| 3c. Same as Entry Level | ☐ |
| 3d. Same as Entry Level | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Ensure personnel's ability to recognize emergencies and other incidents that need to be reported | ☐ |
| 1a. Ensure personnel's knowledge of alarm significance | ☐ |
| 2. Collaborate with appropriate individuals to develop plans and policies for reporting emergencies and other incidents | ☐ |
| 3. Develop procedures to respond to emergencies and other incidents according to institutional plans and policies | ☐ |
| 3a. Collaborate in developing emergency response plans | ☐ |
| 3b. Ensure that emergency disinfection/exposure prevention procedures are performed | ☐ |
| 3c. Ensure proper response to spills | ☐ |
| 3d. Ensure personnel's knowledge of emergency evacuation routes and assembly areas | ☐ |

## What competencies are missing from this domain?

How would you revise the competencies you selected above?

# EMERGENCY PREPAREDNESS AND RESPONSE: Exposure prevention and hazard mitigation

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Describe laboratory's incident follow-up process | ☐ |
| 1a. NA | ☐ |
| 1b. Describe role in investigation process | ☐ |
| 1c. NA | ☐ |
| 1d. Adhere to Action Plan | ☐ |
| 1e. NA | ☐ |
| 2. N/A | ☐ |
| 2a. N/A | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Describe laboratory's incident follow-up process | ☐ |
| 1a. NA | ☐ |
| 1b. Describe role in investigation process | ☐ |
| 1c. NA | ☐ |
| 1d. Implement Action Plan | ☐ |
| 1e. NA | ☐ |
| 2. Report effectiveness of response SOPs to senior level | ☐ |
| 2a. N/A | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Develop laboratory's incident follow-up process. | ☐ |
| 1a. Review incident report | ☐ |
| 1b. Initiate investigation process | ☐ |
| 1c. Conduct root cause analysis | ☐ |
| 1d. Develop Action Plan to mitigate root causes | ☐ |
| 1e. Assess effectiveness of Action Plan | ☐ |
| 2. Determine effectiveness of SOPs used during response to incident | ☐ |
| 2a. Update response SOPs using lessons-learned | ☐ |

### What competencies are missing from this domain?

### How would you revise the competencies you selected above?

# EMERGENCY PREPAREDNESS AND RESPONSE: Exposure prevention and hazard mitigation

* Do you agree with *all* of the competencies below?

- ◯ Yes—please proceed to next page
- ◯ No—please indicate which ones you disagree with and comment below

## Entry level

| | Disagree |
|---|---|
| 1. Comply with personnel emergency response training requirements | ☐ |
| 1a. Participate in entry level personnel training | ☐ |
| 1b.N/A | ☐ |
| 1c. N/A | ☐ |
| 2. Participate in drills and exercises for laboratory personnel | ☐ |
| 2a. N/A | ☐ |
| 2b. N/A | ☐ |

## Mid level

| | Disagree |
|---|---|
| 1. Conduct required emergency response training of laboratory personnel | ☐ |
| 1a. Demonstrate ability to train entry level staff | ☐ |
| 1b. N/A | ☐ |
| 1c. N/A | ☐ |
| 2. Conduct drills and exercises for laboratory personnel | ☐ |
| 2a. N/A | ☐ |
| 2b. N/A | ☐ |

## Senior level

| | Disagree |
|---|---|
| 1. Develop required emergency response training | ☐ |
| 1a. Evaluate ability of mid level staff to train all laboratory personnel | ☐ |
| 1b. Ensure adherence to laboratory's emergency response training requirements | ☐ |
| 1c. Evaluate effectiveness of the laboratory's emergency response training | ☐ |
| 2. Advise on development of drills and exercises for laboratory personnel | ☐ |
| 2a. Assess effectiveness of drills & exercises | ☐ |
| 2b. Incorporate lessons learned into training program | ☐ |

### What competencies are missing from this domain?

### How would you revise the competencies you selected above?

## 27. EMERGENCY PREPAREDNESS & RESPONSE: Other comments

### Additional Feedback

Please provide any additional feedback on the Emergency Preparedness and Response skill domain below.

## 28. Thank you

# Thank you

Thank you again for providing feedback on these competencies. If you have any further questions, please contact Kajari Shah, Senior Specialist, National Center for Public Health Laboratory Leadership, at 704.844.2030 or kajari.shah@aphl.org.