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Applicability: Faculty, Staff, Students and Departments

Purpose

Portable Fire Extinguishers Placement in Lehigh University Owned Buildings Common Area Placement

Policy

As described by the Lehigh University Life Safety Team, this policy will standardize all Fire Extinguisher locations on campus. Relocating Fire Extinguishers to common areas across campus indirectly assists an individual to easily locate a portable Fire Extinguisher in the event of a fire emergency in any University owned building. This policy allows for the removal of Fire Extinguishers from individual rooms, with a few exceptions. This policy ensures placement of extinguishers in common areas is efficient, readily accessible, and is standardized in all buildings.

Fire Extinguisher training is not currently required for all students, staff, and faculty. The International Fire Code, NFPA 10, and OSHA do require annual Fire Extinguisher training. There is an exception to this: as long as there is a written policy published campus wide that everyone is to evacuate in the event of a fire emergency.¹

The purpose of this policy is to reinforce the University's expectation that in the event of a fire or fire alarm, all occupants are to leave the building. The Current Lehigh University policy for occupant action during a fire alarm activation or notification of an emergency in a university owned building is that: all occupants are to immediately evacuate via the most direct and safest route possible. Fire Extinguishers will be located along paths of egress from all buildings.

1. Survey of Portable Fire Extinguishers on Campus findings:

The Life Safety team's survey of portable Fire Extinguishers on campus that began July of 2018 was completed December 2018. The team charted and mapped every Fire Extinguisher, as well as verified information provided by the previous vendor responsible for portable Fire Extinguishers maintenance and repair prior to January 1st, 2019.

This survey, as well as the mapping, has shown that the placement of portable Fire Extinguishers on campus prior to January 2019 did not provide the most efficient method possible for individuals to locate portable Fire Extinguishers. There were very few Fire Extinguisher signs identifying extinguisher locations where the Fire Extinguisher was not clearly visible.² Many extinguishers in multiple areas were not placed along "normal paths of travel."³ This policy is the corrective action created by the Life Safety team to greatly improve the efficiency of locating a Fire Extinguisher.

2. The Common Area Placement

¹Occupational Safety & Health Administration: 29 CFR Section 1910.157

²National Fire Protection Association: Standard for Portable Fire Extinguishers: NFPA 10 (6.1.3.3.1)

³National Fire Protection Association: Standard for Portable Fire Extinguishers: NFPA 10 (6.1.3.2)

- a. Fire Extinguishers on Lehigh University owned properties shall be installed in Common Areas: areas along normal paths of travel including exits, hallways, seating areas near exits, and any other shared spaces.
- b. Common area Fire Extinguishers in all Lehigh University owned buildings shall have the following minimum requirements:
 - i. A UL Listing of 2A-40BC, be properly mounted, and have a 75foot maximum walking distance to the Fire Extinguisher.
 - ii. This policy contains additional requirements for non-common areas (section 3,) residential areas (section 4,) and special/high hazard areas (section 5.)
- c. This policy shall refer to IFC, NFPA 10, or other applicable codes for references on proper mounting of Fire Extinguishers, square footage requirements, minimum UL Listings, and any other code related reference not covered in this document.
- d. Fire Extinguishers shall be mounted with a code approved method. The mounting requirements for any new installation are as follows:
 - i. Shall have 6 inches of clearance under the fire extinguisher to the floor unless stored in a Fire Extinguisher cabinet
 - ii. Shall have 24 inches of clearance to the sides of the fire extinguisher and the area around where the Fire Extinguisher is mounted
 - iii. Shall not be mounted more than 42 inches high to the top of the cylinder
 - iv. Shall not be mounted in a way that requires a user to strain or reach more than 12 inches to equip the fire extinguisher
 - v. Shall have an unobstructed path of access to the Fire Extinguisher location
 - vi. Where the Fire Extinguisher is not clearly visible, there shall be a Fire Extinguisher sign installed indicating its location. For Signage requirements and standards reference NFPA 10.⁴
 - vii. Any new install completed by LU Life Safety shall follow current applicable codes.
 - viii. Any existing extinguisher locations will be reviewed by Life Safety and modified as allowed by room layout and in coordination with occupants.
- e. Examples of Common areas:
 1. Hallways outside of classrooms, rooms, and labs. These are the main paths of travel that occupants will use inside the building in order to reach their destination within the bounds of a building.
 2. Sitting areas, lounges, dining areas and other areas not considered a separate room. This also applies to rooms that have unlocked doors and a normal path of travel is through the specific room.
 3. Large open areas inside a building that individuals traversing the building would travel through in order to reach a destination inside the building.
 4. Areas not assigned to a specific individual or group of individuals.
 5. Areas where the door to enter the room or space does not have the ability to be locked. This is areas of the building that once an individual enters from an exterior door, they will have access at any point during their path of travel without any additional access requirements.

