UNIVERSITY OF ROCHESTER
ENVIRONMENTAL HEALTH & SAFETY

Policy No.: FS004	**Approved by: Mark Cavanaugh**
Title: Selection and Placement of Fire Extinguishers	**Date: 10/10/2022**
Revision No.: 8	**Page 1 of 8**
Prepared by: Mark Militello	
EH&S Department Use Only: _X_ Yes ___ No	**UR Website: _X_ Public ___ Restricted**

I. **PURPOSE**

This policy establishes a guideline for the proper placement, sizing, and type of portable fire extinguisher to be used in the different hazard areas in all University of Rochester buildings.

II. **PERSONNEL AFFECTED**

This policy will affect the Fire Safety Unit.

III. **DEFINITIONS**

Carbon Dioxide (CO2)- A color, odorless, electrically non-conductive inert gas that is a suitable medium for extinguishing Class B and Class C fires.
Class A Fires- Fires in ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics.
Class B Fires- Fires in flammable liquids, combustible liquids, petroleum greases, tar, oils, oil-based paints, solvents, lacquers, alcohols, and flammable gasses.
Class C Fires- Fires that involve energized electrical equipment.
Class D fires- Fires in combustible metals such as magnesium, titanium and sodium.
Class K Fires- Fires in cooking appliances that involve combustible cooking media (vegetable or animal oils and fats)
Clean Agent- Electrically non- conducting, volatile, or gaseous fire extinguisher that does not leave a residue upon evaporations.
Dry Chemical- A mixture of finely divided solid particles, usually sodium bicarbonate, potassium bicarbonate, or ammonium phosphate- based with added particulate material supplemented by special treatment to provide resistance to packing and moisture absorption, and to promote proper flow. (For sizes and ratings see section VII part B)
Dry Powder- Solid materials in powder or granular form designed to extinguish Class D fires by crusting, smothering, or heat-transfer means. (For sizes and ratings see section VII part B)
Halogenated Agents:
- *Halocarbons- Include HCFC, HFC, PFC, FIC Halon replacement agents. (For sizes and ratings see section VII part B)*
- *Halons- Are inert, and non-conductive gases used to extinguish fires by cooling the burning materials (For sizes and ratings see section VII part B)*

Travel Distance- The Actual walking distance from any point to the nearest fire extinguisher fulfilling hazard requirements.
Wet Chemical- Wet chemicals include, but are not limited to, potassium carbonate, potassium citrate and are used as fire suppression agents. (For sizes and ratings see section VII part B)

Portable Fire Extinguishers- A portable device carried or on wheels and operated by hand, containing an extinguishing agent that can be expelled under pressure for the purpose of suppressing or extinguishing a fire
Water Mist Fire Extinguisher- A water type portable fire extinguisher containing distilled water and employing a nozzle that discharges the agent in a fine spray.
(For sizes and ratings see section VII part B)
Water Extinguisher- A portable fire extinguisher that contains water under pressure and employing a straight tip nozzle that discharges the agent in a straight stream. (For sizes and ratings see section VII part B)
Light (low) Hazard- locations where the total amount of Class A combustible materials, including furnishings, decorations and contents are of minor quantity. Small amounts of Class B flammables used for duplicating machines provided that they are kept in closed containers and stored safely.
Ordinary (moderate) Hazard- Locations where the total amount of Class A combustibles and Class B flammables are present in greater amounts than expected under Light (Low) Hazard.
Extra (High) Hazard- Locations where the total amount of Class A combustibles and Class B flammables are present in greater amounts than expected under Light (Low) Hazard. Both in storage, production use and/or finished product over and above those expected and classed as Ordinary (moderate) Hazards.

IV. RESPONSIBILITIES

A) The Fire Safety Specialist/Inspector is responsible for the proper selection, sizing and placement of portable fire extinguishers in new construction and newly renovated areas. As well, the Fire Safety Inspector will be responsible for re-evaluating extinguisher placement for areas that have undergone a change in occupancy or use.
B) The chart found in Section VII part B designates responsibility for monthly "Quick Checks", which can be found in Section VII part A.

