Laboratory Safety Coordinator Meeting

Fall 2011

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Last Meeting- LSC Summer BBQ

- Interactive
- Different groups within EHS presented services to the labs
- Fischer Sci: Gathering lists of PPE and other common items needed with in labs.
- Answers to comments and suggestions from the previous meeting :www.bu.edu/ehs/lsc-toolkit
- This Fall Session marks our 1st Year of LSC Program!
- Welcome Sharon Rose!

INSPECTIONS AND INCIDENTS

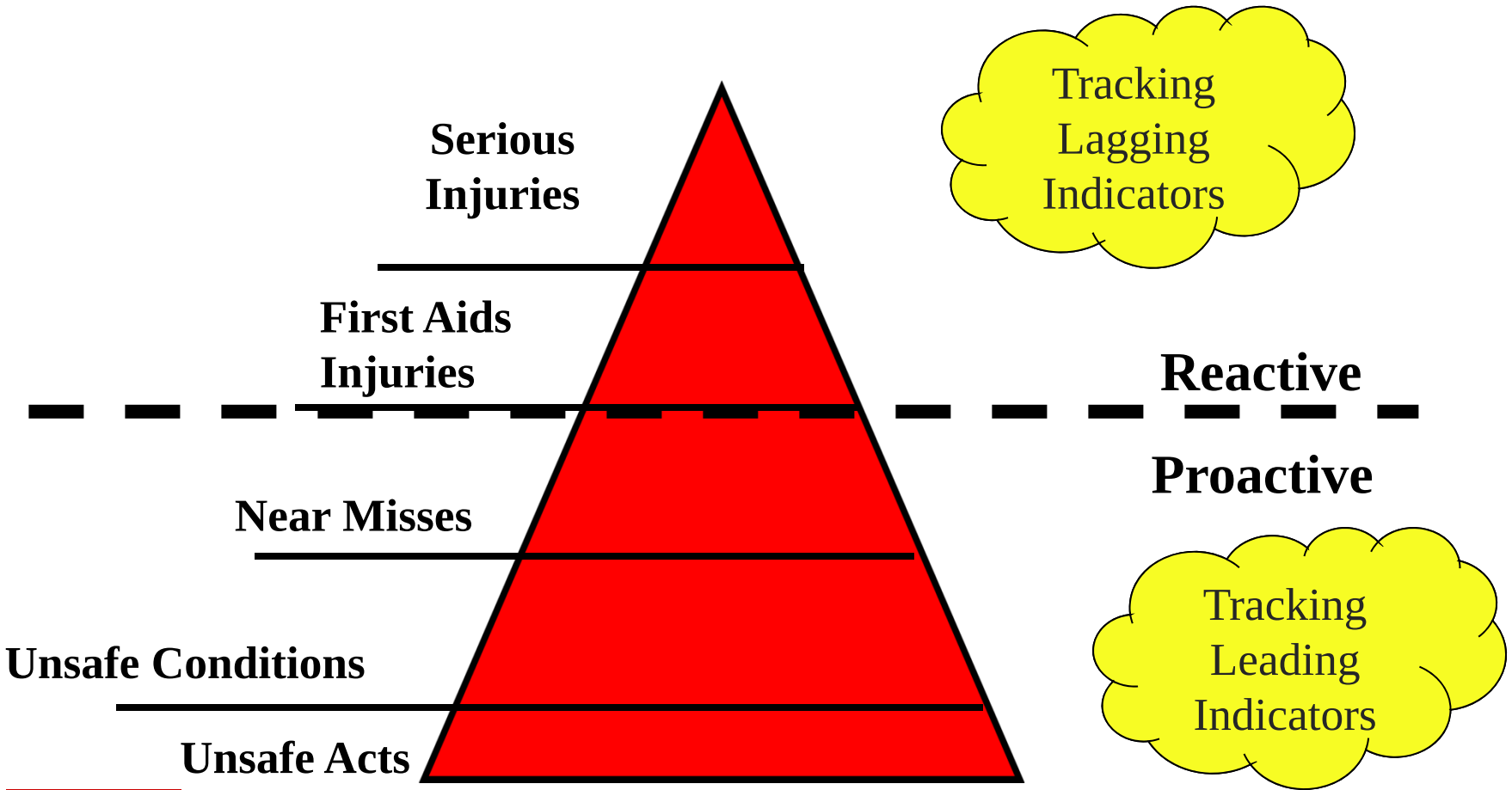
Accidents/Incidents

- 8/27/2011- 11/08/2011
  - 11/3/2011- Needle stick working with hazardous chemicals. Reported to ROHP. Safety glasses, gloves and lab coat worn, process to be reevaluated.
  - 11/1/2011- Chemical eye splash- Chemical handling lead to a broken bottle, small splash to the eye in the lab. No safety glasses worn- reported to ROHP
  - 10/31/2011 – Off hours call. Chemical was not placed in the flammable cabinet after use. It was placed on the floor near the fume hood and knocked over. This resulted in a response by the BFD and clean up by EHS on call personnel. Root Causes- Improper chemical storage, not conscientious.

Incidents Continued

- 9/16/2011- Chemical Eye Splash- Normal procedures NOT wearing safety glasses, flushed with eye wash, and reported to ROHP
- 9/7/2011- Object in Eye- NO eye protection, working with hazardous materials. Eyes were rinsed and reported to ROHP

Accident / Incident Prevention



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Examples of a Near Miss

- Examples
  - Small spill of non-hazardous chemicals
  - spike on gas detection equipment that does not trigger an alarm
  - Slip or trip that does not result in an injury
  - A small spill of biological material that is confined within BSC
- Items to Consider
  - How the near miss was resolved or solutions
  - Provides assistance to EHS when looking at laboratory trends and areas for improvement with training.

Inspection Findings

Campus	Total Inspections	Total Findings	Total Findings/ Total Inspections
BUMC	176	639	3.63
CRC	144	406	2.82
Total	320	1045	3.27
Overall	1045	4034	3.86

Inspection Findings – Common Themes

	BUMC	CRC	Both Campuses
Training records not current	24%	31%	28%
Waste management	19%	16%	18%
Chemicals stored improperly	27%	14%	21%
Emergency Eye Wash	17%	10%	14%

