Portable Fire Extinguishers SOP

1. Purpose / Background
Fires are a leading cause of accidental death resulting in thousands of injuries and fatalities every year in the U.S. Experience has shown that most fires, when discovered in their early stages, can be successfully controlled by trained personnel using portable fire extinguishers. Control of small (incipient stage) fires can save lives and prevent property damage.

Insurance carrier requirements (FM Global), the Massachusetts Fire Prevention Regulations, the Occupational Health and Safety Administration (OSHA) and the City of Cambridge Fire Prevention Office have established requirements for portable fire extinguishers.

2. Scope
This document covers the minimum requirements for the selection, proper and effective operation and maintenance of portable fire extinguishers at MIT.

3. Prerequisites
None

4. General Information
4.1 The selection, placement and installation of portable fire extinguishers shall follow Massachusetts Regulations and the National Fire Protection Association (NFPA 10) requirements and is the responsibility of the Department of Facilities with assistance from the EHS Office, as needed. This includes:

4.1.1 Determination of the hazard class requiring protection
4.1.2 Ascertaining the type and size of portable extinguisher required for the hazard class.
4.1.3 Locating, mounting and providing signage at convenient points of installation, readily accessible in common paths of travel, away from the hazard.

4.2 Classes of Fire Hazards
4.2.1 Class A- ordinary combustibles such as paper, wood, cardboard.
4.2.2 Class B- those involving oil, grease or flammable liquids.
4.2.3 Class C- those involving electricity.
4.2.4 Class D- those involving combustible metals, powders or fines.
4.2.5 Class K- fires in cooking appliances that use animal or vegetable fat.

4.3 Types of portable fire extinguishers found at MIT
4.3.1 Type A is an extinguisher used for fires involving ordinary combustible materials. Recognizable by a chrome/silver body with a thin, black discharge hose and indicator gauge. This type can be found in general office area, corridors, or loading docks. The agent is pressurized water.

4.3.2 Type ABC is a multi-purpose extinguisher suitable for fires involving any one (or combination of) an A, B or C hazard. These are often identified by a red colored body.
with a thin, black discharge hose and indicator gauge. The agent is ammonium phosphate dry chemical.

4.3.3 Type BC is an extinguisher used for fires involving either flammable liquids or electrical. These are often identified by a red colored body and black cone-shaped discharge hose/tube. The agent is carbon dioxide gas. This type IS NOT equipped with an indicator gauge.

4.3.4 Type K is an extinguisher typically found in kitchen areas in the vicinity of cooking equipment. These can be red or yellow with a thin black discharge hose and indicator gauge. The agent is potassium acetate mist.

4.3.5 Type (or class) D is intended for use on metal fires including potassium, aluminum, sodium etc. The agent is sodium chloride or graphite depending on the metal. Typically for use in laboratory settings. These can be red or yellow with a thin black discharge hose.

5. Procedures

5.1 Use of Portable Fire Extinguishers at MIT

5.1.1 Use of portable fire extinguishers at MIT by untrained students and employees is prohibited.

5.1.2 Only personnel who have completed a portable fire extinguisher training course should attempt to use a portable fire extinguisher.

5.1.3 Portable fire extinguishers shall be deployed by trained personnel during all forms of hot work including open flame work, spark producing/grinding activities and welding/cutting.

5.1.4 In the event of a fire, activate the nearest fire alarm pull station and leave the building.

5.2 Operating a Portable Fire Extinguisher (Trained personnel only)

5.2.1 Portable fire extinguishers are only effective on incipient stage fires (e.g. small, early stage.)

5.2.2 Do not use a pressurized water fire extinguisher on a flammable liquid fire or an electrical fire.

5.2.3 Use extreme caution in confined areas. Make sure the exit door is behind you at all times.

5.2.4 Always activate the nearest fire alarm pull station before attempting to extinguish a fire.

5.2.5 After the fire has been extinguished, notify the MIT Operations Center (who shall contact Cambridge Fire Department) and the EHS Office. Be available to assist in a follow up investigation.

5.2.6 Fires can re-ignite; so do not resume operations until the Cambridge Fire Department or the EHS Office has inspected the area.

5.2.7 Remember PASS for portable fire extinguisher operation:

- **P**ull the pin.
- **A**im the extinguisher.
Squeeze the handle.

Sweep the extinguisher stream back and forth at the base of fire.

5.3 Portable Fire Extinguisher Maintenance - outsourced service

5.3.1 Portable fire extinguishers shall be evaluated and serviced (as needed) at least annually.

5.3.2 Only qualified portable fire extinguisher technicians shall examine and service portable fire extinguishers.

5.3.3 Portable fire extinguishers shall be checked annually for physical damage that would prevent operation. This includes dents, broken parts or signs of corrosion.