V. PROCEDURES

A) Placement and Sizing for Class A Hazards Per NFPA 10 standard:

Criteria	Light (low) Hazard Occupancy	Ordinary (moderate) Hazard Occupancy	Extra (High) Hazard Occupancy
Minimum rated single extinguisher	2-A	2-A	4-A
Maximum floor area per unit of A	3,000 ft sq	1,500 ft sq	1,000 ft sq
Maximum floor Area for Extinguisher	11,250 ft	11,250 ft	11,250 ft
Maximum travel distance to extinguisher	75 ft	75 ft	75 ft

B) Placement and Sizing for Class B Hazards Per NFPA 10 standard:

Type of Hazard	Basic Minimum Extinguisher Rating	Maximum Travel Distance to Extinguisher
Light (low)	5-B 10-B	30 Feet 50 Feet
Ordinary (moderate)	10-B 20-B	30 Feet 50 Feet
Extra (high)	40-B 80-B	30 Feet 50 Feet

C) Fire extinguishers with a Class C rating shall be required where energized electrical equipment may be directly involved in a fire and or be with in the immediate vicinity of a fire. Placement and sizing of extinguishers for Class C fires will be based on the anticipated Class A or Class B hazard.

D) Fire extinguishers for Class D fires shall be located so that travel distance from the Class D hazard to the extinguisher does not exceed 75 feet. Extinguisher size shall be based on the type of combustible metal, its particle size, and area to be covered as well as recommendations from the extinguisher's manufacture.

E) Class K fire extinguishers shall be placed so that travel distance from the hazard to the extinguisher, does not exceed 30 feet.
   a. Class K extinguishers shall be placed in all food preparation areas that utilize commercial cooking equipment involving vegetable or animal oil and fats.
   b. Class K extinguishers shall be placed in conjunction with a Type I kitchen hood system to provide secondary protection to the hoods suppression system.

F) Extinguisher for business occupancies (office areas) will be based upon NFPA standards for Light (low) Hazard occupancies.

G) Special Hazard Areas:

   Are still required to adhere to the minimum requirements of extinguisher size and placement for Class A, B and C hazards. These areas contain specific hazards either to property or life that necessitate the placement of specialized portable fire extinguishers.

   a. Extinguisher type and placement for Intensive Care Units (ICU), and Operating Rooms:
      i. Water Mist extinguisher shall be placed in all ICU's and OR's phasing out Halogenated and CO2 extinguishers in an effort to provide safe and reliable protection to patients.

ii. Water Mist extinguishers have a 2A-C rating making them safe for use around energized electrical equipment and pose no health hazards to patients or user.

b. Extinguisher type and placement for Magnetic Resonance Imaging (MRI) rooms:
   i. Water Mist extinguishers shall be phased into all MRI areas replacing halogenated extinguishing agents.
   ii. Water Mist extinguishers are safer for use around patients.
   iii. As well, all Water Mist extinguishers in production by Amerex® are non-ferrous and safe for use around MRI equipment.

c. Extinguisher type and placement for Radiology areas:
   i. Water Mist extinguisher shall be placed in all Radiology areas phasing out Halogenated and CO2 extinguishers in an effort to provide safe and reliable protection to patients, as well as protecting high cost equipment.

d. Research laboratories will not necessarily be required to have an extinguisher inside of the room, if there is sufficient coverage from extinguishers placed in the corridor.
   i. Exceptions:
      - An outside regulatory agency requires extinguishers be placed inside the laboratory for the work that is being done
      - There is a sufficient risk involved with the work being done within and the University Fire Marshal's Office determines an extinguisher is needed.

e. Extinguisher type and placement for mechanical equipment rooms:
   i. Mechanical rooms shall be equipped with either a dry chemical or CO2 extinguisher properly sized for the hazard of the occupancy. (Most mechanical rooms are assessed as ordinary hazards)

f. Extinguisher type and placement for Telecommunication equipment rooms:
   i. Shall be protected by extinguishers containing a Halogenated extinguishing agent to protect the equipment from further damage should the extinguisher need to be used.
   ii. With the phase out of Halon 1211 and 1301, clean agents (Halotron I, FE-36) with similar properties to Halon, which are safe for the ozone, are being introduced.

