SAND2012-10457P

Course:

Good Laboratory Work Practices

Design Document

Sandia National Laboratories
International
BIOLOGICAL THREAT REDUCTION

BEP

CBEP
Cooperative Biological Engagement Program

Part I: Course Overview

Course Description

Overview

Good laboratory work practices is a course designed to introduce students to some of the practices and procedures that have been shown to reduce or mitigate biorisk. It should follow be coupled with other risk mitigation courses such as PPE and Engineering Controls. It is intended to follow after the general Risk Mitigation module.

Scope

This course will draw knowledge and awareness of some good laboratory work practices. It does not cover all the possible practices and uses facilitated learning activities to draw out student's knowledge of good practices and common sense. It reinforces concepts learned in the Risk Mitigation course.

Learning Level
based on
Bloom's taxonomy

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

Length of Course

2.5 hours

Course Objectives

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

Organizational Objectives

- Be able to identify Good laboratory work practices, and explain why they are "good".
- Be able to explain the importance of following proper procedure and how to get people to follow them.

Instructional Objectives

- Demonstrate proper work practices, per lab-specific SOPs.
- Recognize potential unsafe work practices and conditions
- Describe safe work practices and conditions
- Recognize potential tasks within the laboratory's biosafety level that have exposure hazards
- List some general safety rules
- Be able to explain the importance of following proper procedures.

Personal Objectives

Know

- Some common good laboratory work practices
- Why some laboratory practices are better than others
- How to perform a risk assessment to determine if a GLWP is good or not

Feel	• Confident mitigating biorisk by implementing GLWPs
Do	• Be able to recognize potential unsafe work practices and conditions • Wash hands properly
Key Messages	1. Good laboratory work practices are techniques and methods of doing work in the laboratory that reduce biorisk 2. Good laboratory work practices not only reduce risk but also promote better research; more accurate results; and better data. 3. GLWP can be enforced/promoted through various mitigation controls

Evaluation Strategy

Level 1 (satisfaction):	Students will complete a satisfaction survey about their experience with the course
Level 2 (learning):	Students will complete a "learning contract" for the next steps needed to begin biorisk management implementation
Level 3 (behavior):	Desired behavior is for students to participate in additional learning opportunities on BRM – this behavior will be evaluated three to six months post-training and may encompass additional training courses
Level 4 (organizational change):	A repeat of the training needs assessment will be performed at least annually – this annual assessment can be compared to the baseline assessment to determine improvements in biorisk management performance

Learner 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
- ✓ 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	None
Pre- or post-work required for completion	None
Certificates or documents of completion:	Certificates of completion will be provided
Preparation for future coursework	This course is a pre-requisite for all other courses in the biorisk management curriculum
Anticipated next steps	Students will participate in either the management & leadership, advice & advocacy, or skills & competency biorisk management tracks, as defined by the local training needs assessment and other SME recommendations.

Instructional Environment

Number of Instructors/Staff required:	TBD depending on number of students – optimal ratio is 1 trainer per no more than 12 students
Trainer Qualifications:	Instructors must have completed BRM Curriculum Orientation, which includes this course, and be enrolled in the BRM training network.

Learning Environment

Media:	Instructor-led
Exercises & Activities	
Experience (Activists)	Students will be asked to consider their experiences with their work in regard how good laboratory work practices help promote biosafety and biosecurity.
Reflection (Reflectors)	Students will be asked to reflect on those experiences to help develop a list of good laboratory work practices and how those practices are implemented at their institution.
Models (Theorists)	Students will be introduced, through their own experiences and reflections, to model how various mitigation control measures can be used to promote good laboratory work practices.
Practice (Pragmatists)	Students will be given the opportunity to analyze scenarios and pictures that highlight poor laboratory work practices and make suggestions for good laboratory work practices.

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	Powerpoint files (lectures) Facilitator notes Student handouts/notes pages Course evaluation forms Large flip charts Markers (enough for up to 5 groups plus trainer(s)) 6 x 8 inch sticky notes (no lines) Pens

	Laptop computer with PowerPoint files loaded Projector Easels (x ~5) Name tags
Student Handouts	Course agenda and schedule Student notes Glossary CWA 15793

Resources

Dependencies	WHO Biorisk Management course
Authorities	
References	CWA 15793 CEN WS 55, 53 WHO Laboratory Biosafety Manual Laboratory Biosecurity Handbook IBTR Training – Information Security and MC&A (SAND No. 2004-4555P, SAND No. 2005-3288 C) DTRA BSL-2 Training – Hazard Crtieria and Categorization DTRA BSL-3 Training – Bioethics and Biosecurity CDC/WHO Laboratory Quality Management System Training Toolkit Biosecurity Plan template (in development) 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
	25	00:00	Welcome & Introductions	Lecture, student introductions, course objectives discussion	1-4		T/F
	20	00:25	Biorisk Management	Lecture	5-8		T
	35	00:45	Considering Good laboratory work practices	Plenary discussion, small group activities	9-14	1-3	F
	15	01:20	Encouraging and Enforcing Good Lab Practices	Lecture	15-17	2	T
	10	01:35	BREAK				
	45	01:25	Examples: Poor Laboratory Practices	Plenary discussion	18-26	1	F
	20	02:10	Review	Lecture, plenary discussion	27-31		T/F
		02:30	End of Course				

KM = key messages ; T/F = teaching versus facilitation (instructor-based versus learner-based)