



MIDWEST RESEARCH INSTITUTE

**Application of a Standardized Approach to
Biological Safety Training**

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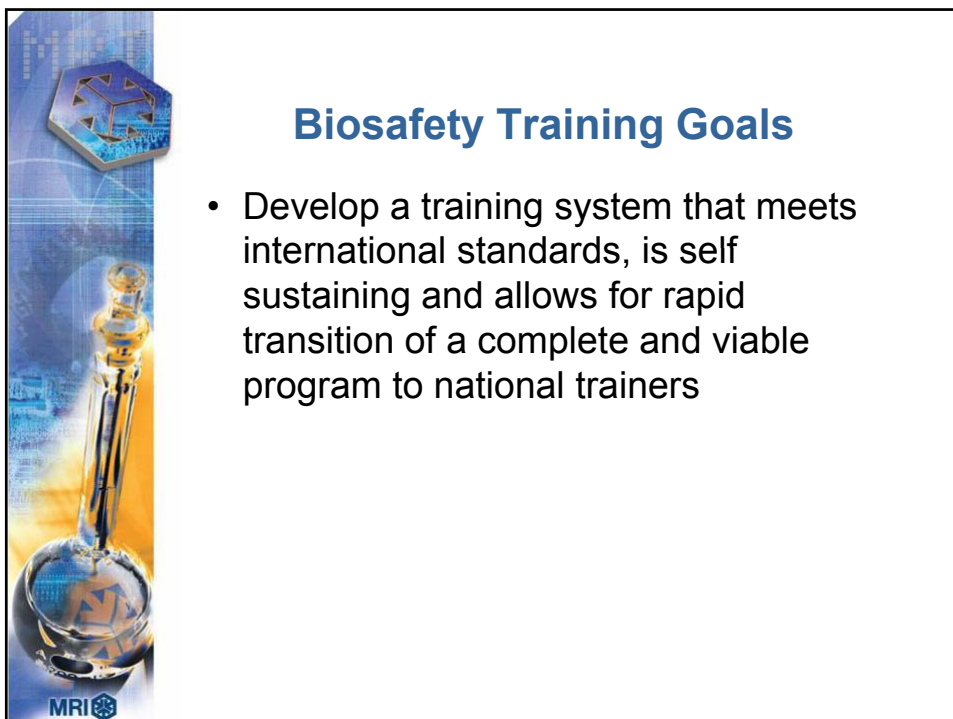
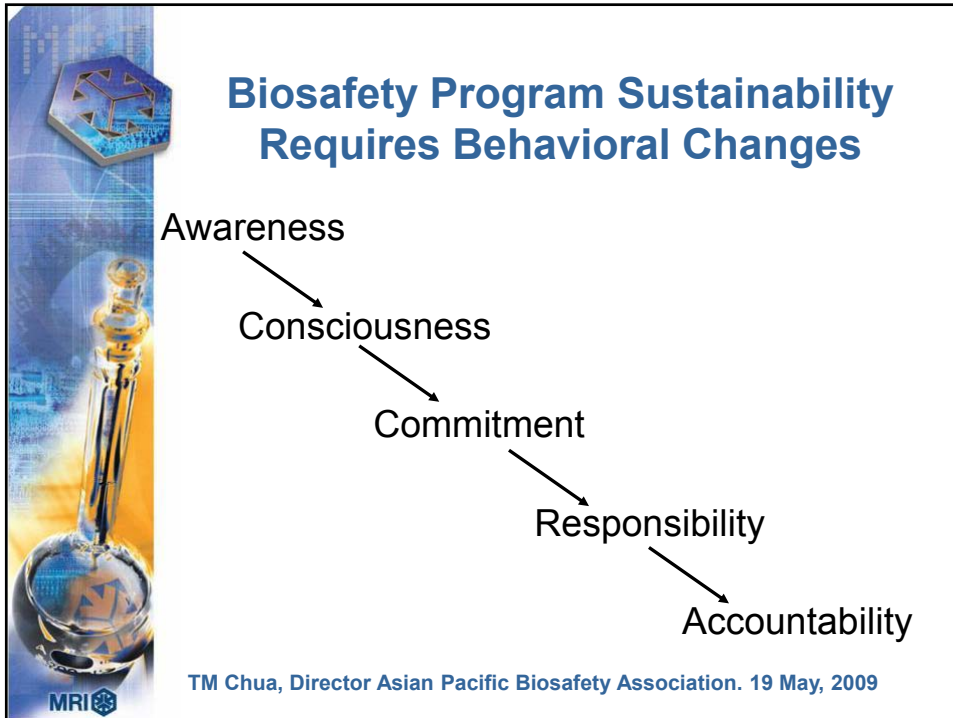
Program Goals

