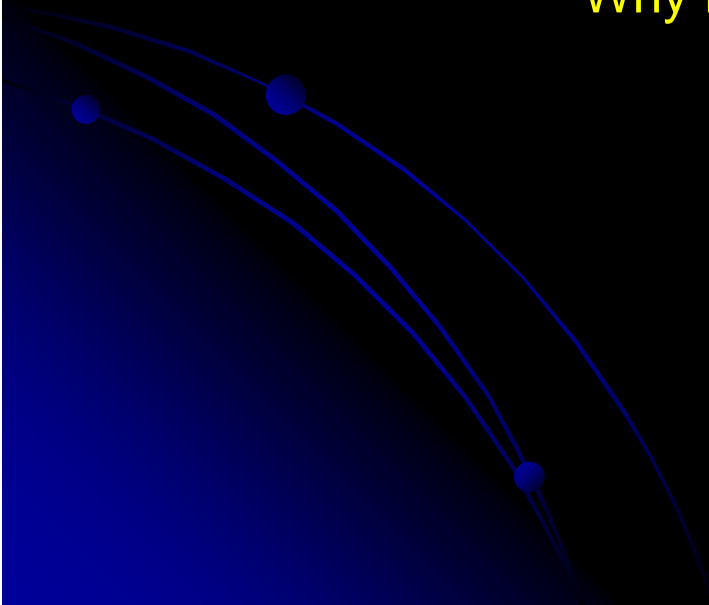


Laboratory Safety Standard

Why Do We Have This Standard?



Objectives

- Familiarize Attendees with Standard
- Explain the BYU, Provo plan (prototype)

Have you participated in a service project...

Added Pressure for Professors

- Maintain continuing status through research (**time**)
- Peer Influence
- Possible Confrontation
- What else?



Margaret C. Samways, "Worker Education & Training", The Occupational Environment its Evaluation, Control, and Management

Safety is Not “Natural”

Naturally More Negative Pressure

Some Positive Pressures:



- Principle Investigators are responsible
- Tort Law
- Ethically Correct to Keep Individuals Safe
- Prepare students

Margaret C. Samways, “Worker Education & Training”, *The Occupational Environment its Evaluation, Control, and Management*

What is a Laboratory

Handling & Use of Chemicals where all of the following are met:

- Chemical Manipulations are carried out on a “laboratory scale”
- The Procedures involved are not part of a production process, nor in any way simulate a production process; and
- Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

Unique Setting

1. Very large variety, but small quantity
2. Processes can change frequently
3. Insignificant to highly hazardous (chemicals and processes)
4. Workers are intimately involved in designing their processes (unusual level of control over safety practices)
5. Many information sources, including MSDS (for high volume), but hazard and chemical info not always available



Stefan Wawzynieci, Jr., CIH, NRCC-CHO, CHMM

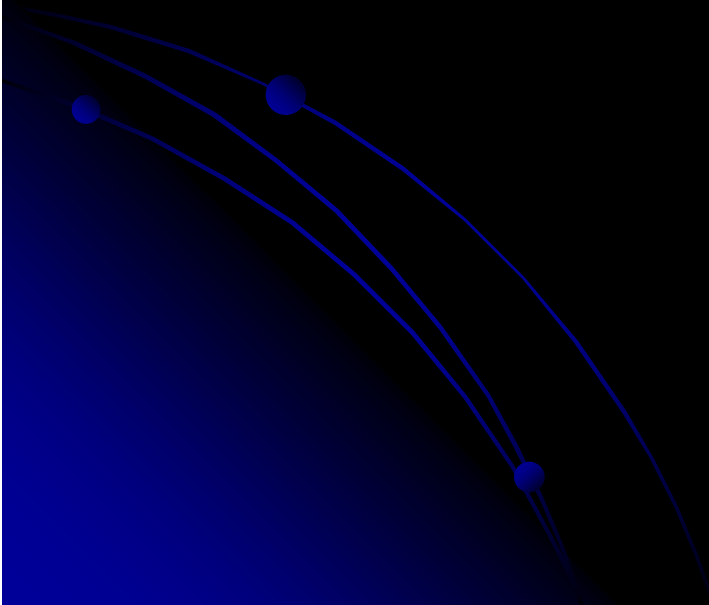


Teaching Laboratory

Pretty much repeat procedures every semester.

Question

How often would procedures need to be created?