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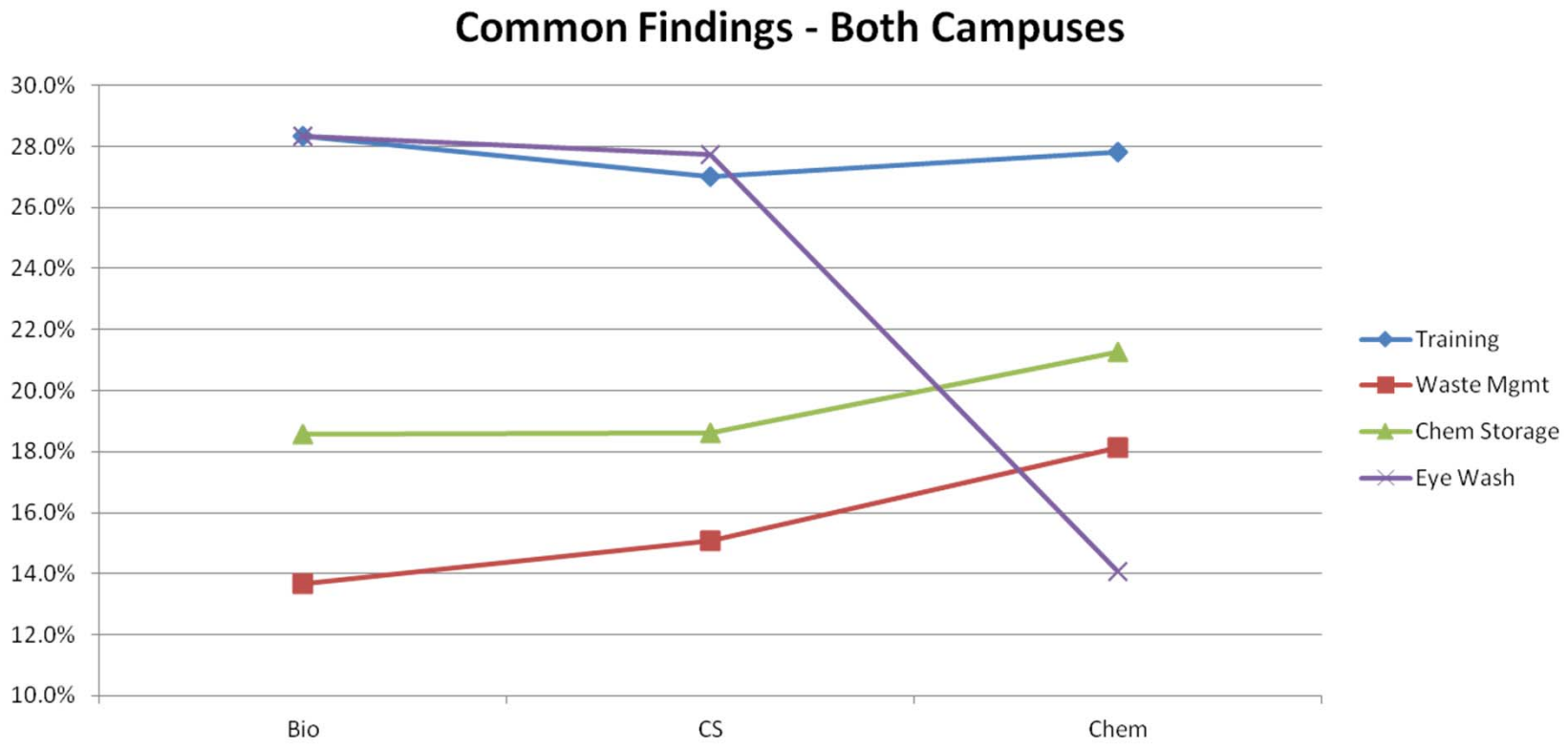
Inspection Trends



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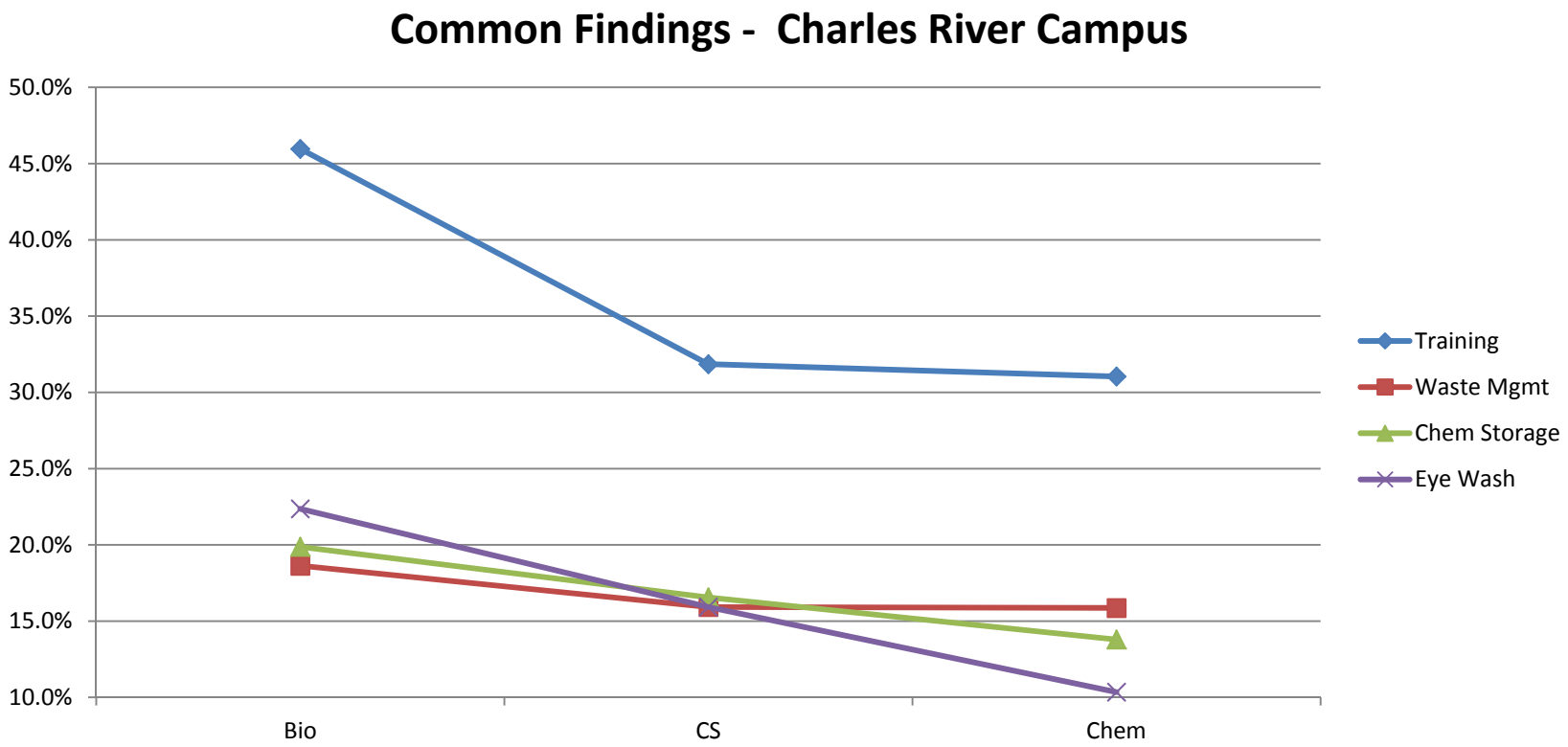
Inspection Trends - CRC



