LABS Meeting: Refresher

7/15/2020
Agenda

- Emergency evacuations: Refresher
- Updates
- BL2 and BL2+: What’s the difference? --- Eric Rouse
Why a refresher?

Everyone assumes they know what to do in an emergency.

Sometimes we haven’t reviewed our evacuation plans.

Maybe we have some questions about whether plans change with COVID.

Sometimes we are in an area we don’t typically work.
Geography

- Know your exits.

- Assess your space.

- Think about the typical hazards you work with.
SPH 1 & 2

Address: 655 Huntington Avenue

Assembly Area: Countway Plaza – Kresge

https://www.ehs.harvard.edu/evactrifolds
Address: 651 Huntington Avenue

Assembly Area: Huntington Avenue/Palace Lot – FXB
Pre-Emergency Planning

• Ensure that hallways in your area are kept free of obstructions
• Ensure that stairwell doors are not propped open and that fire doors close properly
• Ensure that sprinkler heads are free of obstruction (at least 18” below the sprinkler head must be clear)
• Report EXIT signs that are not properly lit and visible to the Building Manager
• Participate in routine evacuation drills
• Know and distribute emergency evacuation information
• Coordinate with others in your area building
• Communicate problems – concerns to your supervisor and or building manager.
In need of assistance or disability

- Bias for able bodies.

- HSPH encourages those requiring evacuation assistance to self-identify with HU Environmental Health & Safety (EH&S) and Security by completing this Form.
Remember R.A.C.E.

• **RELOCATE**- If it is safe to do so, relocate people in immediate danger. Instruct others to report to their designated gathering areas. Be aware of persons who may need assistance.

• **ALARM** - Pull the building fire alarm to alert others. Move to a safe location. Call 911 immediately, then call 5-5560, and report the precise location of the fire

• **CONFINE** - Close all doors, windows and other openings to confine the fire, if this can be done safely.

• **EVACUATE** - Evacuate building
Your floor has it’s own map

https://www.osha.gov/SLTC/etools/evacuation/floorplan_demo.html
Evacuation

• The alarm system will sound a pre-signal, a series of four tones at approximately one second intervals.
• The alarm system will then provide a taped message: above. If your floor is being evacuated, the alarm will then commence a “slow whoop” tone as the evacuation signal.

• Proceed to the nearest stairwell and toward the building exit. Detailed evacuation procedures are attached to the entrance doors of your department, center or office. Never take the elevator.
• Make your way to the evacuation assembly area for your building: (Countway Plaza – Kresge, SPH1, SPH2; Huntington Avenue/Palace Lot – FXB)
• Once the building is declared safe, authorities will tell those in the assembly area that they may re-enter the building.

“Attention Please. The signal tone you have just heard indicated a report of an emergency in this building. If your floor evacuation signal sounds after this message, walk to the nearest stairway and leave the floor. While the report is being verified, occupants on the other floors should await further instruction.”
High Rise

According to the definition of the National Fire Protection Association [NFPA, 2012], high-rise buildings are defined as “buildings greater than 75 feet (approximately 23 m) in height where the building height is measured from the lowest level of fire department vehicle access to the floor of the highest occupiable story”. – Source as on right.

The existing procedures for limited evacuations in the event of a fire in a high-rise office building (evacuation of fire floors and floors above and below the fire) have proved effective in protecting building occupants in ordinary emergencies. - https://www.nfpa.org/-/media/Files/Public-Education/By-topic/Highrise/EmergencyActionPlanHighRise.pdf

The perspective of the technical International guidance, e.g., NFPA101 in the U.S. [NFPA, 2012], or the Approved Document B [The Building Regulation, 2006] in the UK, etc. is to provide information on the design of the egress components (e.g., geometric characteristics of the stairs) that can be applied for high-rise buildings. On the other hand, further information on the behavioral issues associated to the egress performance during high-rise building evacuations is still required.- https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Executive-summaries/evacsyste...viewexecsum.ashx?la=en
High-rise building fire alarm systems are required to have emergency voice communication capability. Trained emergency personnel assess the emergency and can then broadcast a variety of specific messages to the occupants. The occupants believed to be in the greatest potential danger are instructed to use the exit stairs to begin their descent. Occupants of other floors might be instructed to stay where they are and await further instruction. In these cases, only occupants on the fire floor and the floors immediately above and below typically receive the message. Should the scale of the emergency increase, the announcements can be expanded to include additional floors, or if need be, the entire building.

