SAND2012-10540P

Measurement and Analysis of Biorisk Management System Performance

Design Document

Sandia National Laboratories
International
BIOLOGICAL THREAT REDUCTION

BEP

CBEP
Cooperative Biological Engagement Program

Part I: Course Overview

Course Description

Overview

Measurement and Analysis of Biorisk Management System Performance reviews key principles of biorisk management and specifically what defines biorisk management system performance. Through guided discussion and interactive exercise, students will explore how to plan to measure biorisk management performance and what some performance measurement methods might be.

Scope

This course is introductory in nature and is designed to establish key principles of biorisk management performance and to begin to explore how to measure performance. Establishing and using performance indicators, how to evaluate the results of performance measurement, and making improvements to the biorisk management system based on performance measurement are outlined in more detail in additional courses.

Learning Level
based on
Bloom's taxonomy

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

Length of Course

5 hours

Course Objectives

At the end of this Course, Students will be able to:

Organizational Objectives

- Identify the key principles of biorisk management

Instructional Objectives

- Define BRM performance system (i.e. indicators and metrics)
- Assess BRM performances and methods
- Plan a performance measurement
- Explain the importance BRM performance measurements

Personal Objectives

Know

- Define "performance" in biorisk management system context.
- CWA 15793 requirements that are most relevant to performance evaluation
- The connection between performance evaluation and the PDCA cycle for biorisk management.
- Definitions for performance indicators and metrics

- Various performance evaluation methods
- How to plan a performance measurement program.

Feel

- Capable of describing why measuring biorisk management performance is important
- Confident in leading and supporting initiatives to develop organization-specific biorisk management performance measurements

Do

- Explain why biorisk management performance measurements are important
- Defining next steps for more fully establishing, using, and evaluating biorisk management performance measurement

Key Messages

1. The only way to document effective performance is to measure it
2. A measurement is not necessarily a number
3. A biorisk management system is described by CWA 15793:2011 and therefore it is important to refer to this document while defining what measurements of performance are important.
4. Performance can be measured by looking at both activities and outcomes of a biorisk management system
5. Establishing performance indicators must occur during planning objectives, roles, and responsibilities
6. Many opportunities for performance measurements are already integrated and established in current practices.

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

Orientation to Biorisk Management

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

Students will participate in learning tracks, as defined by the local training needs assessment and other subject matter expert (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 course.
Exercises & Activities	
Experience (Activists)	Students will be asked to consider their experiences in regard to measuring and analyzing BRM system performance and if any of their past experiences in planning and measuring BRM performance and its method.
Reflection (Reflectors)	Students will be asked to reflect on those experiences to help develop a model to measure BRM system performance, and evaluate the results.
Models (Theorists)	Students will be introduced to a working model of a biorisk management performance and work through the components of the model (i.e. measuring and evaluating the methods).
Practice (Pragmatists)	Students will be given exercises to explore how to measure biorisk management performance by establishing and using performance indicators to evaluate the results.

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	Large flip charts Markers (enough for up to 5 groups plus instructor(s)) 6 x 8 inch multicolor Post-it notes (no lines) Student binders (1" or less) and tabs

	Pens Laptop computer with PowerPoint files loaded Projector Easels (x ~6) Name tags/lanyards or placards Certificates Notepads PowerPoint files Facilitator notes Student handouts/notes pages Course evaluation forms Reference materials (WHO LBM and Biorisk Management Guidance, SNL Lab Biosecurity handbook, CWA 15793:2008 and CWA guidance documents)
Student Handouts	Course agenda and schedule Student notes Glossary CWA 15793

Resources

Dependencies	
Authorities	
References	CWA 15793 CEN WS 55, 53 WHO Laboratory Biosafety Manual Laboratory Biosecurity Handbook 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**
	00:00	20	Welcome & Introductions	Lecture, student introductions, course objectives discussion	1-6		T/F
	00:20	15	Biorisk Management Touchstone	Lecture	7-10		T
	00:35	25	Review of Key Principles of Biorisk Management	Lecture	11-23		T
	01:00	10	BREAK				
	01:10	60	Introduction to BRM Performance	Small group activities, plenary discussion, lecture	24-38	1-3	T/F
	02:10	60	BREAK				
	03:10	70	Planning for Biorisk Management Performance Measurement	Small group activities, plenary discussion, lecture	39-48	4-6	T/F
	03:20	10	BREAK				
	03:30	60	BRM Performance Measurement Methods	Lecture, plenary discussion	49-64	4-6	T/F
	04:30	10	BREAK				
	04:40	20	Review & Wrap-Up	Lecture, plenary discussion	65-71		T/F
	05:00		End of Course				
KM = key messages ; T/F = teaching versus facilitation (instructor-based versus learner-based)							