## 2019 Summer Laboratory Safety Coordinator Meeting Environmental Health & Safety



#### Agenda

- Welcome & Introductions
- Incident Report
- Introduction to new Sharps Training
- EHS Systems Update
- Satellite Accumulation Areas and Waste Pick-ups
- Lab and Equipment Decommissioning
- Emergency Eye Wash and Safety Showers



### Welcome



#### **Research Safety Personnel CRC July 2019**

- Director Ron Morales
- Dawn Hengl- Program Manager
  - Chemical Program manager
  - Research Labs located at 3 and 24 Cummington Mall (Flrs 7-10); 590 (Chem and Physics), 675-725 Comm. Ave.
- Connie Gath- Sr. Safety Specialist
  - Assist with BioRAFT; Lead on the Biosafety Cabinet program; Assists on Shipping Biologicals
  - Research Labs located at 2, 5, 24(Flrs 1-6), 48, 64 Cummington Mall; 590 (Bio), 635, 871, 900 Comm. Ave; 1 University Rd; 100 Ashford St.
- Samantha Stone- Sr. Safety Specialist
  - Lead on Hazardous Gas monitoring
  - Research Labs located 610,730,750 Comm ave; 8( Photonics) &15 S. Mary's St; 36, 44, 110 Cummington Mall;



#### **Research Safety Personnel MED July 2019**

- Director Ron Morales
- Tanya Cafarella- Sr. Safety Specialist
  - Lead on Lab Safety Coordinator meetings, Lab Safety trainings; Assists on Shipping Biologicals
  - Research labs located on floors 4-8 of X and floors 2-6 of 670
- Anwaar Ahmad- Sr. Safety Specialist
  - Assist with IACUC and Nanomaterials
  - Research labs located in E and K buildings
- Nilay Dey- Sr. Safety Specialist
  - Lead on Controlled Substance Program
  - Research labs located in R and L buildings
- Jenny Davis- Sr. Safety Specialist
  - Lead on IACUC and Shipping Biologicals
  - Research lab located in W and on floors Basement-3 of X building
- John Gilmartin- Program Manager
  - NEIDL BSL-2 Labs



## **YTD Lab Incident Report**



#### Incidents

- January to June time frame
- Most incidents fell under two categories: Lacerations and Chemical spills/exposures
- Note: Animal bites incidents are a joint issue with IACUC and are not in part of this presentation.



#### **Incidents: Chemical related**

- List of chemicals involved in recent spills and exposures:
  - Acetone
  - Sodium Hydroxide
  - TEMED
  - Benzyltriphenylphosphonium
  - Malachite green
  - n-Butyllithium
  - Sodium azide
  - Dimethyl sulfate
- Leading root causes for the spills and exposures
  - Lack of training
  - Not conscientious
  - Defective equipment





#### Lab Safety Spill Kit Demonstration

#### Includes:

- Absorbent Pads
- Spray Bottle
- Absorbent Boom
- Spill Pillows
- Hazardous Waste Labels

Do not use these materials for nonemergencies





#### **Incidents: Sharps related**

- Forceps puncture
- Cut with a razor
- Cut from broken or chipped glassware (multiple)
- Needle sticks
- Cut from a pipet
- Leading root causes for the lacerations:
  - Lack of training
  - Not conscientious



# Examples of how to prevent recurrence of incidents

- Check glassware for cracking pitting hazing before use to mitigate sharps exposures
- Only scale up an experiment after conduction of a new risk analysis
- Choosing the appropriate PPE and donning and doffing correctly must be adhered.
- Utilize modeling and mentoring with junior staff especially on equipment with higher probability of injury.
- Request assistance from EHS for hazard analysis and risk assessments of procedures and experiments or lab spaces.
- Remain mindful of the inherent experimental hazards regardless of familiarity.