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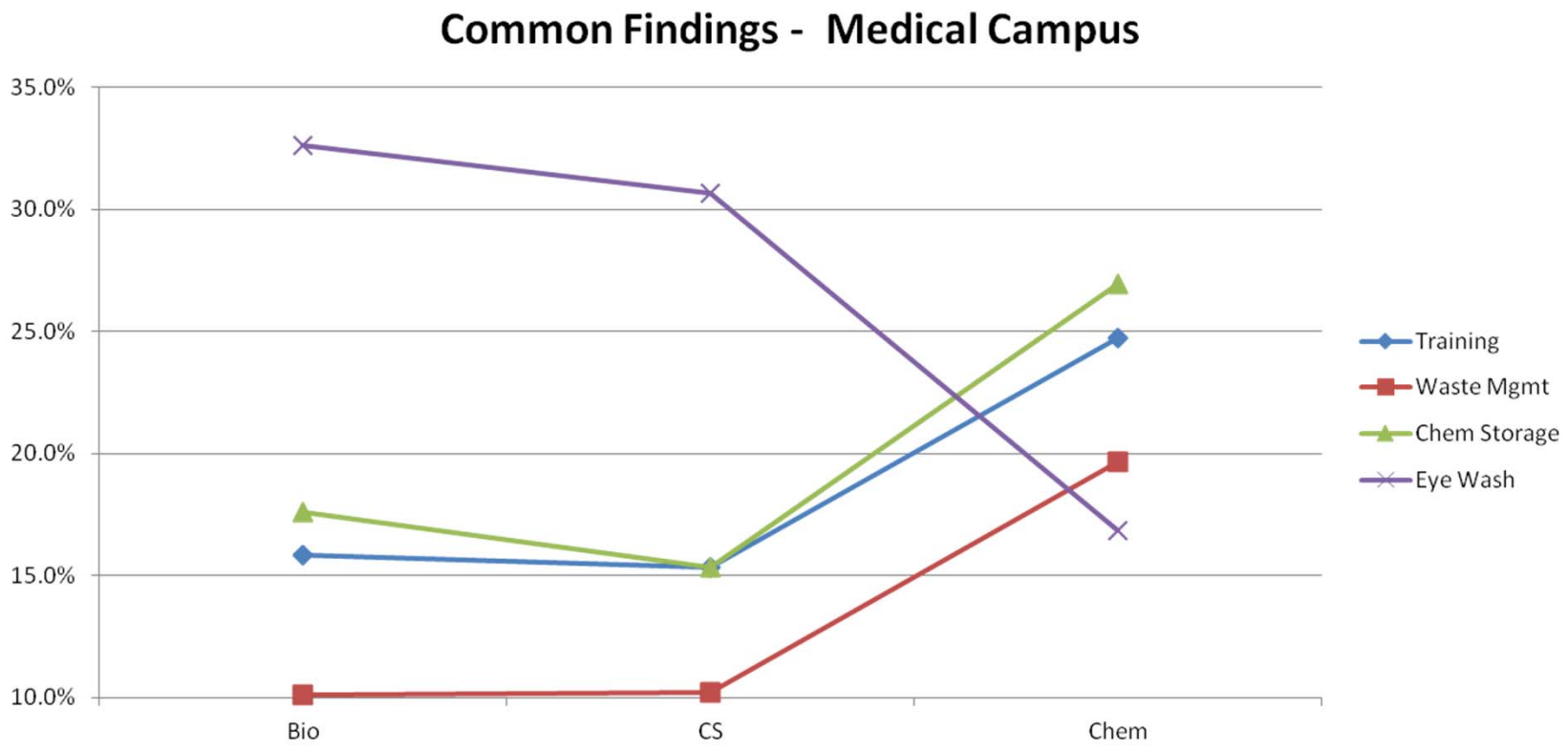
Inspection Trends - BUMC



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GETTING ON TRACK USING THE LSC-TOOLKIT

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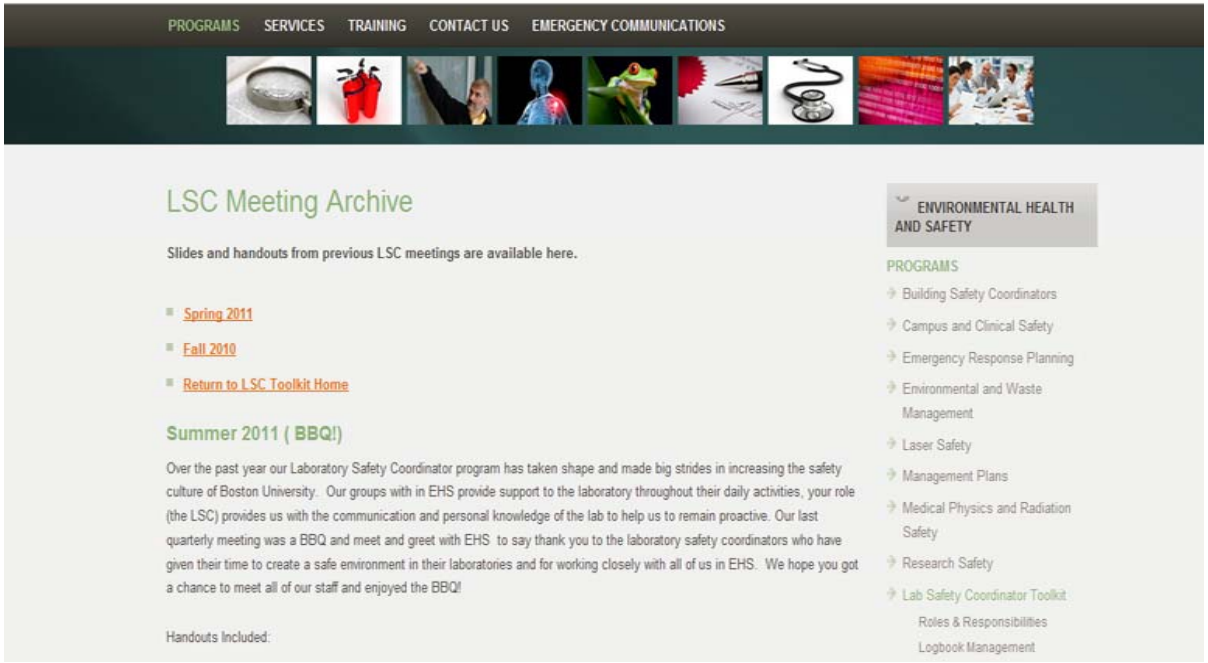
Welcome Page/Navigation

Using the Tool Kit to Help Your Lab!

- Chemical segregation and waste management hand outs were provided at the previous meeting for more information please visit www.bu.edu/ehs-lsc-toolkitarchive
  - Hint- Post inventory on or near the storage areas, if a chemical is added make sure its on the inventory prior, if not add to RIMS and then ensure proper storage



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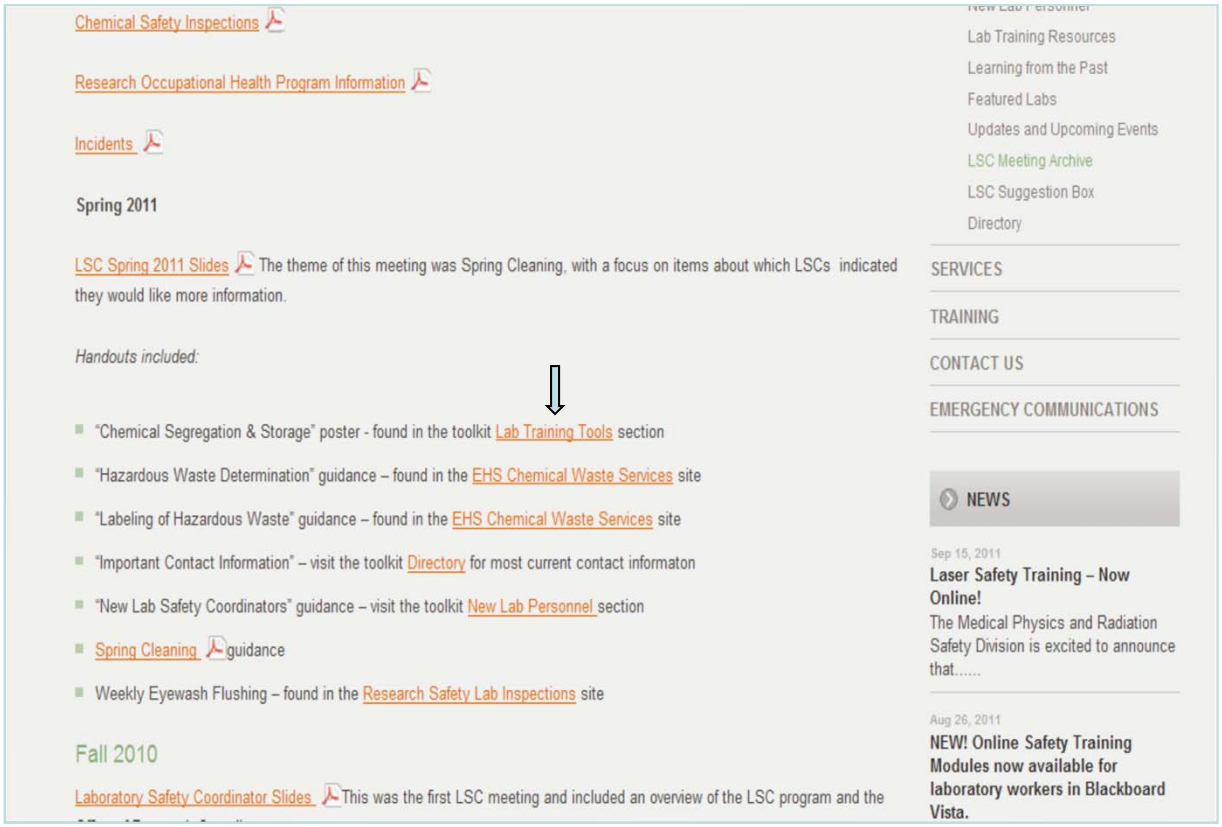
Archive Pages and Links



Chemical Safety Inspections

Research Occupational Health Program Information

Incidents

Spring 2011

LSC Spring 2011 Slides The theme of this meeting was Spring Cleaning, with a focus on items about which LSCs indicated they would like more information.