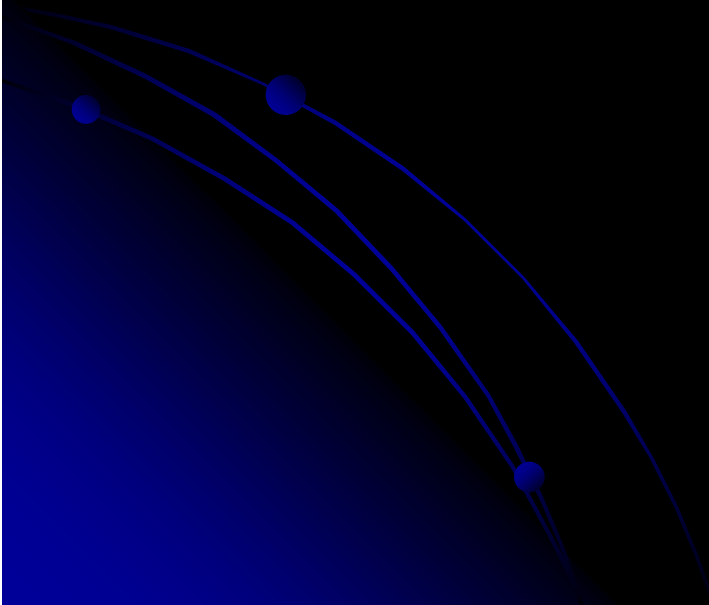


Research Laboratory

Procedures change when research is changed.

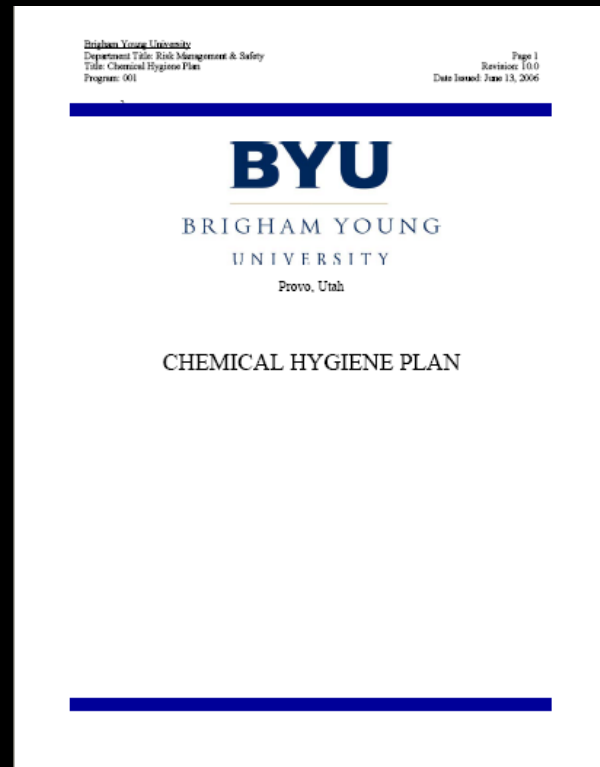
Question

How often would procedures need to be created?



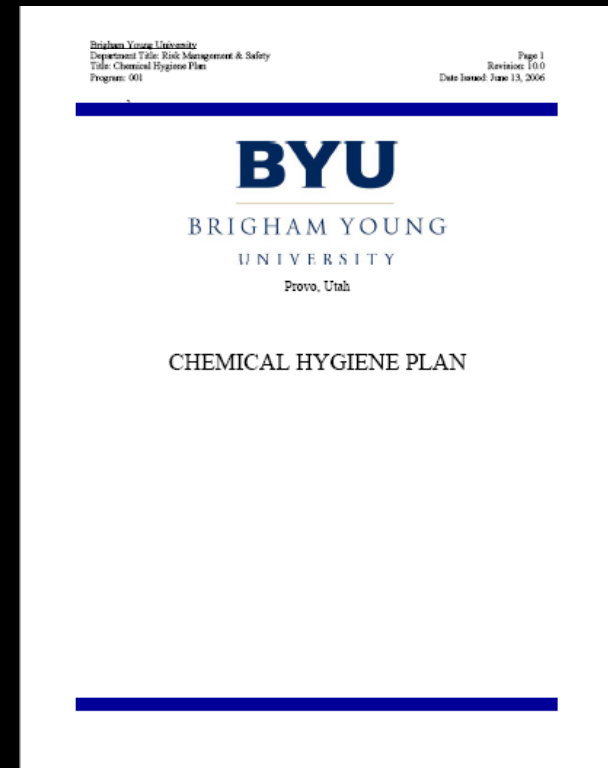
Goals

- Create a program that can be implemented...
- ...as easy as possible
- Involves the Professors