The construction, fire protection and life safety systems installed in high-rise buildings, including automatic sprinkler protection, are designed to control a fire so as to lessen the need to evacuate all occupants to the street level. The occupants of the fire floor and floors immediately above and below it should immediately use the exit stairs to descend to a floor level that is at least a few floors below the fire floor. The occupants can then reenter the occupied space on those safe floors to await further instructions.

Egress: Exit Route

• Hallways, corridors and emergency exit routes must be clear at all times.
• The ceiling of an exit route must be at least seven feet six inches (2.3 m) high.
• An exit access must be at least 28 inches (71.1 cm) wide at all points (the minimum specified width, per 7.3.4.1 and 7.3.4.1.2, is 36 inches for new construction and 28 in. for existing arrangements). Where there is only one exit access leading to an exit or exit discharge, the width of the exit and exit discharge must be at least equal to the width of the exit access. • Objects that project into the exit route must not reduce the width of the exit route to less than the minimum width requirements for exit routes. - https://www.ehs.harvard.edu/node/7304
• Items in stairwells, blocking exit doors, restricting corridors or blocking fire emergency equipment constitute a serious life - safety hazard and require immediate corrective action.
Delayed Egress

PUSH UNTIL ALARM SOUNDS - DOOR CAN BE OPENED IN 15 SECONDS

The delayed-egress locking system must automatically unlock the doors upon activation of either the fire detection system or sprinkler system.
Crawl low, under the smoke to breathe cleaner air if there is a fire. Test doors for heat before opening them by placing the back of your hand against the door so you do not burn your palm and fingers. Do not open a hot door, but find another exit route. Keep “fire doors” closed to slow the spread of smoke and fire.

Shelter in place

In some instances, it may be safer to “shelter in place” than it is to leave a building, i.e. smoke or fire is immediately outside your room, individuals with mobility disabilities are above or below ground floors or if the hazard causes the elevators to become inoperative (i.e. elevator recall). In some cases, authorities may direct you to shelter in place instead of evacuating.

https://www.ehs.harvard.edu/sites/default/files/evacuation_planning_shelter_in_place_fact_sheet.pdf
Flammable Liquids

Class IA
• Flash Point less than 73°F
• Boiling Point less than 100°F
• Class IA - Diethyl Ether, Ethylene Oxide, some light crude oils

Class IB
• Flash Point less than 73°F
• Boiling Point equal to or greater than 100°F
• Class IB - Motor and Aviation Gasolines, Toluene, Lacquers, Lacquer Thinner

Class IC
• Flash Point equal to or greater than 73°F, but less than 100°F
• Class IC - Xylene, some paints, some solvent-based cements

Class II
• Flash Point equal to or greater than 100°F, but less than 140°F
• Class II - Diesel Fuel, Paint Thinner

Class IIIA
• Flash Point equal to or greater than 140°F, but less than 200°F
• Class IIIA - Home Heating Oil

Class IIIB
• Flash Point equal to or greater than 200°F
• Class IIIB - Cooking Oils, Lubricating Oils, Motor Oil

https://www.nfpa.org/Assets/files/AboutTheCodes/30/30_FAQs.pdf
These definitions and classifications were agreed to years ago by NFPA, the U. S. Department of Transportation (DOT), and the U. S. Occupational Safety and Health Administration (OSHA) in an attempt to remove inconsistencies in the definitions used at the time. Since then, DOT has changed its definition of "flammable liquid" by raising the [flash point] upper limit to 141°F (60.5°C). This was done because the United States is a partner to a world-wide set of hazardous materials regulations sponsored by the United Nations and must use the UN definitions, at least for international transportation. Note, however, that DOT regulations include a so-called "domestic exemption" that allows a shipper to redesignate as a combustible liquid any liquid whose flash point is in the NFPA Class II range and which does not meet any other hazardous material definition.

https://www.nfpa.org/Assets/files/AboutTheCodes/30/30_FAQs.pdf
Fridges & Flammables

• Household (Domestic): Refrigerators and freezers that can be used in school science laboratories for storage of aqueous solutions and nonflammable/non-explosive materials.

• Lab-Safe (Flammable Safe): Refrigerators and freezers which are used for storage of flammable or explosive materials. This type of cooling technology has no internal switching devices that can arc or spark as a source of ignition. The compressor and other circuits usually are located at the top of the unit to reduce the potential for ignition of floor-level flammable vapors. These refrigerators also incorporate design features such as thresholds, self-closing doors, and magnetic door gaskets. Special inner shell materials control or limit damage should an exothermic reaction occur within the storage compartment.

• Storing explosives? Reach out to EH&S.