g. Exceptions to extinguisher requirements:

i. Assembly Group A occupancies equipped throughout with quick-response sprinklers, fire extinguishers shall be required only in special hazard areas.
ii. Business Group B occupancies equipped throughout with quick-response sprinklers, fire extinguishers shall be required only in special hazard areas.
iii. Assembly Group A-5 occupancies intended for the participation in or viewing outdoor activities the travel distance to reach an extinguisher shall not apply to the spectator seating portions.

h. Obsolete Fire Extinguishers
   i. The NFPA 10 2013 edition has added to the list of obsolete fire extinguishers. These additions include the following:
      1) Pressurized water fire extinguishers manufactured prior to 1971
      2) Any stored-pressure extinguisher manufactured prior to 1955
      3) Any extinguisher with 4B, 6B, 8B, 12B, and 16B fire ratings
      4) Dry chemical stored pressure extinguishers manufactured prior to October of 1984

VI. REFERENCES

1) National Fire Protection Association 10 Standard for Portable Fire Extinguishers 2017 Edition.
2) State Fire Code of New York State, Chapter F6 Building Services and Systems F607, Commercial Kitchen Hoods
3) Fire Code of New York State, Chapter F9 Fire Protection Systems, F904 Alternative Automatic Fire-Extinguishing Systems
4) Fire Code of New York State, F9 Fire Protection Systems, F906 Portable Fire Extinguishers
5) Amerex® Water, Water Mist, ABC, Halotron I, and Carbon Dioxide extinguisher fact sheets.
6) Ansul® Water, Cleangaurd, Dry chemical, and Carbon Dioxide extinguisher specification sheets.
7) OSHA 1910.157

VII. APPENDICES/FORMS

A. Portable Fire Extinguisher "Quick Checks" procedure – http://www.safety.rochester.edu/fire/ExtinguisherQuickChecks.html

B. Building Listing

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Fire Safety Inspector Responsible for:		Fire Safety Inspector Responsible for:	
RIVER CAMPUS-ACADEMIC	***RIVER CAMPUS - RESIDENTIAL LIFE***	***MEDICAL CENTER/ESM/MAG***	***SMH***
612 Wilson Blvd. (Department of Public Safety)	Alpha Delta Phi	Children's School at URMC (day care)	3000 Area
685 Mt. Hope Ave. (EH&S)	Anderson Tower	Data Center - 300 Science Park	5000 Tower
Advancement (Alumni Advancement Center - AAC)	Burton Hall	Eastman School of Music	G-4300
Bausch & Lomb Hall	Crosby Hall	ESM Annex/Old Sibley Library	G-4500 MRI
BMEO /Goergen Bldg	Delta Kappa Epsilon	Eastman Commons/SLC	1-5100
Computer Studies Building - Carlson Library	Douglass Leadership House (formerly Delta Upsilon)	ESM East Wing	5-3200
Fauver Stadium	Drama Center	ESM Main Building	5-4100
Frederick Douglass Commons	Gilbert Hall	ESM Messinger Hall	Access Center
Gavett Hall	Hillcourt (FSI) - 6 bldgs	ESM Place/Miller Center	Ambulatory Care Facility
Genesee Hall	Chambers House	ESM Theatre	Golisano Children's Hospital @Strong
Goergen Athletic Center - count as 3 bldgs	Fairchild House	Helen Wood Hall	Behavioral Health (R-Wing/Psychiatry)
Hajim Alumni Gym	Gale House	Levine Pavilion (Link Building)	Emergency Department
Zornow Center/Field House	Kendrick House	MAG/Cutler Union/1967 Add/Vanden Brul Pavilion	Medical Center Parking Garage
Palestra	Munro House	Medical Center Annex	Strong Memorial Hospital
Grounds Building (512, 514, 516) (UFS Annex)	Slater House	Medical Center Building	Strong West
Grounds Gas Island	Hoeing Hall	Middle Chiller Plant/Pumping Station	Wilmot Cancer Center
Harkness Hall	Lovejoy Hall	MRB (FSI) (aka Kornberg Med Research Bldg)	
Hazardous Waste Building	O'Brien Hall	MRBX (FSI) (aka Ernest Delmonte Neuroscience Bldg)	
Hopeman Engineering Building	Psi Upsilon	Saunders Research Building	
Hoyt Hall	SBA Halls - count as 1 bldg	School of M&D (Bldg 104)	
Hutchison Hall (Hubbell & Lander Aud.)	Danforth Dining Cntr	S & GG Wing/SMD (Bldg 107)	
Hylan Building	Gannett Hall		
Interfaith Chapel	Gates Hall	**MC FSC Responsible for:**	**SMH FSC Responsible for:**
Lattimore Hall	Hollister Hall	Eastman Dental Center	Ambulatory Surgical Center (Sawgrass Dr)
LeChase Hall (Warner School)	Morgan Hall		
Meliora Hall	Sigma Alpha Mu		
Morey Hall	Sigma Chi (FSI)		
Rettner Hall (MAIC)	Sigma Epsilon House (formerly CLC/Quad Annex)		
Rush Rhees Library	Theta Chi		
Sage Art Center	Tiernan Hall		
Schlegel Hall (includes Gleason Hall)	Wilder Tower		
SLOAN Performing Arts Center			
Spurrier Hall			
Strong Auditorium			
Taylor Hall			
Todd Union			
University Facilities Services (UFS/UFC)			
University Health Service			
Wallis Hall (aka Administration Bldg)			
Wegman Hall			
Wilmot Annex (aka NYS Ctr for Adv. Technology)			
Wilmot Building			
Wilson Commons			
6/10/2019			