Standard Overview

- 29 CFR 1910.1450
- Basic Requirements
 1. Written Plan
 2. Communicate Hazards
 3. Training – Knowledge & Skills
 4. Control Exposures
 5. Offer Medical Consultation
 6. Establish Designated Areas



A performance based standard

Required Written CHP Elements

1. Standard Operating Procedures
2. Criteria to determine and implement control measures (selection, use, maintenance, replacement)
3. Procedures for ensuring lab hoods and PPE are functioning properly (proper & adequate performance)
4. Provisions for information & training
5. Circumstances for prior approval
6. Provisions for medical consultation
7. Designation of those responsible
8. Provisions for additional employee protection when using carcinogens, reproductive toxins, highly toxics
 - Establish Designated area
 - Use of containment devices
 - Procedures for safe removal of waste
 - Decon Procedures

Standard Operating Procedures

- Introduction
- Chemicals Used & States
- Specified Hazards
- Purchasing
- Storage
- Authorized Personnel
- Training
- Designated Areas
- Exposure Assessment
- Exposure Controls
- PPE Use Requirements
- Decon Procedures
- Emergency Procedures
- Phone Numbers

Specific to Safety & Health in Laboratory

1

Brigham Young University

SOP

Standard Operating Procedure

Microelectromechanical Systems (MEMS) Oxide Chemical Release For End-User MEMS Process (MEMEP)	
---	--

Principal Investigator: Dr. Larry Howell	
Primary Contact: Dr. Larry Howell	+1-225-2425
Secondary Contact: Dr. Brian Jensen	+1-225-4030
Lab # 454	Building: U204

Content	Page
Description of Work and Scope of SOP	2
Procedures	2
General Notes	2
Equipment	2
Required Equipment, Safety Equipment, & Personal Protective Equipment (PPE)	2
Procedure/Steps Needed To Complete Work Safely	3
Waste Disposal Procedures	4
Chemicals Used	5
Machines & Eaters	5
Chemical Spill/Release Procedures	5
Appendix: Lab Layout	6

Completed By: Jeff Anderson
Edited By: Gary Johns
Approved By:

Control Measures

- Engineering Controls
- Administrative Controls
- PPE



Acid Digestion Hood with Polycarb Sash & Plastic Ducting

Splash Goggles



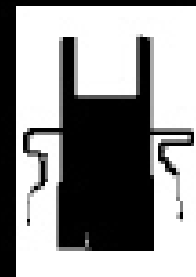
Gloves



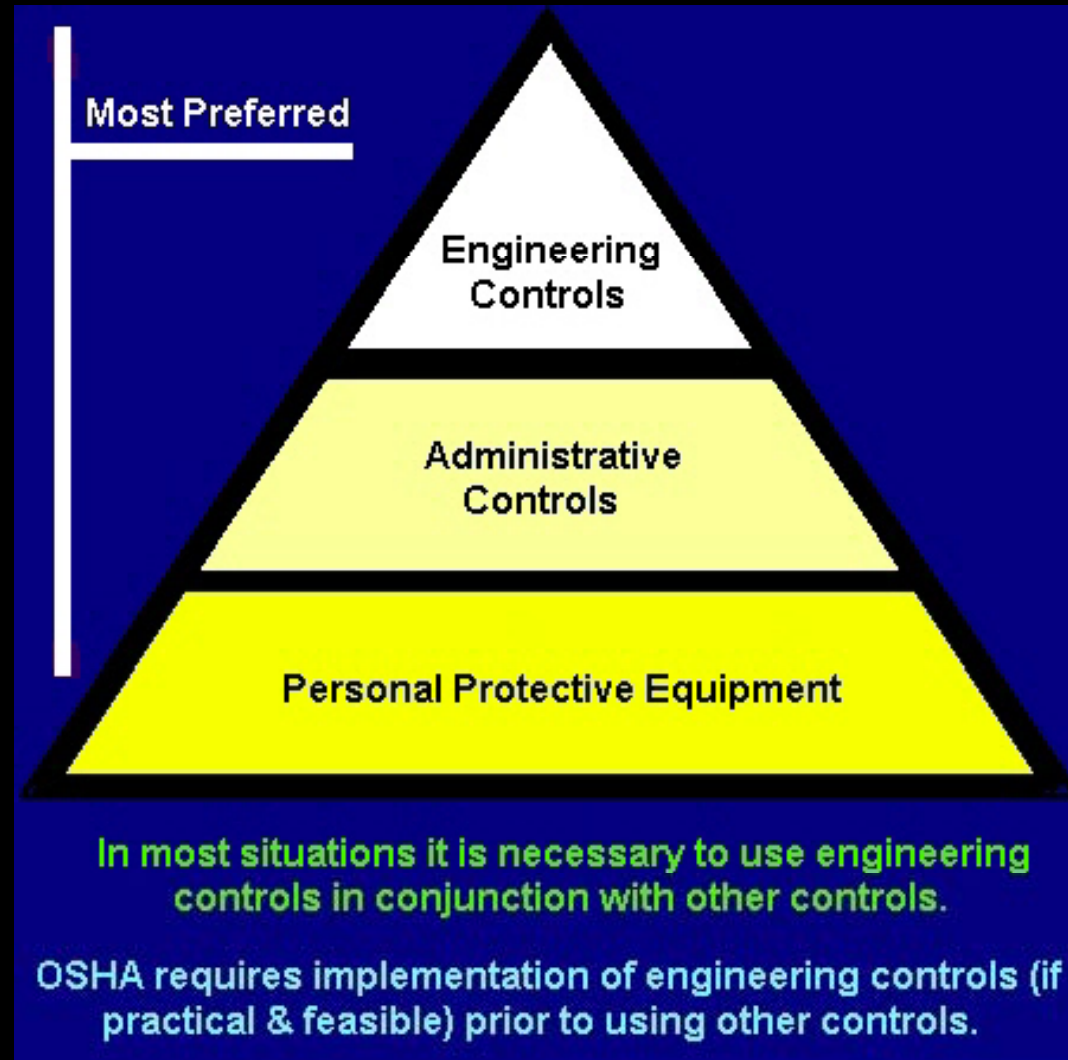
Face Shield

Apron

etc.



- Elimination
- Substitution
- Process Modification



Ensure Controls are Functioning

- Ventilation

- Laboratory Hoods
 - Face Velocity Test
 - Visible Gages
 - Kimwipe Test



- Personal Protective Equipment

- Upon Purchase
- Prior to Use
- Following Each Use

Information & Training

- Knowledge
- Skills
- Abilities

1

Brigham Young University

SOP

Standard Operating Procedure

Microelectromechanics Systems (MEMS) Oxide Chemical Release For Bulk-User MEMS Processes (MEMS)	
--	--

Principal Investigator: Dr. Larry Howell	
Primary Contact: Dr. Larry Howell	+1-435-242-5
Secondary Contact: Dr. Brian Jensen	+1-435-4030
Lab #: 434	Building: UG-6

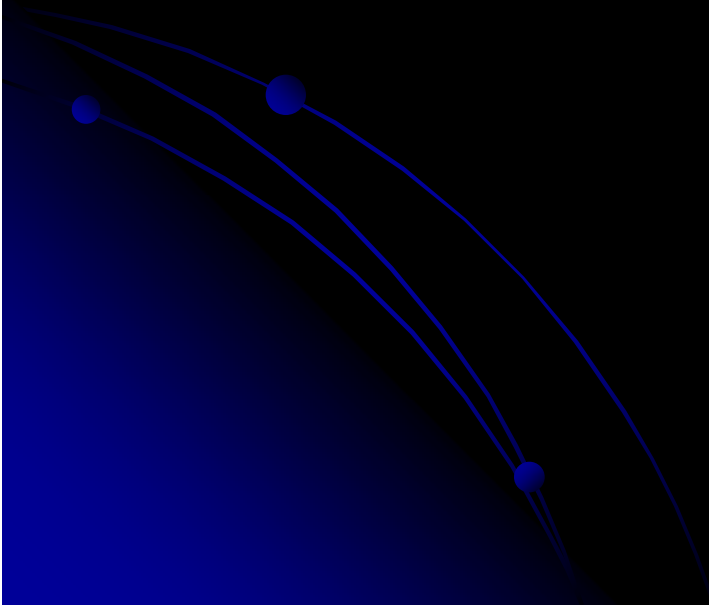
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Appendix: Lab Layout	6