- Establish functional, self supporting, Biosafety and Biosecurity programs that conform to international standards and can be implemented in developing countries around the world



End Point Goals


- Sustainable
- Transition as quickly as possible to local nationals






What is Needed to Transition a Biosafety Program to Biosafety Officers in Foreign National Institutes?

- Standardized
 - Can be implemented by many different people
 - Can be implemented into different cultures
- Adaptable
 - Fits into the culture (training + organization)
 - Accounts for local regulations
 - Institute specific



Current Working Practices and Procedures

Pathogenicity groups are directly related to the containment practices and working procedures are standardized by law. (SanPiN# 63. Jan. 21, 2004)







What Has Changed?






What Works?

What is Needed?

- Lots of interest!
- Culture is traditionally focused on safety practices

- New skills
- Less disposable waste



Instructional Systems Design Training (ISD)

- Training Methodology
 - Train by task
 - Every task has a performance metric that allows evaluation of successful completion of the task



Comparison of Training Methodologies

Graduate School

1. Analysis
 - a. Goals and objectives
2. Design
3. Development
4. Implementation
5. Evaluation
 - a. Satisfaction with course
 - b. Classroom learning
 - c. Pre and Post learning

ISD Training

1. Analysis
 - a. Goals and objectives
 - b. Job analysis
 - c. Training needs
 - d. Training gap analysis
2. Design
3. Development
4. Implementation
5. Evaluation
 - a. Satisfaction with course
 - b. Classroom learning
 - c. Pre and Post learning
 - d. Application of learning
 - e. Program success



Train-the-Trainer Program Objectives

- After completion of the Biological Safety Train-the-Trainer course participants will be able to apply the ISD training methodology to develop individualized, institute-specific biosafety training




Biosafety Training Analysis

Mission Essential Task	Mission Essential Subtask	Metric	SOP or PPT #	TARGET AUDIENCE	TRAINING OBJECTIVES	ROLE	SKILL CATEGORY
4) Waste Handling and Decontamination	Lists information contained on hazardous waste labels	Demonstration, Exam and Inspection	SOP XX	This training is appropriate for personnel who perform the following tasks:	Persons receiving this training will be able to:	Entry Level Scientist	Capabilities
	List procedures to decontaminate liquids by adding a sufficient quantity of concentrated bleach to qs to 0.5% v/v sodium hypochlorite (1:10 Bleach solution) in water and neutralize the solution before flushing down the drain	Exam	SOP XX			Supervised Position, Assists In:	Understanding of the BTRP program goals
	Identifies hazardous vs. non hazardous waste	Demonstration, Exam and Inspection	SOP XX		Understand Biosafety and Chemical Hygiene principles and practices	Laboratory Housekeeping	Knowledge of Basic Biosafety and Chemical Hygiene
	Describes procedure for decontamination of laboratory equipment	Exam	SOP XX		Understand facility regulations with respect to biosafety	Assay Preparation	General understanding of the facility
	Lists conditions for decontamination of laboratory equipment	Exam	SOP XX			Sample receiving and processing	Understands the Laboratory Code of Ethics
	Lists chemical and biological spill control procedures and responsibilities	Demonstration	SOP XX				Capable to perform Laboratory Work Processes

- Comprehensive lists based on international and national regulations, laboratory SOPs and the Institute Biosafety Manual
- Grouped into proficiency levels and targeted by task
- Each task is linked to a performance metric

