SAND2012-2435P

Course:

Personal Protective Equipment

Design Document

Developed by Eric Cook, MPH, CBSP

Sandia National Laboratories

International

BIOLOGICAL THREAT REDUCTION

BIOSECURITY ENGAGEMENT PROGRAM

CBEP

Cooperative Biological Engagement Program

Course Description

Overview

Personal Protective Equipment (PPE) is designed for lab workers who use PPE and those who may be responsible for selection and purchase of PPE. Students will discover the various options for PPE and how it is used to prevent exposures in both day to day setting and emergency procedures. Participants will gain an understanding of how to properly use PPE and develop measures for checking, maintaining, donning and doffing PPE.

Scope

This course will provide awareness of various kinds of PPE and a general overview of principles used to select appropriate PPE, and circumstances how and where they may be used. Participants will have some hands on practice with some limited examples of PPE. This course will NOT provide details on every type of PPE and options for use, nor will this training cover the specifics of how to use, decontaminate, remove, or maintain specific PPE.

Learning Level

based on Bloom's taxonomy

- ✓ knowledge
- ✓ comprehension
- ✓ application
- synthesis
- evaluation

Length of Course

4 hours

Course Objectives

At the end of this course, students will be able to:

Organizational Objectives

- Apply control measures, specifically PPE to mitigate risk of exposure to or release of biological agents and toxins

Instructional Objectives

- Define, give examples, and demonstrate key features, functions, and proper operations and maintenance of PPE.
- Describe which types of PPE are appropriate for different settings and risk levels.
- Understand the limitations of PPE.
- Write an example lab procedure that includes the use and maintenance of PPE for that procedure.

Personal Objectives

Know

- What PPE is and what each type of PPE is used for.
- Which types of PPE are appropriate for different settings and risk levels.
- Specific procedures for use and maintenance.
- How to integrate the use of PPE into current laboratory procedures.

Feel

- Confident that suitable PPE has been chosen for laboratory procedures and activities.

- Confident that proper use and maintenance is understood by all those in the laboratory.

Do

- Demonstrate different types and uses of PPE.
- Write laboratory procedures that include the use and maintenance of PPE appropriate to that procedure.

Key Messages

1. Understand why PPE is one of the key controls to mitigate biorisks but in the last level in the "Hierarchy of Controls" for several reasons.
2. There are many types/kinds of PPE with various advantages and limitations
3. The selection of PPE is based on several factors but most importantly on a thorough risk assessment.
4. It is important to plan the order of donning and doffing PPE and follow that plan to reduce risk.

Evaluation Strategy

Level 1 (satisfaction):	Students will complete a satisfaction survey about their experience with the course
Level 2 (learning):	Students will use a provided template to complete an SOP for PPE use that will be reviewed by fellow participants and the course instructor.
Level 3 (behavior):	A survey will be sent to the students to determine their use of the SOP and "baseball" card learning aids developed during this course. A metric of how many additional PPE-related SOPs they have developed will also be determined.
Level 4 (organizational change):	Annual training needs assessment will be performed at least annually and will compared to the baseline assessment to determine improvements in biorisk management, specifically PPE performance.

Student Description (for course design purposes)

Number of students: 10 to 25; small groups of 5 people each

Biorisk Management Role:

Policy Makers
Top Management
✓ Biorisk Management Advisors/Advocates
✓ Scientific/Lab Management
✓ Lab Workforce

Audience Assumptions:

(assumed range is indicated by shaded cells)

		Novice		Practi-tioner		Expert
Education	Scientific	1	2	3	4	5
	BRM*	1	2	3	4	5
Expertise	Scientific	1	2	3	4	5
	BRM	1	2	3	4	5
Competence	Scientific	1	2	3	4	5
	BRM	1	2	3	4	5
BRM = "biorisk management". See definitions for terms in Resources section						

Language of instruction; translation or interpretation anticipated:

English (for design purposes)

Prerequisites

- Orientation to Biorisk Management
- Bioethics
- Developing, Performing, and Documenting a Biorisk Assessments
- Developing, Evaluating, Validating and Communicating Standard Operating Procedures
- Biorisk Mitigation Strategies

Pre- or post-work required for completion

None

Certificates or documents of completion:

Certificates of completion will be provided

Preparation for future coursework

Anticipated next steps

This course is part of the Laboratory-Level Track in the GBRMC. The student may still be required to attend other courses, depending on the local training needs assessment and other subject matter experts (SME) recommendations.