Completed By: Jeff Anderson
Edited By: Gary Johns
Approved By:


Prior Approval

Risk Assessment:

- Likelihood of Event
- Severity of Outcome

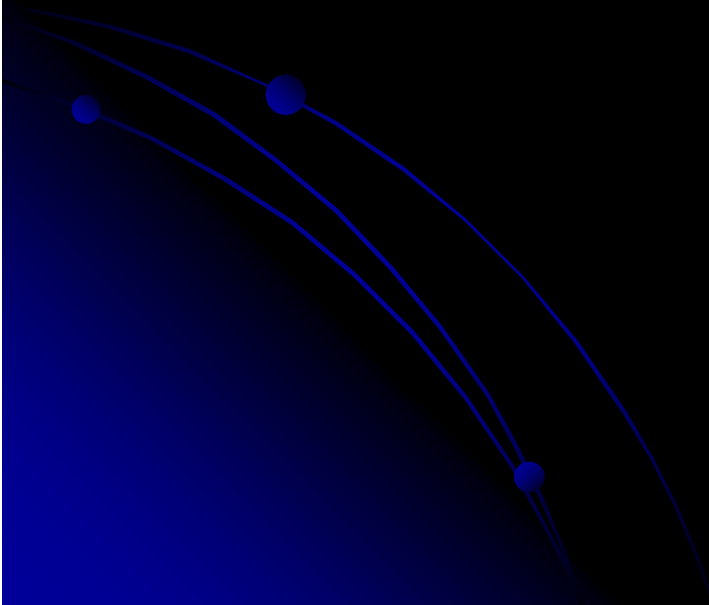


Medical Consultation

- Signs & Symptoms
 - Exposure Monitoring Reveals High Levels
 - Spill, leak, etc.
- 

Responsibility

- Chemical Hygiene Officer
- Principle Investigator
- Other Employees
- Students



Carcinogens, Reproductive Toxins, and Highly Toxic Chemicals

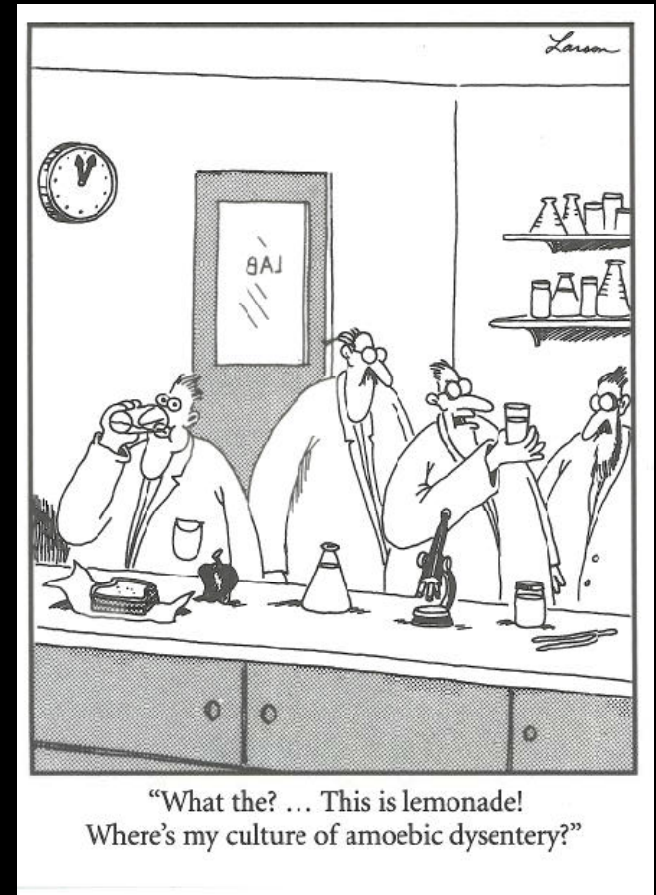


Designated Areas

Elements Common CHP Elements

Standard Policy Elements:

- Standard Attire
- Container Labeling
- Housekeeping
- Use of Laboratory Hoods
- Selection of Protective Gloves
- Emergency Numbers
- Chemical Waste Management
- Training



Laboratory Safety Program

May Include:

- Chemical Hygiene Plan
- Laser Safety Program
- Radiation Safety Program
- Biosafety Program
- Other



Centers around the work performed in the laboratory

Resources Available

- Safety Office/Team
- Online Information
- **Students**
- Etc.