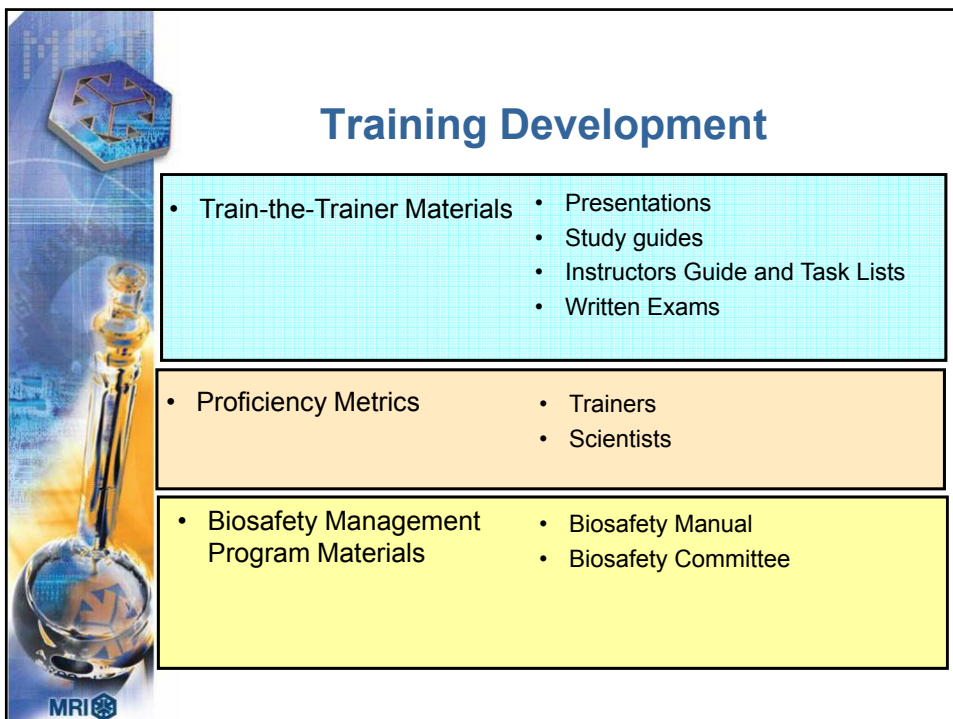
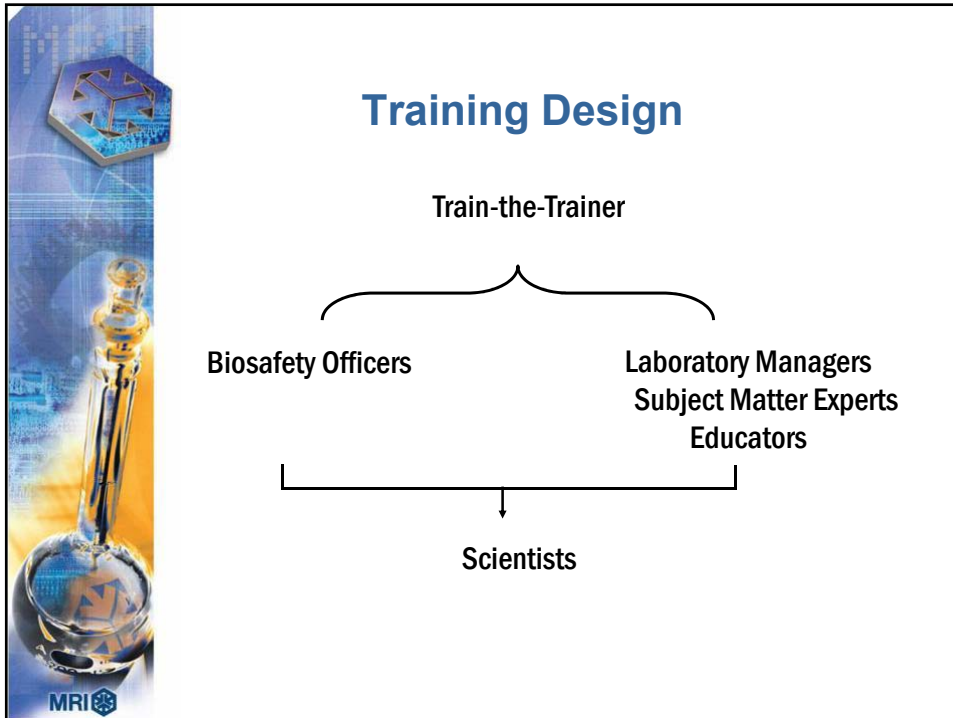



Biosafety Management Training



Biosafety Training Analysis by Task

1. Every person working in a research institute or clinical laboratory has biosafety responsibilities
2. Every task performed in a biological laboratory has a biological safety component