## **Sharps Training**



#### **Sharps Safety Training Objectives**



Awareness

- Prevention
- Communication
- Reporting



#### **Identify Sharps Hazards...**







 Sharps include: needles, syringes, razor blades, slides, scalpels, glass-pipettes, broken plastic or glassware, and other devices capable of cutting or piercing the skin.











# What are your chances of infection from a contaminated sharps injury?



- Injuries from sharps present a significant occupational health risk because such injuries may directly introduce pathogens, chemicals, or radioactive materials into the body.
- Always practice universal precautions



#### **Timing of Sharps Injuries**







#### **Avoiding Sharps Injuries...**

General Risk Factors	Prevention Strategies
Lack of Safety Devices	Use Safety Devices as Intended. Select Needleless Systems When Available for the Application. Minimize Use of Glass and Select Plastic Alternatives.
Inconveniently Placed or Overfilled Sharps Disposal Containers	Place a Sharps Disposal Container Close to the Point of Operation. Immediately Dispose of Devices in Rigid, Sharps Containers and Do Not Overfill
Busy, Congested Environments with Heavy Work Pressure and Rushing	Be Aware of People Around You. Stop if You Feel Rushed or Distracted. Focus on the Task.
Poor Housekeeping	Create a Neutral Zone. Work in Well-Lit Areas. Organize Work Area.
Frequent and Distracting Interruptions	Limit Interruptions During Procedures.

• It is estimated that more than 800,000 injuries occur annually in the U.S. from needles and other sharps.

## First Aid for Exposures & Reporting

Punctures

- 1) Apply pressure below wound to force bleeding
- $\checkmark$  2) Wash with soap and water for  $\sim$ 15 minutes

<u>Cuts</u>

✓ Wash with soap and water for ~15 minutes

For Medical Assistance:

- On CRC call: (617) 353-2121
- On BUMC/BMC call: (617) 414-4444

<u>Report all sharps injuries to:</u>

ROHP: (617) 358-7647

<u>Report all sharps incidents to EHS:</u>

- On CRC call: (617) 358-4094
- On BUMC/BMC call: (617) 358-7840





## **EHS Systems Update**



#### **BioRAFT**

- BU has been live in BioRAFT for over 2 years now.
- Modules rolled out
  - Platform (Locations, Pls, Spaces, Members, etc.)
  - Inspections
  - Training
  - ChemTracker
  - Haz Waste
  - Radioisotope
  - Equipment
- As with any system data accuracy is the key to success



#### **BioRAFT Access**

- By default BioRAFT is open to all active faculty/staff/students. If you have a BU Kerberos ID you have access to BioRAFT (one exception is alumni)
  - Alumni who are not staff will not be able to access the system without reaching out to EHS Technology Program Manager (<u>cheir@bu.edu</u>)
  - Visiting students, researchers, scholars who will be working in your laboratory will need to be added to your BioRAFT profile as members and assigned training. Please reach out to EHS Technology Program Manager so we can get these users in the system and added to your laboratory profile in BioRAFT.



#### **BioRAFT and the LSC**

- As the designated LSC you have the ability to make the following changes:
  - Update Laboratory BioRAFT Profile (Office location, telephone #s, etc.)
    - KEEP IN MIND LABORATORY SPACES CAN ONLY BE ADDED/REMOVED BY EHS. IF THERE ARE SPACES MISSING FROM YOUR LABORATORY PROFILE PLEASE CONTACT YOUR EHS SAFETY SPECIALIST.
  - Add/Remove Members (important to keep up-to-date)
  - Manage/Edit <u>JOB ACTIVITIES</u> of members
    - VERY IMPORTANT in order to trigger the required safety trainings in BioRAFT
    - Without assigned job activities there is no training reminders/requirements
    - PLEASE MAKE SURE ASSIGNED JOB ACTIVITES MATCH THE WORK BEING PERFORMED IN YOUR LABORATORY