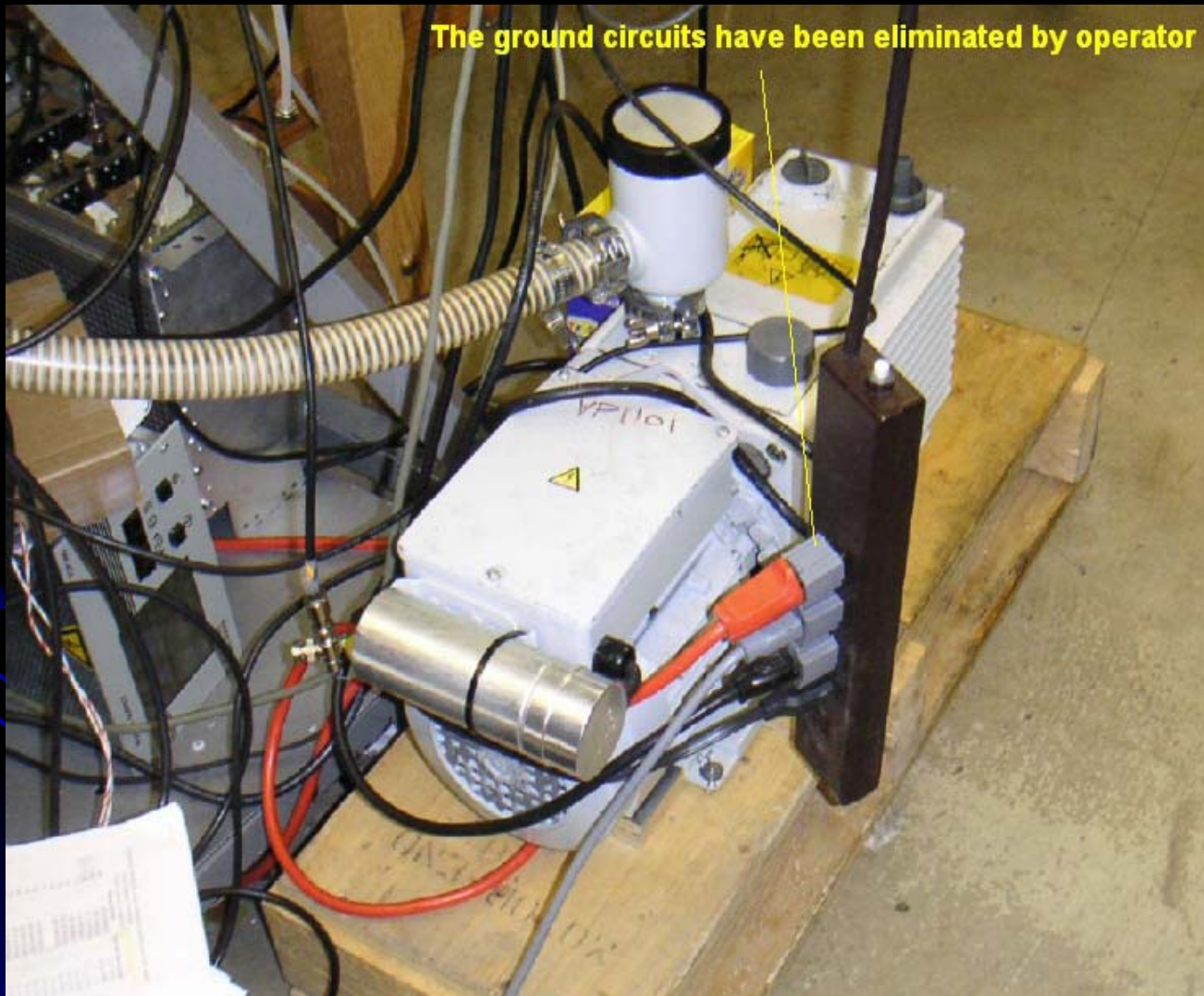
What Incentive(s) Can Be Used for Participation?