Handouts included:

- "Chemical Segregation & Storage" poster - found in the toolkit Lab Training Tools section
- "Hazardous Waste Determination" guidance – found in the EHS Chemical Waste Services site
- "Labeling of Hazardous Waste" guidance – found in the EHS Chemical Waste Services site
- "Important Contact Information" – visit the toolkit Directory for most current contact informaton
- "New Lab Safety Coordinators" guidance – visit the toolkit New Lab Personnel section
- Spring Cleaning guidance
- Weekly Eyewash Flushing – found in the Research Safety Lab Inspections site

Fall 2010

Laboratory Safety Coordinator Slides This was the first LSC meeting and included an overview of the LSC program and the

Lab Training Resources
Learning from the Past
Featured Labs
Updates and Upcoming Events
LSC Meeting Archive
LSC Suggestion Box
Directory

SERVICES
TRAINING
CONTACT US
EMERGENCY COMMUNICATIONS

NEWS

Sep 15, 2011
Laser Safety Training – Now Online!
The Medical Physics and Radiation Safety Division is excited to announce that.....

Aug 26, 2011
NEW! Online Safety Training Modules now available for laboratory workers in Blackboard Vista.

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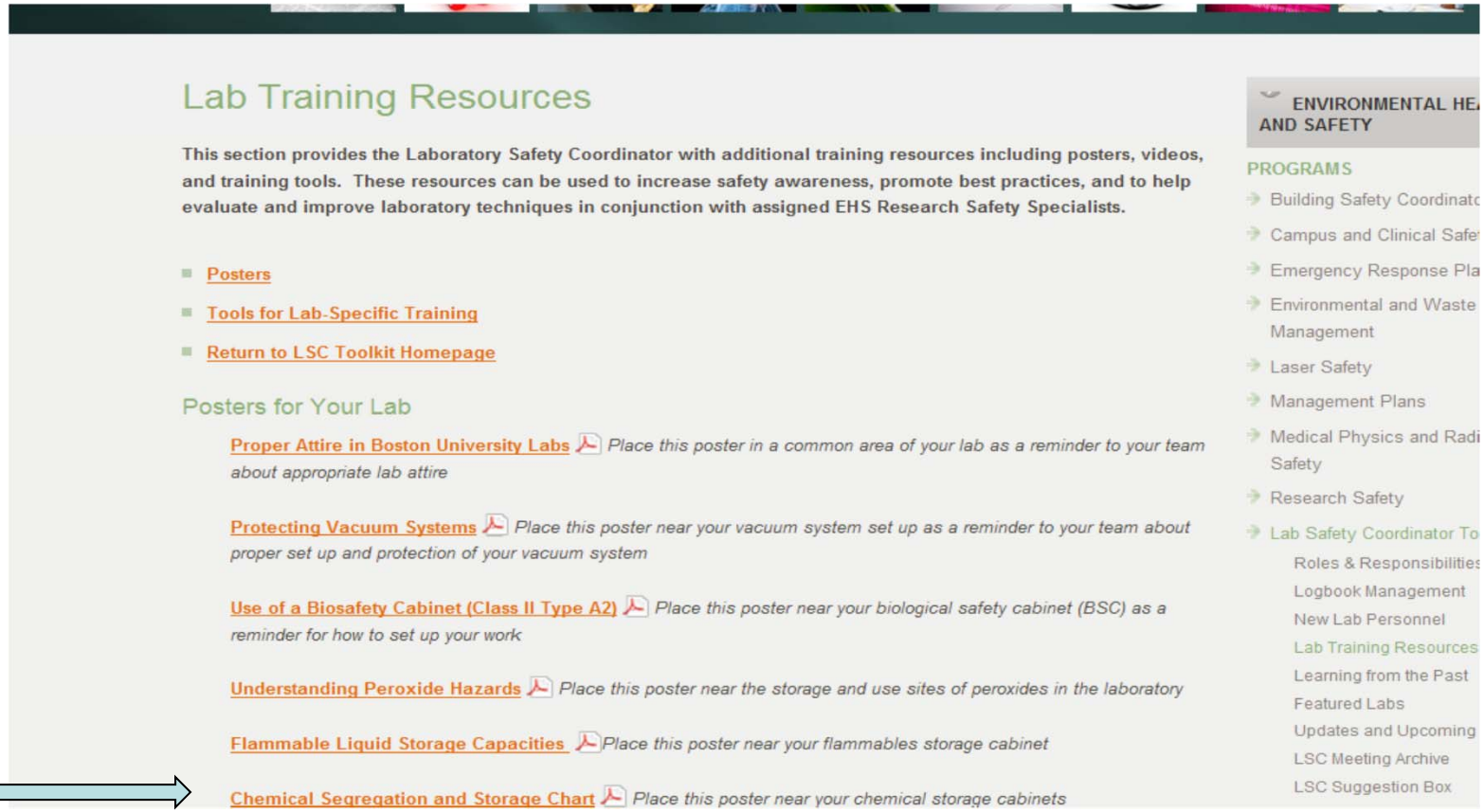
Lab Training Resources



Lab Training Resources

This section provides the Laboratory Safety Coordinator with additional training resources including posters, videos, and training tools. These resources can be used to increase safety awareness, promote best practices, and to help evaluate and improve laboratory techniques in conjunction with assigned EHS Research Safety Specialists.

- Posters
- Tools for Lab-Specific Training
- Return to LSC Toolkit Homepage

Posters for Your Lab

Proper Attire in Boston University Labs *Place this poster in a common area of your lab as a reminder to your team about appropriate lab attire*

Protecting Vacuum Systems *Place this poster near your vacuum system set up as a reminder to your team about proper set up and protection of your vacuum system*

Use of a Biosafety Cabinet (Class II Type A2) *Place this poster near your biological safety cabinet (BSC) as a reminder for how to set up your work*

Understanding Peroxide Hazards *Place this poster near the storage and use sites of peroxides in the laboratory*

Flammable Liquid Storage Capacities *Place this poster near your flammables storage cabinet*

Chemical Segregation and Storage Chart *Place this poster near your chemical storage cabinets*

ENVIRONMENTAL HE
AND SAFETY

PROGRAMS

- Building Safety Coordinato
- Campus and Clinical Safe
- Emergency Response Pla
- Environmental and Waste Management
- Laser Safety
- Management Plans
- Medical Physics and Radi Safety
- Research Safety
- Lab Safety Coordinator To
  - Roles & Responsibilities
  - Logbook Management
  - New Lab Personnel
  - Lab Training Resources
  - Learning from the Past
  - Featured Labs
  - Updates and Upcoming
  - LSC Meeting Archive
  - LSC Suggestion Box