5.3.4 The pressure gauge level shall be verified that it is in the normal working green range (carbon dioxide fire extinguishers are weighed.)

5.3.5 Portable fire extinguisher shall undergo maintenance every (6) years.

5.3.6 The need for hydrostatic testing (pressure testing) shall be determined by checking the previous test date that was marked on the extinguisher.

5.3.7 Carbon dioxide types and pressurized water extinguisher types shall undergo hydrostatic testing every 5 years.

5.3.8 Dry-chemical type and dry-powder type fire extinguishers shall undergo hydrostatic testing every 12 years.

5.3.9 Hydrostatic testing and (6) year maintenance shall be performed by a qualified portable fire extinguisher service company, at the direction of the Department of Facilities.

5.3.10 A qualified technician shall re-tag, initial, mark and date the fire extinguisher prior to it being placed back into service.

5.4 Monthly Inspections-

5.4.1 It is recommended that Departments, Laboratory and Centers inspect portable fire extinguishers on a monthly basis.

5.4.2 Verification shall be made that that fire extinguishers are mounted at the designated location.

5.4.3 Verify that portable fire extinguishers are visible, accessible and are equipped with wall-mounted signage that reads “Fire Extinguisher.”

5.4.4 Inspect for obvious damage and that the plastic tamper seals are intact

5.4.5 Verify that pressure gauge is within the green range

5.4.6 Verify that a maintenance tag is present and current (e.g. maintenance was performed within the last year.)

5.4.7 Initial and date the inspection log on the maintenance tag.

5.4.8 Notify the Department of Facilities if a problem is found.

6. Roles & Responsibilities

6.1 Department of Facilities

An official hardcopy of this document exists in the EHS Office or on the EHS website. See Legal Disclaimer at: http://ehs.mit.edu/site/content/legal-disclaimer
6.1.1 Ensure that portable fire extinguishers have been provided based on the hazard exposure and regulatory requirements for all new construction, renovation/space change projects.

6.1.2 Ensure that a qualified vendor performs annual maintenance on portable fire extinguishers.

6.2 Department, Laboratories and Centers (DLC’s)

6.2.1 Report any new fire hazards in an area to the EHS Office.

6.2.2 Ensure that only trained personnel use portable fire extinguishers.

6.2.3 Communicate explicitly that use by others is prohibited.

6.2.4 During Level 2 inspections, verify that portable fire extinguishers are being inspected annually for those located in laboratory and shop areas.

6.2.5 Any situation which resulted in the discharge of a portable fire extinguisher must be reported to the Cambridge Fire Department, regardless of the size of the fire.

6.3 EHS Office

6.3.1 Ensure that portable fire extinguisher use training is available.

6.3.2 Assist Department, Laboratories and Centers with interpretation of regulatory requirements related to portable fire extinguishers.

6.3.3 Review and revise (as needed) this SOP on a periodic basis.

7. Training

Only trained personnel are authorized to use portable fire extinguishers.

8. Monitoring Requirements

The presence of portable fire extinguishers in the workplace shall be verified during Level 2 Inspections.

9. Record Management

Records including the inspection, testing and maintenance of portable fire extinguishers shall be maintained by the Department of Facilities.

10. References

10.1 Standards

NFPA 10 Portable Fire Extinguishers
OSHA 1910.157 Portable Fire Extinguishers
527 CMR Massachusetts Fire Prevention Regulations
780 CMR Massachusetts Building Code

11. Other SOP/ SOGs

MIT EHS SOP “Control and Reporting Fires”
MIT EHS SOG “Hot Work Permit Program”

12. Definitions

An official hardcopy of this document exists in the EHS Office or on the EHS website.

See Legal Disclaimer at: http://ehs.mit.edu/site/content/legal-disclaimer
Extinguisher Classifications

1. Class A Extinguisher – intended for use on fires fueled by ordinary combustibles such as wood and paper (e.g. pressurized water)

2. Class B Extinguisher – intended for use on fires fueled by flammable liquids such as gasoline, oil and grease (e.g. carbon dioxide)

3. Class C Extinguisher – intended for use on fires in energized electrical equipment or wiring (e.g. carbon dioxide, dry chemical)

4. Class ABC Extinguisher – a multipurpose extinguisher (e.g. dry chemical)

5. Class D Extinguisher – intended for use on fires fueled by combustible metals such as magnesium, potassium, sodium, titanium and lithium (e.g. sand, metallic)

Portable Fire Extinguisher Inspection – A periodic check to ensure that portable fire extinguishers are available, at their designated location, have not been actuated or tampered with and that there is no obvious damage or condition to prevent use.

Portable Fire Extinguisher Maintenance: A periodic examination to ensure that an extinguisher will operate effectively, has the proper amount of extinguishing material and has undergone required hydrostatic testing.