Instructional Environment

Number of Instructors/Staff required:

TBD depending on number of students – optimal ratio is 1 instructor per no more than 12 students

Instructor Qualifications:

Instructors must have completed the Global Biorisk Management Curriculum (GBRMC) orientation, including this course, and be enrolled in the GBRMC training network.

Learning Environment

Media:	Instructor-led

Exercises & Activities

Experience (Activists)	Students will be asked to consider their experiences using PPE as well as complete a PPE standard operating procedure (SOP).
Reflection (Reflectors)	Students will be asked to reflect on their experiences using PPE and use this information, working in small groups, to create a SOP specific to PPE.
Models (Theorists)	Students will be asked to model a variety of scenarios in which particular PPE would be useful.
Practice (Pragmatists)	Students will participate in a game to identify different kinds of PPE in which they will create PPE "trading" cards. The game simulates real-world scenarios in which PPE use is applied.

On-Site Specifics

Location	TBD
Room organization	Clusters of tables to facilitate small group (no more than 5 students per group)
Dress code and/or important cultural considerations	TBD

Instructional Materials

Equipment & Supplies	Flip Charts, post-it notes, 4x6 cards (used to make their own PPE trading cards); PPE SOP templates. Two additional alternatives for the 4x6 cards: instructor can be prepared with pre-printed PPE trading cards (glossy/laminated); and/or participants can create posters using the flip charts.
Student Handouts	Student notes Glossary CWA 15793 PPE SOP template

Resources

Dependencies	CBEP PPE SOP BTRP PPE Training (see LouAnn) IBTR Controlling Biorisks
Authorities	BMBL WHO LBM

References

CWA 15793
CEN WS 55, 53
WHO Laboratory Biosafety Manual
NIH/CDC BMBL
Glossary of terms (in development)

Terms used in this document

- Knowledge – remembering the material in the same form as it was taught
- Comprehension – student's ability to understand the material by (for example) explaining or summarizing key messages
- Application – ability to use the material in a new or given situation
- Synthesis – ability to put together learning material in a new whole entirety. For example, using the material to create a new program or plan.
- Evaluation – ability to judge the value of the material presented as a peer (to be able to critically advise or judge others on their application and synthesis of this learning material).
- Novice – a person who is new to the circumstances, work, etc. in which s/he is placed; beginner
- Practitioner – a person engaged in the practice of a profession; a person who practices something specified
- Expert – a person who has special skill or knowledge in some particular field; specialist; authority; trained by practice
- Education – the act of acquiring particular knowledge or skills, as for a profession
- Expertise – the process of personally observing, encountering or undergoing something; knowledge or practical wisdom gained from what one has observed, encountered, or undergone
- Competence – Possession of a suitable or sufficient skill, knowledge, experience, etc. for some specified purpose; properly qualified

Part II: Course Outline/Schedule							
Day	**Segment time (min)**	**Time**	**Topic**	**Instructional Method**	**Slide #**	**KM #**	**T/F**
			Pre-Work	None			
	10	00:00	Welcome & Introductions				T/F
	30	00:10	Review: Hierarchy of controls; routes of transmission; advantages/limitations of PPE	Instructor presentation; individual reflection (worksheet); class activity			T/F
	10	00:40	Why use PPE?	Plenary discussion			F
	20	00:50	Different kinds of PPE and what it protects against	Small group activity (game to list as many as possible)			F
	10	01:10	BREAK				
	70	01:20	Creation of PPE trading cards	Small group activity; plenary discussion		1	F
	10	02:30	BREAK				
	70	02:40	Selecting appropriate PPE; factors to consider	Small groups with individual scenarios; plenary discussion		1	F
	10	03:50	BREAK				
	15	04:00	Donning and doffing order	Small groups working on a single scenario		1	F
	45	04:15	Review and Creating a PPE SOP	What? So what? Now what? Continuation from scenarios above using a template			F
KM = key messages ; T/F = teaching versus facilitation (instructor-based versus student-based)							