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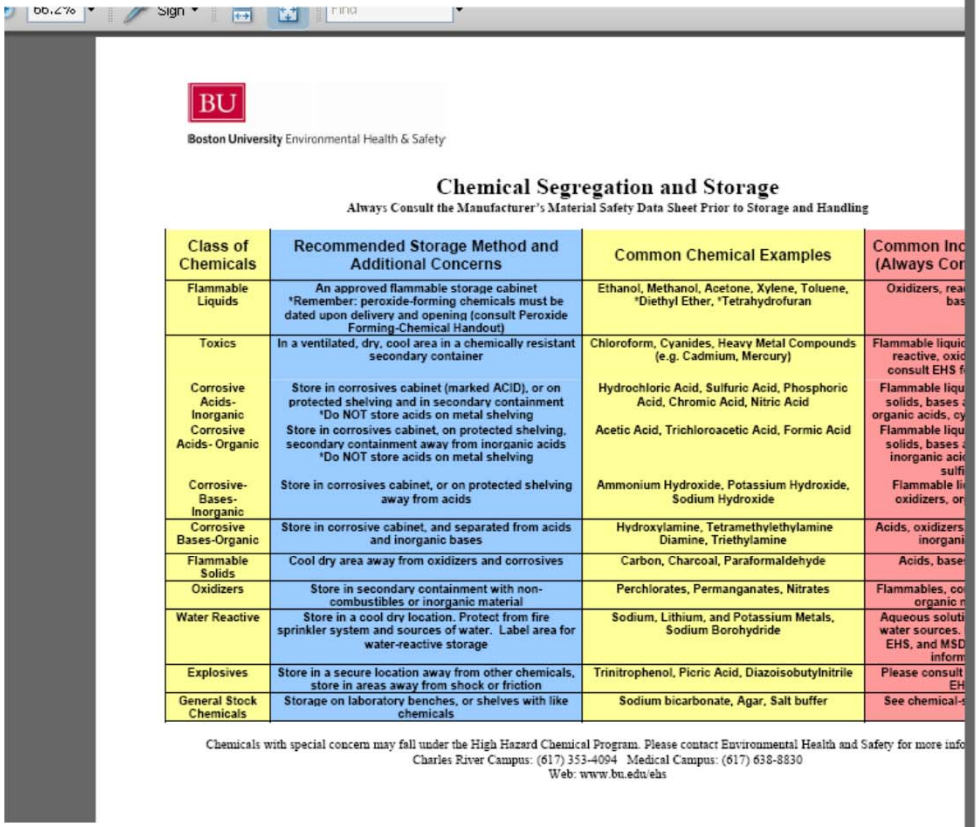
Available Handouts!



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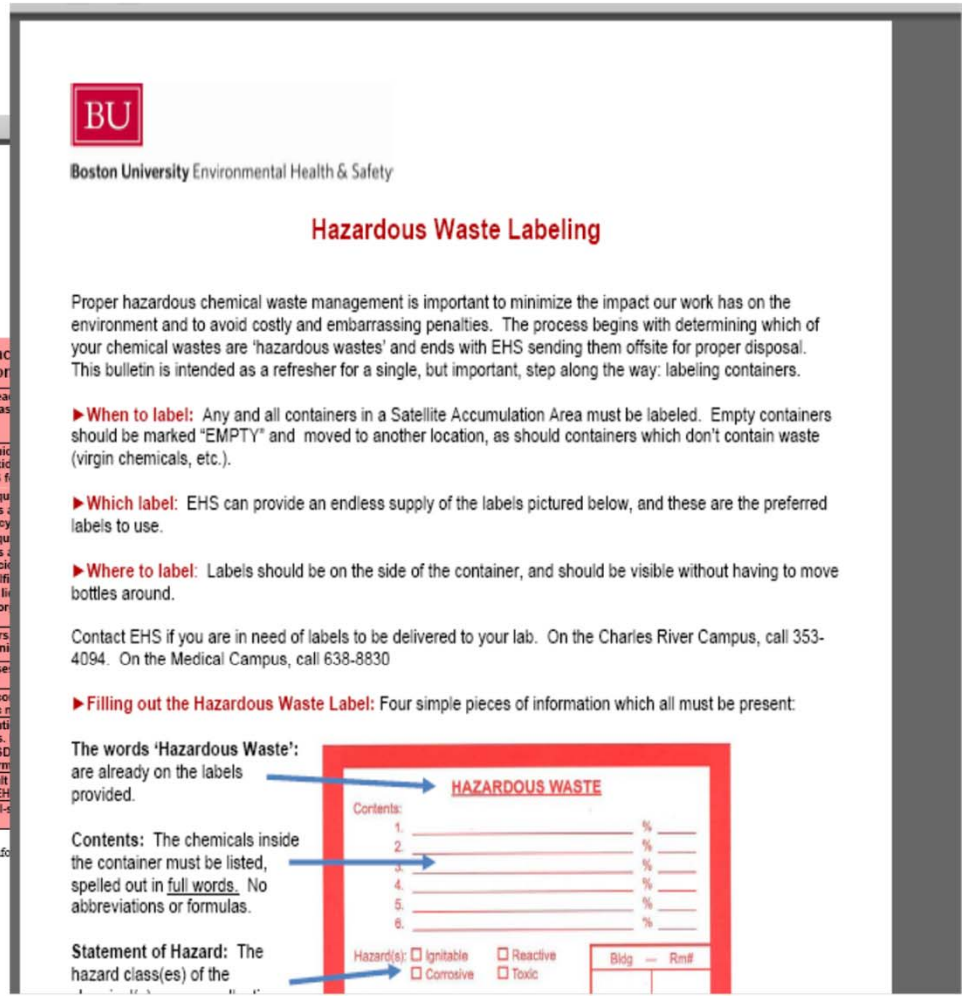
Chemical Segregation and Storage

Always Consult the Manufacturer's Material Safety Data Sheet Prior to Storage and Handling

Class of Chemicals	Recommended Storage Method and Additional Concerns	Common Chemical Examples	Common Inc (Always Cor
Flammable Liquids	An approved flammable storage cabinet *Remember: peroxide-forming chemicals must be dated upon delivery and opening (consult Peroxide Forming-Chemical Handout)	Ethanol, Methanol, Acetone, Xylene, Toluene, *Diethyl Ether, *Tetrahydrofuran	Oxidizers, rea bas
Toxics	In a ventilated, dry, cool area in a chemically resistant secondary container	Chloroform, Cyanides, Heavy Metal Compounds (e.g. Cadmium, Mercury)	Flammable liquic reactive, oxic consult EHS f
Corrosive Acids- Inorganic	Store in corrosives cabinet (marked ACID), or on protected shelving and in secondary containment *Do NOT store acids on metal shelving	Hydrochloric Acid, Sulfuric Acid, Phosphoric Acid, Chromic Acid, Nitric Acid	Flammable liqu solids, bases organic acids, cy
Corrosive Acids- Organic	Store in corrosives cabinet, on protected shelving, secondary containment away from inorganic acids *Do NOT store acids on metal shelving	Acetic Acid, Trichloroacetic Acid, Formic Acid	Flammable liqu solids, bases inorganic acic sulfi
Corrosive- Bases- Inorganic	Store in corrosives cabinet, or on protected shelving away from acids	Ammonium Hydroxide, Potassium Hydroxide, Sodium Hydroxide	Flammable li oxidizers, or
Corrosive Bases-Organic	Store in corrosive cabinet, and separated from acids and inorganic bases	Hydroxylamine, Tetramethylethylamine Diamine, Triethylamine	Acids, oxidizers inorgani
Flammable Solids	Cool dry area away from oxidizers and corrosives	Carbon, Charcoal, Paraformaldehyde	Acids, base
Oxidizers	Store in secondary containment with non-combustibles or inorganic material	Perchlorates, Permanganates, Nitrates	Flammables, co organic r
Water Reactive	Store in a cool dry location. Protect from fire sprinkler system and sources of water. Label area for water-reactive storage	Sodium, Lithium, and Potassium Metals, Sodium Borohydride	Aqueous soluti water sources, EHS, and MSD inform
Explosives	Store in a secure location away from other chemicals, store in areas away from shock or friction	Trinitrophenol, Picric Acid, Diazoisobutylnitrile	Please consult EH
General Stock Chemicals	Storage on laboratory benches, or shelves with like chemicals	Sodium bicarbonate, Agar, Salt buffer	See chemical-s

Chemicals with special concern may fall under the High Hazard Chemical Program. Please contact Environmental Health and Safety for more info
Charles River Campus: (617) 353-4094 Medical Campus: (617) 638-8830
Web: www.bu.edu/ehs



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Hazardous Waste Labeling

Proper hazardous chemical waste management is important to minimize the impact our work has on the environment and to avoid costly and embarrassing penalties. The process begins with determining which of your chemical wastes are 'hazardous wastes' and ends with EHS sending them offsite for proper disposal. This bulletin is intended as a refresher for a single, but important, step along the way: labeling containers.