⁴National Fire Protection Association: Standard for Portable Fire Extinguishers: NFPA 10 (6.1.3.3.2)

6. The living room/kitchen area within an apartment style student suite is a common area if the exit/entry door to the apartment leads to the exterior of the building.
- f. Examples of areas that are Non-Common areas:
 1. Offices, classrooms, Auditoriums, meeting halls, or storage areas that are assigned to an individual or group of individuals that have a lockable door.
 2. Rooms and areas that have special or high hazard that falls under and additional code requirement and/or cannot be covered by the minimum code requirements of a Fire Extinguisher in the nearest common area. (See Section 5 for details and examples pertaining to special/high hazards)
 3. Hallways, gangways, and/or open spaces that are only accessible from inside the building and require a key to access the area.
 4. The living room/kitchen area within an apartment style student suite is a non-common area if the egress path of the apartment leads to the common corridor of the building.
3. Placement of Extinguishers in Non-Common Areas/Specific Rooms
 - a. “Supplemental coverage” for the purposes of this document, is when a Fire Extinguisher is required to be installed in a non-common area.
 - b. Supplemental coverage shall only be required in areas where:
 - i. when the non-common area is not covered by the common area Fire Extinguisher placement
 - ii. In areas that contain special hazards that are along the path of the only means of egress from the room/area.
 - iii. When the specific type of hazard requires a Fire Extinguisher that does not meet the minimum code requirements for the common area coverage.⁵
 - c. Any supplemental coverage Fire Extinguishers may be requested to be installed in non-common areas only when specifically requested by the Bethlehem City Fire Marshal’s office, Lehigh University Life Safety, insurance provider, or Lehigh University Environmental Health & Safety.⁶
 - i. Any requests for supplemental coverage installation by another Lehigh individual or group shall be requested through Life Safety or Environmental Health & Safety.
 - ii. All requests for supplemental coverage installation in any non-common area shall adhere to the standards of this document in the most reasonable manner possible.
 - d. In any non-common area where a supplemental coverage Fire Extinguisher is installed:
 - i. There shall be a sign on the entry/exit door(s) to the room clearly identifying there is a Fire Extinguisher inside the room. The “Fire Extinguisher inside sign” shall be at least 2inches by 2inches in size.⁷

⁵Occupational Safety & Health Administration: 29 CFR Section 1910.157

⁶National Fire Protection Association: Standard for Portable Fire Extinguishers: NFPA 10 (6.1.3.1)

⁷National Fire Protection Association: Standard for Portable Fire Extinguishers: NFPA 10 (6.1.3.3.2)

- ii. Any and all regular occupants of that area or room *shall* be offered training annually in the proper use of portable Fire Extinguishers and fire safety. (See Section 7 of this document for training policy.)
 - e. Examples of Fire Extinguisher placement in non-common areas:
 - i. Example 1: There is Class B hazard in room but the room is covered by the Fire Extinguisher's walking distance from the hallway. The specific hazard is protected by the Fire Extinguisher in the hall so long as that Fire Extinguisher in the hallway meets the minimum UL listing for that specific hazard.
 - 1. If the minimum coverage requirement of the specific hazard is not met by the UL rated listing of the common area extinguisher then:
 - a. An additional Fire Extinguisher shall be installed as supplemental coverage inside the room.
 - OR
 - b. The closest common area Fire Extinguisher shall be replaced with a type/size that covers the requirements of the hazard and the common area.
 - ii. Example 2: A Wet-Chemical Suppression system is installed in a Kitchen.
 - 1. A portable Wet-Chemical Fire Extinguisher shall be installed within the minimum code requirements of 30ft from the hazard to the Class K (Wet chemical) Fire Extinguisher in accordance with NFPA 17A.
 - 2. A Class K Fire Extinguisher does not meet any other protection requirement for common area placement; therefore it should remain in the kitchen area and require training to properly utilize.
 - iii. Example 3: There is a room in a building that is not covered within the walking distance of the common area placement and has a special hazard in the room that requires a higher class B rating than what is currently in the common areas of the building.
 - 1. Install an additional extinguisher to the common area that meets the hazard need, minimum common area requirements, and the walking distance coverage.
 - OR
 - 2. Install Fire Extinguisher as supplemental coverage inside the room that meets the hazard need and walking distance to the hazard. The common area Fire Extinguisher(s) shall be relocated in order to cover the minimum code requirements for the building.
 - OR
 - 3. Install two Fire Extinguishers in the common area outside the hazard room with one meeting the room requirements closest to the hazard room and another meeting the building requirements closest to the common area.
4. Placement of Extinguishers In Residential Areas:
- a. Fire Extinguishers shall not be installed or stored in student rooms unless the egress path from the room leads to the exterior of the building. (see section 2 of this policy for reference)
 - b. Fire Extinguishers shall be located in common areas of all resident houses.