#### **BioRAFT and the LSC cont.**

- Manage training compliance (You and the PI are emailed a list of users who are delinquent on trainings in your lab)
- Manage ChemTracker: To update your chemical inventory (required)
  - CFATS and Select Agent Toxins: It is important that these inventories be maintained in BioRAFT and any updates be made upon receipt/transfer/disposal.
- Submit Hazardous Waste Pick Up Requests
  - CRC : functionality has been rolled out to entire campus
  - MED: being rolled out gradually building by building
- Provide Additional Permissions to lab members
  - Hazardous Waste Pick ups/request supplies
  - Manage ChemTracker



#### **Preview of Things to Come**

- Haz Waste module roll out to rest of medical Campus
  - Currently only NEIDL and R Building are live on MED
- Door sign module:
  - EHS has begun using the door sign module to generate HAZCOMs for all spaces
  - BioRAFT Door sign module relies on the hazards that are entered for your laboratory to prepopulate some of the fields on the HAZCOM
    - To that end it is important that laboratories update their hazards anytime there is a major change to the hazards or at least annually.



#### **EHS Website Updates**

- <u>Research Safety FAQ's page</u>
- Updated Laboratory Safety Coordinator Toolkit Page
- Hazardous Waste Pick Up Page: has been taken down because all haz waste are not handled in BioRAFT (CRC campus wide). Medical campus roll out has begun
- Updated EHS Telephone #s for MED campus:
  - 617-358-7840
  - Your EHS contact is your assigned safety specialist
  - In the event they are out of office you can always email <u>oehs@bu.edu</u>
  - If issue is related to BioRAFT, website, or other EHS system you can reach out to EHS Technology Program Manager Sony Heir <u>cheir@bu.edu</u>



#### Inspections/Training Data Analysis

- Training Safety Compliance by Course:
  - Laboratory Safety Training: 95.1%
  - Chemical Safety Training: 96.6%
  - BSL 1 & 2 Safety Training: 96.5%
  - Bloodborne Pathogen Safety Training: 97.2%
- Inspection Findings: (Top 5: Q4 2018, Q1 2019)
  - Chemical waste not stored appropriately in satellite accumulation area
  - Trainings are not completed as required by job activities
  - Chemical containers are not properly labelled and/or don't meet GHS requirements
  - Chemical inventory not available and/or is not current
  - Chemicals not stored properly



## SAA Compliance and Bioraft



#### **Managing Hazardous Waste**

- Step 1: Set up Satellite Accumulation Area(s) (SAA).
  - This is the designated location where you'll collect your hazardous waste chemicals
  - The area must be identified by a sign (available from EHS)
  - The area must have <u>secondary containers</u> under the chemical waste storage bottles
  - SAA must be located <u>at the site</u> where the chemical waste is generated
  - SAAs must visually inspected weekly







#### Managing Hazardous Waste Containers

#### All Containers of hazardous waste in a SAA must:

- Be tightly closed at all times
  - The cap must be on and securely closed (FUNNELS!!)
  - Bags must be tied/taped shut
- Be <u>segregated from incompatible wastes</u> in the same SAA via different secondary containment (use two secondary containment trays to keep them apart)
- <u>Not be duplicated</u> in the same SAA; only one container of each chemical waste can be active in an SAA (fill one, then start the second one)
- Be labeled (next slide)



#### Hazardous Waste Container Labeling

- Every container of hazardous waste must be labeled at all times:
  - The words '<u>Hazardous Waste</u>' (already printed on the labels EHS supplies)
  - The <u>name of the chemical(s)</u> in the container:
    - No abbreviations
    - Must be full, English words
  - A <u>statement of the hazard</u>; just check one (or more if appropriate) of the boxes on – the label.
  - The <u>date</u> the container is <u>FULL</u> (i.e. the date you stop putting waste into it)



http://www.bu.edu/ehs/files/2010/05/Chemical-Waste-Labeling-Handout.pdf



## Funnels must be closed when not in use



#### Hoses can corrode and release glycol in chilling mechanisms





(3) The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greater. <u>Containers that do not contain free liquids need not be considered in this</u> <u>determination</u>