▶**When to label:** Any and all containers in a Satellite Accumulation Area must be labeled. Empty containers should be marked "EMPTY" and moved to another location, as should containers which don't contain waste (virgin chemicals, etc.).

▶**Which label:** EHS can provide an endless supply of the labels pictured below, and these are the preferred labels to use.

▶**Where to label:** Labels should be on the side of the container, and should be visible without having to move bottles around.

Contact EHS if you are in need of labels to be delivered to your lab. On the Charles River Campus, call 353-4094. On the Medical Campus, call 638-8830

▶**Filling out the Hazardous Waste Label:** Four simple pieces of information which all must be present:

The words 'Hazardous Waste': are already on the labels provided.

Contents: The chemicals inside the container must be listed, spelled out in full words. No abbreviations or formulas.

Statement of Hazard: The hazard class(es) of the

HAZARDOUS WASTE
Contents:
1. % 2. % 3. % 4. % 5. % 6. %
Hazard(s): ☐ Ignitable ☐ Reactive ☐ Corrosive ☐ Toxic
Bldg — Rm#

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New Lab Personnel Page LSC-toolkit

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New Lab Personnel- Getting Started

Environmental Health & Safety

New Lab Personnel – A Guide to Get Started

This guide is for Principal Investigators and Lab Safety Coordinators to use as a tool to onboard and orient new laboratory personnel, with the mutual goal of leading our new personnel on the path to safe research at Boston University. Please consult your Department Safety Advisor for assistance if needed. 638-8830 (BUMC EHS) 353-4094(CRC EHS)

Trainee/New Lab Member Name	
Principal Investigator Name	
Lab Safety Coordinator Name	
Date of Hire	

Administrative Items *These are items that you can do on the "first day" in the lab.*		*Notes*
ROHP Enrollment: *Enroll in the Research Occupational Health Program (ROHP) - Have your new personnel fill out the appropriate ROHP forms found at www.bu.edu/rohp (work with ROHP and EHS in advance to know which forms are applicable)*		
RIMS Enrollment: *First, please add your new personnel to the "Identify your personnel" section of your lab's profile in RIMS. Second, your new personnel need to create a RIMS Training Profile to track their research-related training. They can do this by visiting www.bu.edu/rims/training-registration*		
ORC Overview *Orient new personnel to the Office of Research Compliance (ORC) website at www.bu.edu/orc and ensure it is bookmarked on computer.*		
User Certification Forms *- Add new personnel information to User Certification Forms in Lab Safety Log Books.*		
Add to Lab Protocols (Amendments) as applicable *www.bu.edu/orccommittees* ***and*** *www.bu.edu/ehs/programs/laboratory-safety/controlled-substances*	*IBC* *IACUC* *Radiation Protection* *Controlled Substances*	

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Importance of Tracking Personnel

- Personnel can be added/changed only through your Principal Investigators account information in RIMS
- Keeping personnel up to date can affect our lab reports for training records.
- Not tracking can delay IBC protocols if people are not listed, or not listed as trained (because they are no longer active)
- Please adjust personnel list before directing lab members to trainings or continuing with refresher trainings. (New personnel Checklist available on www.bu.edu/ehs/lsc-toolkit/new-lab-personnel)

Tracking Personnel in the Lab

- Why is this important to EHS?
  - Injuries in the lab off hours
    - We can look up the personnel (faster response to an emergency)
    - What personnel work with or what lab activities
- Saves time when checking training records
  - Higher accuracy of training records and for specific tasks – Chem/Bio/Rad/Laser/Animal/ etc.
  - Saves you redundant emails each quarter for rosters.

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TRAINING…GETTING STARTED

RIMS and Training Information

- www.bu.edu/rims Research Information Management System
- When you log in you will see two names:

Please select your login entity

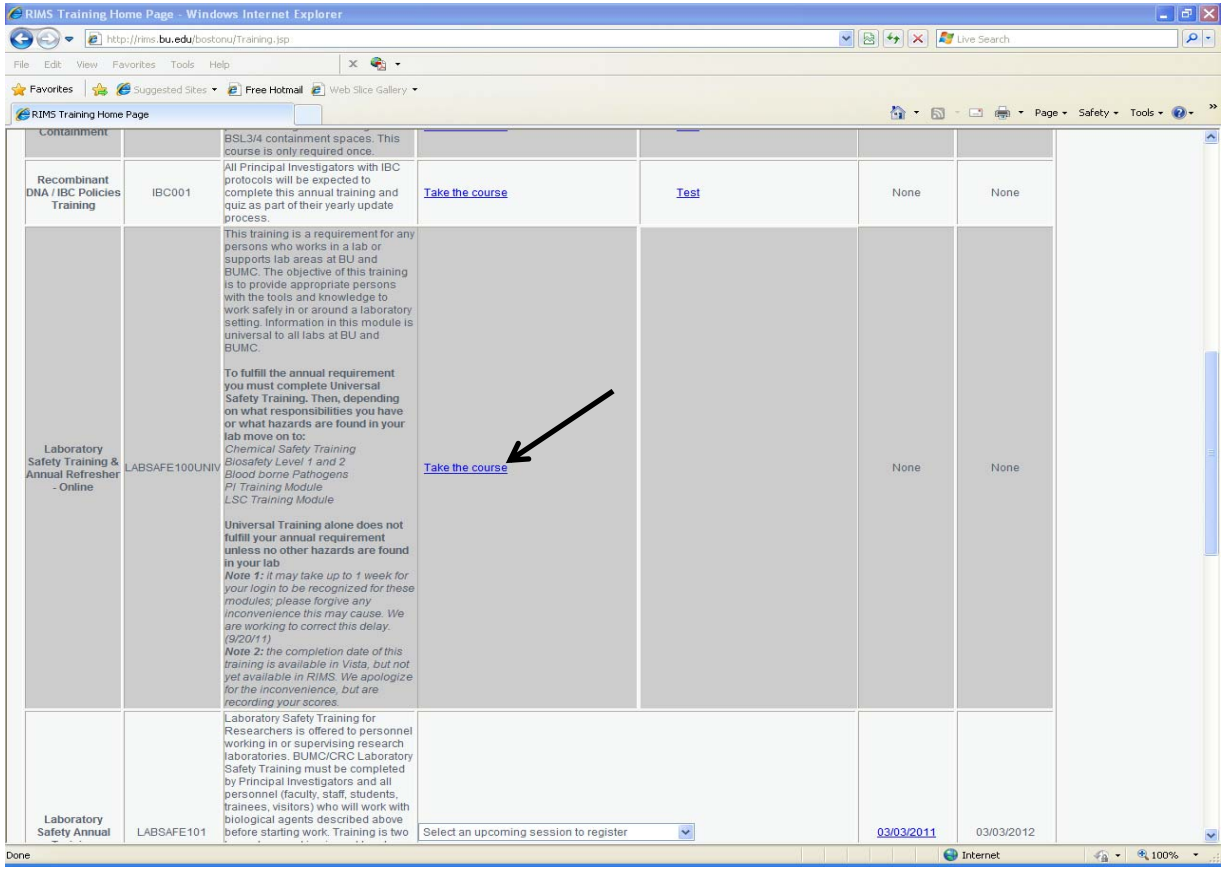
- Your name- Researcher, John/ Jane (Training Profile)
- Your P.I. name - Principal Investigator, John/Jane (Lab profile)