Occupants Responsible for:		Occupants Responsible for:	
RIVER CAMPUS-ACADEMIC	***RIVER CAMPUS - RESIDENTIAL LIFE***	***MEDICAL CENTER/ESM/MAG***	***SMH***
575 Mt. Hope Ave. (Office of Comm Development-FACILITIES)	Brooks Landing (Cabot Group)	630 Mt. Hope Ave. (President's House-FACILITIES)	Behavioral Health (315 Science Park)

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590 Mt. Hope Ave. (Investment Office-FACILITIES)	deKiewiet Tower (Rochester Mgmnt)	692 Mt. Hope Ave. (Provost's House-FACILITIES)	Bivona Child Advocacy Center (REACH)
668 Mt. Hope Ave. (Ellwanger & Barry Bldg.-FACILITIES)	Goler House (Rochester Mgmnt)	1510 Mt. Hope Ave. (Mail Services) (Rochester Mgmnt)	Cardiology/Cardiology Rehab (S. Clinton)
**** FSU to conduct annuals on 575/590/630/668/685**	Graduate Maisonettes-3 bldgs (GLC) (Rochester Mgmnt)	Cardio Vascular Research Inst (CVRI) (Alberti Assoc)	Clinical Lab (474 Collins St., Avon)
& 692 Mt. Hope	Riverview (Somerset)	LLE/COI/Omega Upgrade (LLE staff)	Clinical Lab (2400 S. Clinton, Brighton)
	University Park - 33 bldgs (Rochester Mgmnt)	Mees Observatory/Gannett House (staff)	Clinical Lab (800 Ayrault Rd., Fairport)
	Valentine Tower (Rochester Mgmnt)	Mt. Hope Family Center (staff)	Clinical Lab (2 Ryan Drive, Geneseo)
	Whipple Park - 9 bldgs (Rochester Mgmnt)		Clinical Lab (10 S. Pointe Landing, Greece)
	Brooks Crossing (Rochester River Front Properties)		Clinical Lab (2300 W. Ridge Rd., Greece)
			Clinical Lab (400 Red Creek, Henrietta)
			Clinical Lab (1026 Hilton Parma Crnrs Rd., Hilton)
			Clinical Lab (809 E. Ridge Road, Irondequoit)
			Clinical Lab (3509 Thomas Drive, Lakeville)
			Clinical Lab (2212 Penfield Road, Penfield)
			Clinical Lab (1050 Pitts-Victor Rd., Pittsford)
			Clinical Lab (777 S. Clinton Ave., Rochester)
			Clinical Lab (125 Lattimore Road, Rochester)
			Clinical Lab (990 South Avenue, Rochester)
			Clinical Lab (340 Lake Avenue, Rochester)
			Clinical Lab (905 Culver Road, Rochester)
			Clinical Lab (15 High Tech Drive, Rush)
			Clinical Lab (1672 Empire Blvd., Webster)
			Clinical Lab (1770 Long Pond Rd.)
			Clinical Lab (1820 S. Clinton)
			Clinical Lab (1860 Buffalo Rd., Gates)
			Clinical Lab (2030 Monroe Ave.)
			Clinical Lab (21 Union Hill, Spencerport)
			Clinical Lab (300 West Ave., Brockport)
			Clinical Lab (300 White Spruce Blvd., Brighton)
			Clinical Lab (301 W. Street, Albion)
			Clinical Lab (3350 Brown Rd., Caledonia)
			Clinical Lab (82 Holland St.)
			Clinical Lab (919 Westfall-Ste B)
			Clinical Lab (East High School)
			Clinical Lab (Jordan)
			Clinton Crossings (24 S. Clinton Avenue)
			Comm. Nursing Center (79 N. Ave.)
			Ear Nose & Throat (2365 S. Clinton Ave.)
			Finger Lakes Occ. Med. (980 Westfall-#2)
			Geriatrics/Medicine (1400 S. Plymouth)
			Hand Therapy (Clinton Crossing Bldg D)
			MIPS/Strong Ties (2613 W. Henrietta Rd)
			Mary Parkes Asthma Ctr (400 Red Creek Drive)
			Mood Disorder Clinic
			Neurology (125 Lattimore)
			Neurosurgery Med Pain Mngmt (2180 S. Clinton)
			Neurology/Epilepsy (919 Westfall Road)
			Occupational Medicine (400 Red Creek Drive)
			Pain & Symptom Treat. (2337 S. Clinton)
			Pediatric Cardiology (Elmwood)
			Pediatric Sleep Center (2180 S. Clinton Avenue)
			Perinatology (1815 S. Clinton)