#### Inadequate containment!!!

















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<ul> <li>» Send Lab Message</li> <li>» Self Inspections</li> <li>» Manage Lab Forms</li> </ul>	Request <u>#</u> ▲ Profile Number	<u>Waste</u> Total <u>Profile</u> Amount	Supplies I Needed I	Last Requested Requested By	
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+ Training					"submit new
<ul> <li>Equipment</li> <li>My Account</li> </ul>					chemical waste pickup request"



This is the form. Please + Research Tool + Training + Equipment keep in mind, this is My Account essentially just an email to the waste vendor. Any information that you think would be important if you had to find a reagent in someone else's lab is exactly what our chemist requires.

BOSTON

Find Individual or

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#### Lab Decontamination and Decommissioning: Why, What, Who, When, and How

#### Why Decommission?

- Lab Equipment and lab spaces may be contaminated with chemicals or biological hazards.
- It's important to remove these hazards before equipment is removed or a lab is turned over for the safety of the environment and people who will be working in that space in the future
  - The goal is to minimize hazards to the environment and people working with old lab equipment and lab spaces (Construction workers, Facilities, etc)



#### What needs to be decontaminated?

- Any equipment that has come into contact with a laboratory hazard, directly or indirectly. Common examples include:
  - Freezers and refrigerators
  - Centrifuges
  - Water baths
  - Incubators
  - Fume Hoods
  - Biological Safety Cabinets
- Laboratory surfaces, floors, and chemical storage areas if the space is being vacated





#### Who needs to perform decontamination?

- Individuals who use the equipment are responsible for decontaminating lab equipment and spaces
- For certain equipment, facilities or EHS may need to assist
  - Removing refrigerant MUST be done by HVAC. Labs should never attempt to remove refrigerant from a freezer or refrigerator
  - Please coordinate with EHS to remove unwanted chemicals
- Once equipment has been decontaminated by the lab, EHS needs to post signage to show the equipment is decontaminated. Contact your Safety Specialist for assistance with this step



#### When should we decontaminate?

- Times when decontamination should be performed:
  - Moving
  - Getting rid of equipment
  - Giving equipment to another lab
  - Trucking/Facilities needs to relocate equipment
- Decontamination can be done in advance, but decontamination signage issued by EHS has a 2 week expiration date.
- Contact your Safety Specialist well before a big planned move or equipment disposal so they can help you come up with a decontamination plan



#### How?

- Wipe down all surfaces on equipment with either 70% ethanol or 10% freshly prepared bleach
- For radioactive equipment and spaces, Radiation Safety must be contacted
- Drain pump oil if required and dispose of as waste
- Contact EHS for mercury containing equipment or lead containing equipment
- Do not remove refrigerant gas yourself. HVAC will take care of this at a separate facility
- Ensure all unwanted chemicals are removed
- Rinse sink traps with bleach
- Fill out the EHS Decontamination form and give it to your lab's EHS Safety Specialist
- Coordinate removal with Facilities
- Make sure the green equipment decontamination sticker is placed

#### ENVIRONMENTAL HEALTH AND SAFETY

#### Laboratory or Equipment Decontamination Certification

1. I certify that the rooms or equipment listed below, previously used by my laboratory, have been emptied of biological and chemical materials: Equipment

#### 2. DECONTAMINATED

The surfaces of these rooms/equipment have been decontaminated (if equipment: inside and outside) with: (specify decontaminants and percentages, (i.e. 70% Ethanol, if 10% bleach is used, it must be freshly made up).