Proper Access for Your Task

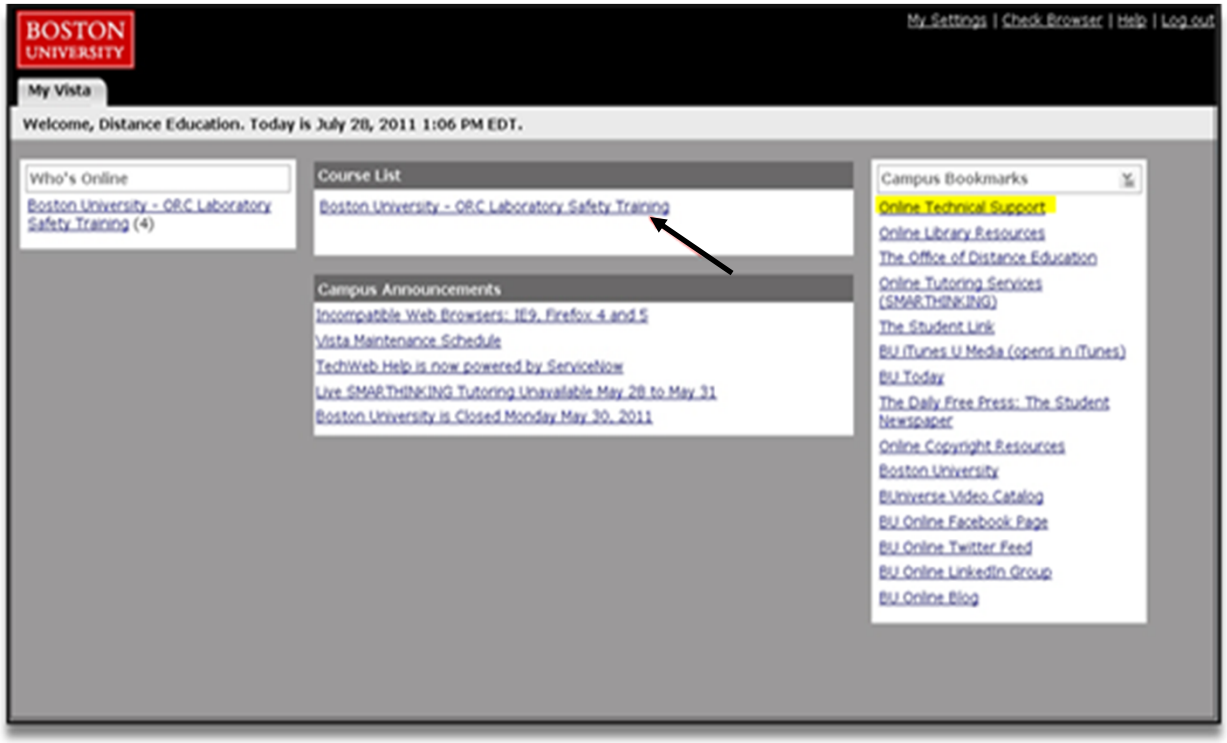
- Clicking on your Name-will provide access to *your* RIMS training profile
  - All lab members who intending on signing up for trainings on line will have to create an account, adding them to RIMS early will assist with online access.
- The PI Name - will allow you to update lab specific items such as personnel, chemical inventory and protocol submissions.
  - Allowed access ONLY if PI granted you secondary access

From your training profile click on

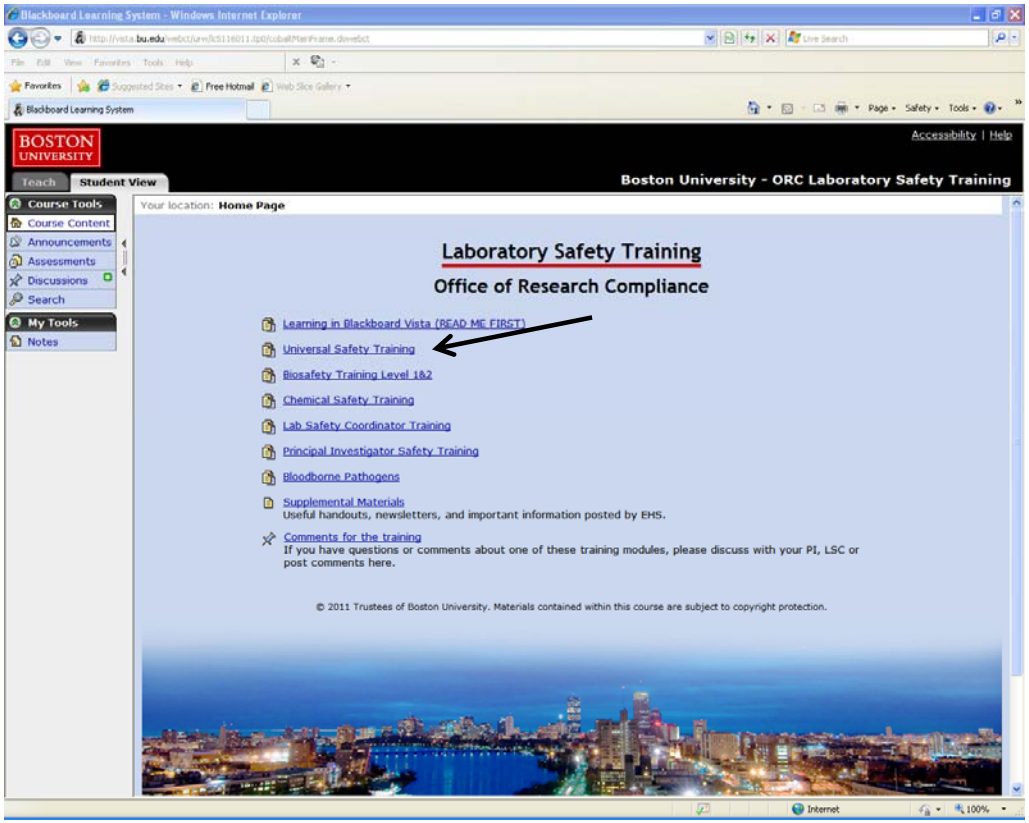
Take The Course



Clicking on “ORC Laboratory Safety Training” will bring you to your homepage



At first your only training option will be Universal Training



Once you pass the Universal Quiz with 80 or Higher, come back to your homepage to see the other modules

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Universal Training and Modules

Universal Training is not the full training

To complete the training the following modules must be completed:

- Chemical Safety –For laboratory work with Chemicals, additional hazardous waste information.
- Biological Safety Levels 1 and 2 –Anyone working in a bio level 1 or 2 lab
- Blood Borne Pathogens- Anyone working in a lab using any human based material
- PI Training- Principal Investigators
- LSC Training- Lab Safety Coordinators. Use as a tool for transitions

- Only when you've completed all needed modules will your lab safety training or refresher will be completed
- The PI and LSC should ensure Lab members take appropriate modules

Module scores

- Universal Safety Training: 157 Students -96%
- Chemical Safety Training :71 Students- 90%
- Biological Safety Training: 68 Students-95%
- BloodBorne Pathogens Training: 41 Students- 97%
- Lab Safety Coordinators: 22 – 35/40 or 87.5%