• Links:
  • https://www.ehs.harvard.edu/node/7312
  • https://www.nfpa.org/Assets/files/AboutTheCodes/30/30_FAQs.pdf
Flammables gases

- Separate flammable gas (ex. hydrogen) cylinders from oxygen, chlorine, and other oxidizers by at least 20 ft. (6.1 m), or use a barricade of noncombustible material. This barricade should be at least 5 ft. (1.53 m) high and have a fire resistance rating of at least ½ hour.

- Always secure cylinders upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the cylinder is not in use.

- Post “No Smoking or Open Flames” signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class hazardous areas.

- The Use of a Flash Arrestor - Whenever a flammable gas is to be used it is recommended that a simple flash arrestor be installed in the line. Flashback is the reversing of the flame such that it travels through the line back into the pressure regulator or cylinder.

https://www.ehs.harvard.edu/node/7310
https://www.ehs.harvard.edu/node/7634
Updates

PPE assessment language and default PPE by activity now reflect current COMS requirements including clothing covering the legs for BL1 & BL2 and lab coats recommended for BL1. PPE requirements for BL2+ have also been added. These changes will be reflected when creating new PPE assessments and when updating current PPE assessments.

BL2 and BL2+: What's the difference?
(Awareness Training)

*This training does not replace laboratory specific BL2+ training requirements.*

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The following are subject to COMS oversight:

- Recombinant or synthetic nucleic acids as defined in the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines).
- Human or non-human primate blood, cells, tissues, fluids, and secretions.
- Biological toxins subject to the National Select Agent Registry.
  - Examples: Conotoxins, Botulinum neurotoxins, TTX...
- Bacteria, virus, fungi, yeast, parasites, and prions.
When do we use BL2+?

• Required for some viral vector work depending on genes involved:
  • Increasing expression of an oncogene.
  • Inhibiting a tumor suppressor gene.

• Appropriate for some infectious agent work depending on sample type, concentration, or other factors.
  • HIV, HBV, zika virus, SARS-CoV-2+ samples.

• Genes encoding some functional biological toxins.

• Or as determined by COMS...
What is BL2+?

• The application of specific BL3 work practices to enhance the biosafety of BL2 work practices.

• Defined by COMS BL2+ Policy available here:
  
  • https://hms.harvard.edu/departments/committee-microbiological-safety/registering-coms/coms-policies/coms-bl2-policy

• Additional stipulations may be included in your COMS approval letter.
BL2+ Personal Protection Equipment (PPE):

- A disposable solid front gown that is impervious to fluids is required.
- Double gloves are required.
- Skin should not be exposed during work with infectious materials.
  - Options include extended cuff gloves and gowns with closed cuffs.
- Respiratory protection may be required.
  - Must be evaluated with BSO.
- All PPE must be dedicated to BL2+ activities and must be disposed of in a biowaste container.
BL2+ Work Practices

Include:

• Efforts should be made to reduce aerosols and aerosol generating procedures.

• Elimination of sharps.

• All work must be conducted in the biosafety cabinet or other physical containment device.
  • No infectious agents or materials may be left unattended inside the biosafety cabinet.

• All centrifugation must be conducted using sealed rotors or centrifuge safety cups/buckets.

• Any research material handled in the biosafety cabinet while working at BL2+ must be decontaminated on the outside of each container prior to removal from the biosafety cabinet.

• Transfer of materials to or from incubators, freezers, or centrifuges should be conducted within a secondary container with absorbent material.
BL2+ Waste Procedures Include:

- Inside the Biosafety Cabinet (BSC)
  - A solid waste collection container with autoclavable biohazard waste bag must be placed inside the BSC to collect solid experimental materials.
  - Liquid waste must be inactivated with the appropriate disinfectant prior to being removed from the BSC.
  - All materials and surfaces inside the BSC are considered contaminated and must be decontaminated before removal from BSC.

- Solid Waste Disposal Options
  - Follow SPH policy for biowaste containers.
  - Autoclaving prior to disposal may be required.
BL2+ laboratory spaces must be designated with a sign on the door indicating that materials requiring BL2+ work practices are in use and listing the agent(s).

- Access control is required when the space is at BL2+.
  - If you have not been trained and approved to enter the space-Do Not Enter!
For more information:

Contact your BSO at eric_rouse@Harvard.edu

Find Harvard Biosafety Resources at
https://www.ehs.harvard.edu/services/biosafety

Find COMS Policies at
https://hms.harvard.edu/departments/committee-microbiological-safety/registering-coms/coms-policies