#### CHEMICALS

- I chemicals contained within the rooms or equipment have been removed or drained and collected for proper disposal (including, but not limited to:
   Oil If the equipment contains a pump or other oil reservoir, oil must be drained and collected as Hazardous Waste in the laboratory's Satellite Accumulation Area. Contact EHS for assistance.
- Mercury If there is a thermometer or other device inside or associated with the equipment or space the device must be removed and collected as Hazardous Waste in the laboratory's Satellife Accumulation Area. Contact EHS for assistance.
- Refrigerant Gas If the equipment involved cooling and relied on refrigerant gas, this gas must be removed prior to disposal. Facilities Management must be contacted as only licensed mechanics can perform this service.
- Lead Shielding If the equipment used lead as a shielding agent, this material must be removed prior to disposal. Contact EHS to assist in lead removal.

O All chemicals contained within the rooms or equipment have been removed or drained and collected for proper disposal

#### 4. RADIOACTIVE MATERIA

If the space or equipment contained or was used with any radioactive material (isotopes, sealed sources, etc.), the laboratory pe YES NO N/A sonnel have decontaminated the area and equipment. Radiation Safety has been contacted, has surveyed the equipment, and has certified it free of detectable radioactive contamination and arranged for the removal of any lead shielding \* Complete a Radiological Equipment Release Survey Request 5. SINK TRAPS YES NO N/A All sink traps (including those in Fume hoods) have been bleached and flushed v 20 minutes, then flush thoroughly with water 6. FLUID YES NO N/A Does equipment contain fluid (water bath, antifreeze, etc.)? OTHER PIs & CO-P Last Name First Name Phone Ext



YES NO N/A

# **Emergency Eyewash and Safety Showers**



#### Responsibility

Managers responsible in areas where emergency eyewash stations are located will:

- conduct weekly flushes and complete the weekly inspection check sheet
- maintain clear access to and around the emergency eyewash station and safety shower
- report deficiencies of the equipment to the Control Center or complete an online work request
- ensure their employees are trained on the location and use of the equipment in their area



#### **Training and Forms**

Every area where corrosives or flammable liquids are handled or where open flame devices are used shall be equipped with an emergency eyewash station, a safety shower, or both.

Employees who may be exposed to corrosive or flammable materials shall be instructed in the location and proper use of the equipment by their manager - EHS is available for assistance as requested.

- Weekly Eyewash Station Check sheet
- Emergency Eyewash Guidance Document



#### **Inspections and Testing**

Emergency eyewash stations must be flushed by the manager of the area or their designee on a weekly basis following the steps on the bottom of the Weekly Eyewash Station Flush sheet

Equipment will be inspected and a flow test performed every six (6) months (twice annually) by EHS

#### WEEKLY FLUSH STEPS

- Ensure it is easily identifiable and unobstructed.
- Ensure it activates easily with one-handed control, the flow removes eyepiece covers, and water flows evenly and in a steady stream
- Allow it to run for 1-3 minutes to flush stagnant water from the line if this is your first time flushing the station, you may have to run it longer to ensure the water is clean
- If yours does not have a drain, ensure you use a bucket to capture the water
- Complete an online service request for any water flow or unit deficiencies.



#### **Guidance and Instructions**

When performing a weekly eyewash flush, check the following:

► Access and signage: Ensure that the eyewash station is easily identifiable and unobstructed. Carts, chairs, glassware and equipment can all obstruct an eyewash station, which may slow the response in the event of an emergency. If you have to use an eyewash station in an emergency you won't be able to see very well!

► Operation: Ensure that the eyewash station activates easily with one-handed control, the flow removes eyepiece covers, and water flows evenly and in a steady stream.

► Water: Allow the eyewash station to run for 1-3 minutes to flush stagnant water from the line. If this is your first time flushing the station, you may have to run it longer to ensure that the water is clean.

Report malfunctioning eyewash stations to the Control Center at (617) 414-4144 or complete an online service request.



#### **Helpful Hints:**

- Make sure you know where the water drains! Often a bucket or a tray has to be positioned under the unit's drain to collect the water.

- Have a roll of paper towels on hand in case of water leakage.

- A large tray may be needed to collect the water under units that pull down from the wall to activate.

If you have questions or if you are unable to flush your eyewash station, contact Environmental Health and Safety at (617) 358-7840.