Refresher Information

- Completing appropriate modules is the equivalent of the in person Lab Safety Training and the Annual Refresher.
  - In 2012 there will be a refresher module. Using this method for the first year ensures everyone starts with the same baseline training.
- You must create a Training Profile in RIMS to use the online modules
- It may take time for Distance Education to process your access to Blackboard Vista

LSC Feedback and Providing Assistance

- This is still a new program so we are looking for feedback from those who have taken it.
- It is suggested that you take the modules associated with your work so that you may assist others in the laboratory and provide us with thoughts, suggestions, and comments
- Upon completion of the training your annual lab safety training refresher requirements will have been met!
- Comments can be filled out today, placed on the LSC tool kit, or comment on Vista

FIRE AND GENERAL SAFETY INSPECTIONS

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Fire and General Safety Inspections

- Quicklist items- Consistent through out all inspections, our best quantifiable means of determining our trends
  - Chemical storage- Flammable and corrosive cabinets/segregated and used
  - Proper waste determination/labeling/segregation/time
  - Ceiling tiles not damaged- keep heat from escaping past the sprinkler heads
  - Fire extinguishers- checked monthly/ unobstructed
  - Safety equipment- eye wash/safety showers/ sprinklers
  - Doors being kept shut- propped doors affect air balance and containment
  - Emergency action plans- posted on the walls outside of labs
  - 36 inches of clearance through the lab
  - Electrical cords and equipment maintained- grounded, not frayed, UL listed.

Fire and General Safety Inspections

- 18 inches of clearance below sprinkler heads
- Extension Cords should not be used
- Machine guarding- installations not removed or damaged
- General House Keeping- debris, filings, sharps, tools placed away properly
- Gas cylinders secured, labeled and capped
- Keep electrical panels unobstructed.
  - Provide enough space for the width of the panel and 36” access in front
- For facilities related items:
  - **BUMC: 414-6666**
  - **CRC: 353-2105**

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Identify Trouble Areas- Pre-Inspection

- Engineering Controls- items that affect correct use
  - **Fume hoods, Biological Safety Cabinets, snorkel-hoods**
  - **Appropriate for the work being conducted**
  - **Free from clutter and improper storage.**

- We don't expect you to change ceiling tiles or fix your fume hood if you experience low flow or sudden failure. We do expect you to contact us with these issues immediately. Do not wait until an inspection to bring these to the attention of EHS, facilities or other applicable party.
- Inform your DSA of concerns in your laboratory

Identifying Trouble Areas- Pre-Inspection

- Work Practice/Administrative Controls- Lab Dependent
  - Standard Operation Procedures for group areas posted (helpful hints from LSC-toolkit)
    - Writing out the procedure can ensure effective trainings with repeat quality and assurance that the steps are being followed
  - Document lab specific training in your Laboratory Chemical/Biological safety log book
- Personal protective equipment (PPE) Items to address to EHS
  - N95 in the lab without enrollment in the Respiratory Protection Program
  - Chemical gloves- worn out, not the right size, inappropriate for chemical work (compatibility), DSA can assist with glove compatibility charts
  - Not dressed properly for the lab work conducted in your area
  - Lab coats/ Eye-Face Protection proper for work?

What's your Fire Safety I.Q.?

- At your next group meeting or inspection…quiz your lab mates
  - What's your designated rally point for the lab?
  - Which is the closest stairwell? Do you know where both are located?
  - Where is the spill kit/Lab safety Center located?
  - Are their objects in the path of egress? Is their 36 inches of clearance through out the lab? (Helpful hint a typical floor tile is 12in)
  - Suggest a group tour of lab safety items- Take a walk through the lab to refresh your laboratories memory of safety equipment
  - What do you do if there is a fire in the lab?
  - What do you do when the fire alarm sounds in the lab?
  - Get nominated! LSC-toolkit!

PPE PROGRAM AND SELECTION GUIDE

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Personal Protective Equipment Program and Selection Guide

- Purpose and function
  - Standardize PPE across Boston University Campuses
  - To ensure all laboratory personnel are wearing the correct PPE for task at hand

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Selection based on hazard class

Type of Work conducted in lab?		Biological Hazards				
Yes	**No**	**Type of Work**	**Potential Hazard(s)**	**Proper Dress**	**Hand Protection**	**Eye Protection**
		Biological Safety Level 1		Required: Lab Coat, long pants and closed toe shoes	Gloves appropriate for the material being handled	Required: Safety Glasses while completing bench work, Safety Goggles and/or Face Shield combo required for anticipated splashes, sprays or splatters
		Biological Safety Level 2		Required: Lab Coat, long pants and closed toe shoes	Gloves appropriate for the material being handled	Recommended: Safety Glasses while working in a biological safety cabinet (BSC) and/or bench top Required: Safety Goggles and/or Face Shield combo required for anticipated splashes, sprays or splatters

PPE Selection Guide

Example*	Type	Pro	Con	Applications
	Nitrile - Disposable	Dexterity Sensitivity Clear indication of tears and breaks	Strong Oxidizing agents, aromatic solvents, ketones, acetates	Caustics, acids, alcohols, oils, grease
	Nitrile – Reusable	Good abrasion resistance	Strong Oxidizing agents, aromatic solvents, ketones, acetates	Caustics, acids, alcohols, oils, grease
	Butyl	Resist oxidation, ozone corrosion, abrasion, remains flexible at low temperatures	Halogenated, aliphatic and aromatic hydrocarbons,	Organic Acids, Alkalis, Aldehydes, Alcohols, Amines and some organic acids, esters, ethers and glycols
	Viton	Very flexible	Some ketones, esters, amines	Chlorinated and aromatic solvents
	Neoprene	Good pliability, finger dexterity, tear resistance, heat resistance	Aliphatic, Halogenated and aromatic hydrocarbons, Esters,	Some organic acids, bases, peroxides, hydrocarbons, phenols
	Poly Vinyl Chloride (PVC)	Abrasion resistant	Aliphatic, aromatic and chlorinated organic solvents, aldehydes, ketones, nitrocompounds	Strong acids and bases, alcohols, glycol ethers, peroxides, amines

*Colors and styles available may vary depending on manufacturer.
**Check Manufacturers' website for exact temperature ranges.

Example*	Type	Pro	Con	Applications
	Latex	Excellent tensile strength, elasticity, temperature resistance	Allergic Reactions, organic solvents, hard to detect holes	Weak acids and bases, alcohols, aqueous solutions
	Stainless Steel Mesh	Protection against sharp tools	Reduced Dexterity	Working with sharp tools
	Cryogenic Gloves**	Excellent dexterity, long exposure to cold temperatures	Not for immersion in liquid nitrogen or use near open flames	Working with very cold materials, equipment and/or dry ice
	Autoclave Gloves**	Heat resistant, wrist and forearm protection	Varying maximum temperatures *(check with manufacturer)*	Working with heat producing equipment
	Welding Gloves	Reflects heat	Only protects hands from exposure	Working with or around welding equipment
	Puncture Resistant	Protection against cuts and punctures		Working with sharp materials

*Colors and styles available may vary depending on manufacturer.
**Check Manufacturers' website for exact temperature ranges.

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Conclusion

- While we are making progress with inspections, our top items include Training, Hazardous Waste Management and Chemicals Stored Properly
- The LSC Tool kit is available for items such as posters, checklists and answers to your peers questions
- Training is now available online, access is provided through RIMS and a training profile should be made for your new lab members.
- Fire and General Safety Inspections are underway this quarter, for more information on content contact your D.S.A
- Next meeting agenda will focus on Personal Protective Equipment in the Laboratory and near misses
- Comments, questions or suggestions can be written on the LSC Tool kit or provided on the comment section of your hand out.