Study Guide

BIOSAFETY STUDY GUIDE FOR THE ENTRY LEVEL SCIENTIST

- 1. Waste Handling and Decontamination (Institute Biosafety Manual, SOPs)**
 - List information contained on hazardous waste labels (E) (D) (I)
 - List procedures to decontaminate liquids with bleach (E)
 - Prepare a 1:10 bleach solution (D)
 - Decontaminate liquids by adding 1:10 bleach solution (D)
- 2. Good Microbial Technique (Institute Biosafety Manual, SOPs)**
 - Wash hands before leaving the laboratory (D)
 - Do not eat or drink in the laboratory (D) (I)
 - Do not store food in the laboratory refrigerator (I)



Instruction Checklist

NAME/ DATE	Entry Level Scientist Tasks	PROFICIENCY METRIC		
		EXAM	DEMONSTRATION	INSPECTION
	General Knowledge of Biosafety	80% or greater	Completion of practical exercise with instructor	Compliance
	Waste Handling and Decontamination	80% or greater	Completion of practical exercise with instructor	Compliance
	Good Microbial and Aseptic Technique	80% or greater	Completion of practical exercise with instructor	Compliance



Task Evaluation

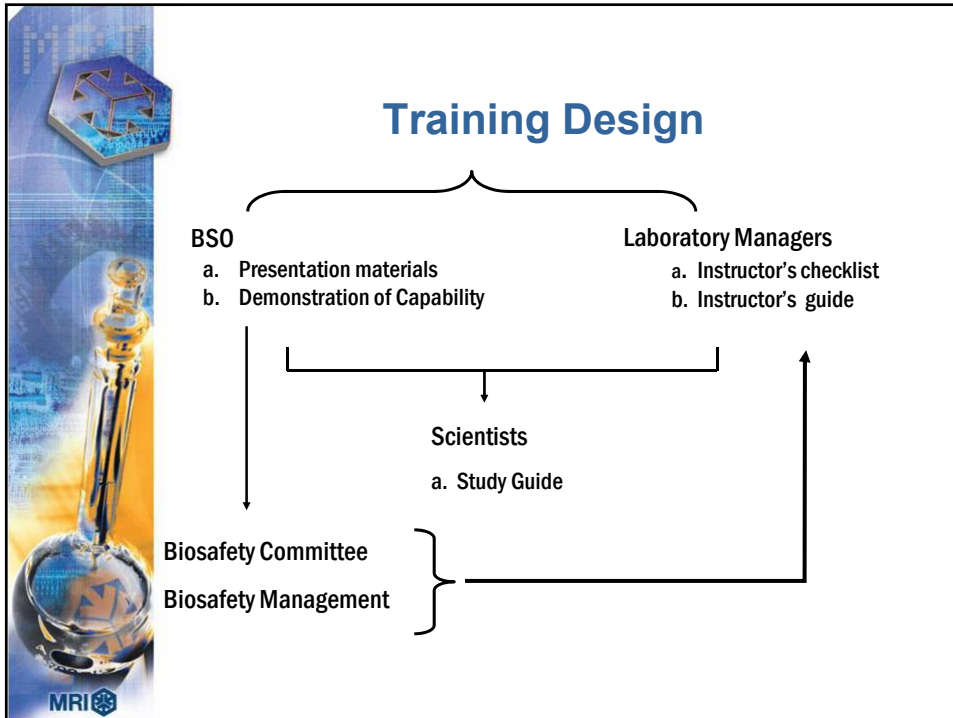


- Aseptic Technique
- Sharps Disposal
- Aerosols
- Donning and Doffing of PPE



Independent Evaluations

- Demonstration of Capability Exam
 - Practical exam that allows personnel to “test out” of task-based training based on performance in a practical exam
- Biosafety Program Standards
 - Duties and responsibilities defined
 - Biosafety Committee minutes
 - Biosafety Manual





ISD Training Summary

- Links training to tasks performed on the job
- Promotes transfer of training to working procedures and practices
- Evaluates training at 5 levels
 1. Satisfaction with program and trainer
 2. Classroom Learning
 3. Pre and post instruction
 4. Transfer of learning to working practices
 5. Program Evaluation
- Promotes and supports biosafety managers and trainers



Sustainability Rating for ISD Training

- ✓ Comprehensive analysis promotes rapid handoff to national trainers
- ✓ Evaluation techniques are standardized across different trainers
- ✓ Training design is adaptable to different countries and institutions
- ✓ Developed training is low tech and low cost
- ✓ Training implementation supported by many trainers



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