- c. Placement of Fire Extinguishers in common areas of residential buildings shall be a minimum UL Classification of 2-A and 40-BC and shall be achieved with a single Fire Extinguisher.
 - d. Maximum walking distance shall be 75ft to a Fire Extinguisher.
5. Placement of Extinguishers in Areas with Special Hazards or High Hazards:
- a. Common area(s) within 50 feet walking distance to a special/high hazard area/room shall be considered part of the hazard area. The hazard area shall be covered within the walking distance of the Fire Extinguisher installed in the common area.⁸
 - b. Placement of Fire Extinguishers in common areas of special/high hazards shall:
 - i. Have a minimum UL Classification of 4-A and 80-BC
 - ii. Achieve this rating by no more than two extinguishers mounted within three feet of each other.⁹
 - c. Examples of Special Hazard and High Hazard areas that may fall under separate codes on a case by case basis:
 - i. Class A hazards such as woodworking shops that contain both a high fire load and a risk of deep seated fires.
 - ii. Class B hazards such as Mechanical rooms or labs with flammable liquids and gasses hazards.
 - iii. Class C hazards such as mechanical rooms and labs with large amounts of electricity utilized for day to day operations.
 - iv. Class D hazards such as metalworking labs that deal with combustible metals such as magnesium and lithium
 - v. Class K hazards found in kitchens with Commercial cooking appliances
 - vi. Hazards requiring a clean agent where the protected equipment and/or items are deemed irreplaceable if lost to fire/water damage and/or outweigh the cost of the continual purchase/service of a clean agent type Fire Extinguisher.
 - d. If the special or high hazard requires a specific type of Fire Extinguisher for its protection that does not have the minimum UL listing to cover the common area and the common area placement does not protect the hazard, then the specialized fire extinguisher shall be installed in a manner in which it is the closest fire extinguisher to the hazard. (Refer to section 3 of this document for an example)
6. References for Common Area Fire Extinguisher Placement.
- a. Lehigh University Falls under the Jurisdiction of the Bethlehem Code Enforcement. The Bethlehem Fire Code is Article 1501: Fire Safety and Code Enforcement Inspection Fees.
 - i. The City of Bethlehem has adopted the International Fire Code 2015 Edition.
 - ii. There are amendments that the City of Bethlehem has made to specific areas of the IFC. This document shall strictly adhere to any and all applicable codes and/or amendments that are adopted by the City of Bethlehem.
 - b. The international fire code heavily references NFPA 10 for code references pertaining to Fire Extinguisher placement.

⁸National Fire Protection Association: Standard for Portable Fire Extinguishers: NFPA 10 (6.2.1.1 & 6.3.1.1)

⁹National Fire Protection Association: Standard for Portable Fire Extinguishers: NFPA 10 (6.3)

- i. Section 906 of the International Fire Code states that “Fire Extinguishers shall be Selected, installed, and maintained in accordance with this section and NFPA 10.”
 - ii. Section 906 of the International Fire Code states that Fire Extinguishers are to be placed in hazard areas where flammable liquids are in use.
 1. This policy dictates that the common areas within 50 feet of the hazard area are to be considered part of the hazard area. Common area placement shall properly cover the hazard and any additional code requirements
 - c. Occupational Safety & Health Administration: 29 CFR Section 1910.38 section on Evacuation of workplaces. This section requires the notification of the occupants on the emergency action plan annually as well as the training annually on specified individuals to assist with evacuation.
 - i. Occupational Safety & Health Administration: 29 CFR Section 1910.157(b)(2):
 1. “Where the employer has an emergency action plan meeting the requirements of 1910.38 which designates certain employees to be the only employees authorized to use the available portable Fire Extinguishers, and which requires all other employees in the fire area to immediately evacuate the affected work area upon the sounding of the fire alarm, the employer is **exempt** from the distribution requirements in paragraph (d) of this section.”
 2. **Exempt** from paragraph (d): **1910.157(d) (1)**: “Portable Fire Extinguishers shall be provided for employee use and selected and distributed based on the classes of anticipated workplace fires and on the size and degree of hazard which would affect their use.”
7. Lehigh University Environmental Health & Safety - Training policy for Fire Extinguishers:
 - a. Lehigh University directs students, staff and faculty to sound a fire alarm and evacuate the building in the event of a fire. The philosophy behind this directive is to allow as much time as possible for laboratory personnel to successfully minimize laboratory operations and evacuate the building.
 - b. The Bethlehem fire department is located three to four minutes away from the University. Lehigh’s primary concern is the saving of lives. Buildings and equipment can be replaced if lost due to a fire.
 - c. Laboratory fire safety training is available on line for students, staff and faculty. The fire safety training does instruct the user on how to use a fire extinguisher by identifying the term PASS (Pull -Aim -Squeeze and Sweep) so an extinguisher may be used to create an escape path if one is needed. However, it is stressed in laboratory fire safety training the primary response to an active fire is to sound the alarm and evacuate the building. This approach allows occupants of the building with the best chance of a safe evacuation while ensuring the fire department and police department are contacted and are responding to the emergency.
 - d. Live Fire Extinguisher Training
 - i. On occasion Lehigh has conducted live fire extinguisher training. Often this is done at the request of a specific group or department who feel the need to experience a live fire situation.
 - ii. Currently live fire exercises are limited due to costs and location. Each live fire event requires an air quality permit from the Department of Environmental

Protection (DEP,) an open flame permit from the City of Bethlehem, and must be conducted during seasons where live (open) fires are permitted. Residual waste from the live fire must be disposed of properly. Departments requesting live fire training will be required to cover the cost of training.

Keywords: Fire, Fire Extinguisher, Life Safety