Physical Therapy (919 Westfall-Bldg B)
Pluta Cancer Center (Cawkins Corp Pkwy LLC)
Rehabilitation (2180 S. Clinton Avenue)
Sleep Lab (2337 S. Clinton Avenue)
Sports Medicine (Clinton Crossing Bldg D)
Sports Medicine (10 S. Pointe Landing)
Women's Health (919 Westfall)

C. Extinguisher Ratings

Extinguisher Size	2 1/2 gal	5lbs	10lbs	15lbs	20lbs
Extinguishing Agent					
Water	2A	n/a	n/a	n/a	n/a
Water Mist	2A:C	n/a	n/a	n/a	n/a
Carbon Dioxide	n/a	5B:C	10B:C	10B:C	10B:C
Potassium Bicarbonate	n/a	20B:C	80B:C	n/a	120B:C
Sodium Bicarbonate	n/a	40B:C	40B:C	n/a	80B:C
Monoammonium Phosphate	n/a	3A:40B:C	4A:60B:C	n/a	20A:120B:C
Halon	n/a	10B:C	1A:10B:C	n/a	4A:80B:C
Halotron I	n/a	5B:C	1A:10B:C	2A:10B:C	n/a
FE-36	n/a	5B:C	1A:10B:C	2A:10B:C	n/a

Extinguisher ratings may vary between different manufactures despite the use of the same extinguishing agent. An extinguishers rating should always be verified prior to placement and use of the extinguisher.

No number is assigned to the rating of Class D, Class K, or Class C extinguishers

VIII. REVISION HISTORY

Date	Revision No.	Description
6/20/2011	1	Updated building listing
6/1/2012	2	Updated Portable Fire Extinguisher “Quick Checks”
10/30/2013	3	Updated building listing and added Clean Agent extinguisher information
3/19/2014	4	Added OSHA 1910.157 as a reference
7/29/2015	5	Updated building listing
6/21/2016	6	Updated building listing and removed sprinkler exemptions
6/10/2019	7	Triennial review and added new RC buildings
10/10/2022	8	Triennial review and added Sloan Performing Arts to Academic List