Five Keys



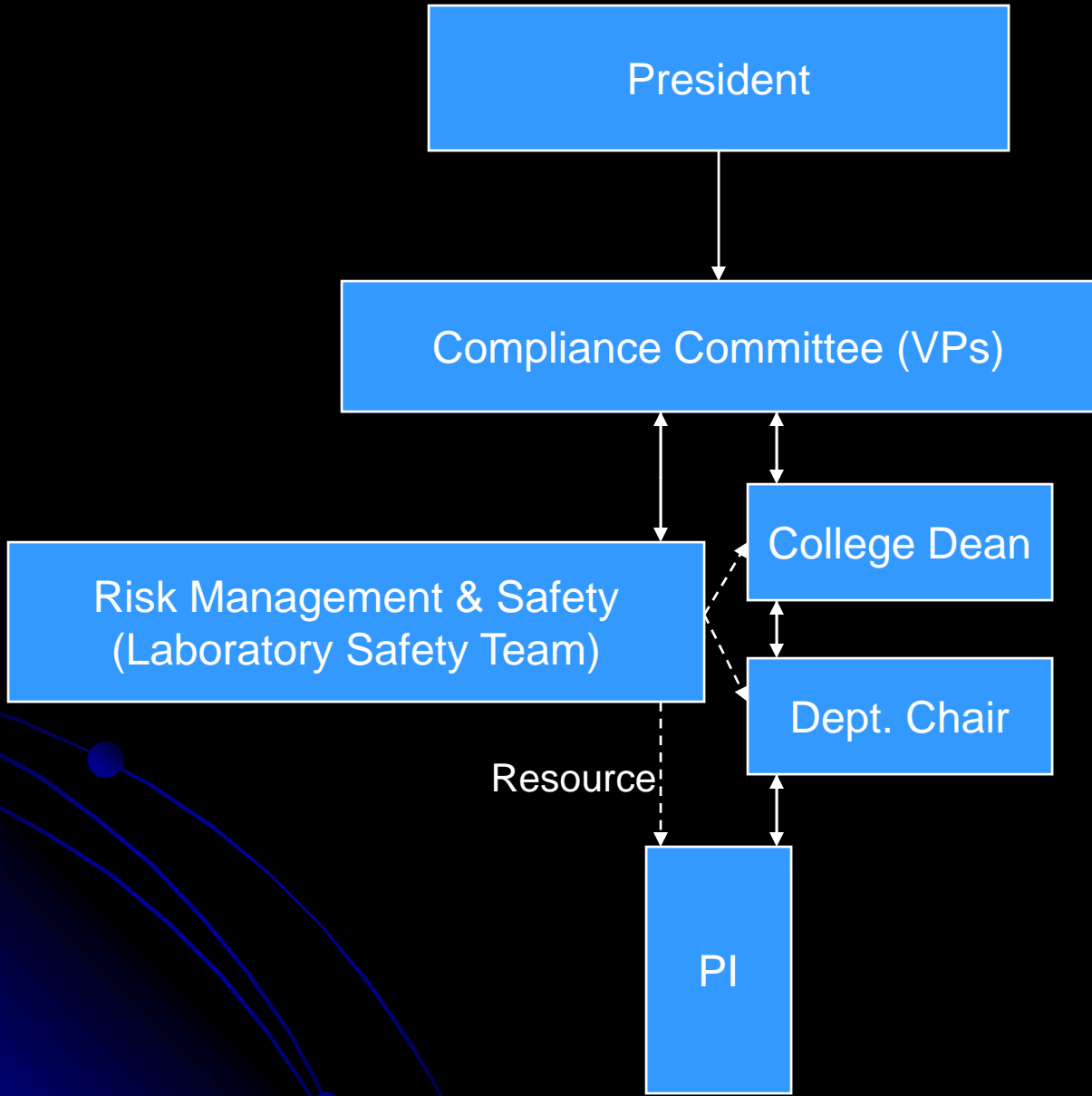
- University Supports Safety Programs
- Safety Office Provides Framework & Support
- Professors Integrate Safety
- Share Standard Operating Procedures
- Utilize Students

Other Hazards



Summary

- Performance Based Standard, States Objectives
 - Program Development Must Involve Professors
 - Important Keys:
 - University Supports Safety Programs
 - Safety Office Provides Framework & Support
 - Professors Integrate Safety
 - Share Standard Operating Procedures
 - Utilize Students
- 



-Questions-

