WHAT IS THE SCOPE OF THIS GUIDELINE?

All users of flammable and combustible liquids at Brandeis University must follow this Policy as a minimum level of protection. These guidelines apply to flammable and combustible liquids as defined by OSHA and the National Fire Protection Association (NFPA)

DEFINITIONS

The following classes are defined as “flammable”:

CLASS	*FLASH POINT	BOILING POINT	EXAMPLES
IA	Below 73º F	Below 100º F	
IB	Below 73º F	At or above 100º F	
IC	At or above 73º F and below 100º F		

Note*: "Flashpoint" means the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid (1910.106(a))

The following classes are defined as “combustible”:

CLASS	FLASH POINT	EXAMPLES
II	100º -139º F	
IIIA	140º -199º F	
IIIB	200º F or above	

"Combustible liquid" means any liquid having a flashpoint at or above 100 deg. F. (37.8 deg. C.) (1910.106(a))

ENGINEERING AND ADMINISTRATIVE CONTROLS

VENTILATION

Proper ventilation should be maintained when using flammable and combustible liquids. Material should be stored in approved flammable storage cabinets with a minimum stored on bench tops for experiment use, generally only enough for work being conducted.

FUME HOODS

Properly functioning fume hoods should be utilized when handling flammable and combustible liquids and should generally NOT be used as storage areas unless specifically designed.

REFRIGERATORS

Flammable and combustible liquids should not be stored in regular refrigerators. Refrigerators for the storage of flammable and combustible material shall meet the requirements for Class I locations and shall be appropriately marked [NFPA 45, 12.2.2].

When handling or using flammable and/or combustible liquids, all sources of ignition should be controlled or eliminated.

Do not store flammable or combustible materials near incompatible material, in particular with oxidizing materials.

HOW DO I PROTECT MYSELF?

Personnel handling flammable and combustible chemicals must wear adequate eye protection. Adequate safety glasses must meet the requirements of the Practice for Occupational and Educational Eye and Face Protection (ANSI Z.87. 1 1989) and must be equipped with side shields. Ordinary prescription glasses do not provide adequate protection unless they meet this standard and are marked as such. Safety glasses with side shields do not provide adequate protection from splashes; therefore, when the potential for splash hazard exists other eye protection and/or face protection must be worn (i.e. splash goggles).

Gloves should be worn when handling flammable and combustible chemicals. Disposable nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals.

Appropriate protective clothing should be worn if the possibility of skin contact is likely. Open toe shoes are not appropriate when handling chemicals in a laboratory or in other areas where there is a potential for exposure.

SPECIAL HANDLING AND/OR STORAGE REQUIREMENTS

- Only approved containers shall be used to store flammable and combustible liquids.

- Table H-12 outlines the allowable maximum container size of flammable and combustible liquids and has been incorporated into this Policy from 29 CFR 1910.106. Please review exceptions **a-c** after the table for further clarification.

TABLE H-12 - MAXIMUM ALLOWABLE SIZE OF CONTAINERS AND PORTABLE TANKS

Container type	Flammable liquids[c]			Combustible liquids	
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic.....	1 pt[a]	1 qt	1 gal	1 gal	1 gal.[b]
Metal (other than DOT drums).....	1 gal	5 gal	5 gal	5 gal	5 gal.
Safety cans.....	2 gal	5 gal	5 gal	5 gal	5 gal.
Metal drums (DOT specifications)..	60 gal	60 gal	60 gal	60 gal	60 gal.
Approved portable tanks.....	660 gal	660 gal	660 gal	660 gal	660 gal.

NOTE: Container exemptions: [a] Medicines, beverages, foodstuffs, cosmetics, and other common consumer items, when packaged according to commonly accepted practices, shall be exempt from the requirements of 1910.106(d)(2)(i) and (ii).

a. Plastic coated glass containers as large as 4 L (1 gal) permitted.
b. NFPA 45 allows maximum container size for Class IIIA of 20 L (5 gallons).
c. For educational and instructional laboratories, Class I and Class II containers shall not exceed the following capacity; Safety cans no greater than 8 L (2.1 gal) or other containers of 4 L (1 gal). [NFPA 45]

MAXIMUM QUANTITIES OF FLAMMABLE AND COMBUSTIBLE LIQUIDS IN <u>SPRINKLERED</u> LABORATORY UNITS OUTSIDE OF APPROVED FLAMMABLE LIQUID STORAGE ROOMS

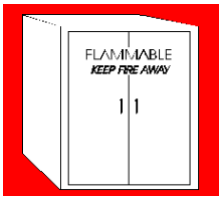
<u>Excluding</u> Quantities in Storage Cabinets and Safety Cans

CLASS	Maximum Quantity per 100 sq. ft. of Lab Unit	Maximum Quantity per Unit***
Class I	7.5 L (2 Gals)	570 L (150 Gals)
Class I, II, III	15 L (4 Gals)	757 L (200 Gals)

Note: This is for the classification of a Laboratory Unit Fire Hazard Class C, low fire hazard. (NFPA 45 – 2004)

<u>Including</u> Quantities in Storage Cabinets and Storage Cans

CLASS	Maximum Quantity per 100 sq. ft. of Lab Unit	Maximum Quantity per Unit***
Class I	15 L (4 Gals)	1136 L (300 Gals)
Class I, II, III	30 L (8 Gals)	1515 L (400 Gals)



- Not more than 60 gallons of Class I or Class II liquids, nor more than 120 gallons of Class III may be stored in a storage cabinet.

HANDLING EMERGENCIES INVOLVING FLAMMABLE CHEMICALS

Anticipate emergency situations, have proper handling equipment in the lab and readily available for spills. Check the MSDS to determine what is appropriate.

In the event of a spill or adverse reaction notify lab personnel immediately that an incident has occurred. Do not attempt to handle a large spill/reaction/fire, or one in which you are not trained or equipped for. Turn off all ignition sources if this can be done safely, vacate the area and call for assistance.

Laboratory emergencies should be reported to the Public Safety Office at **63333**. Public Safety will also contact the EH&S Office at **64262**. Communicate the following:

- Location of spill/incident
- Type of material involved and quantity
- Injuries involved
- Fire/explosion
- Your location/contact information (or who to contact for further information)

Notify the PI or designated Safety Officer as soon as possible also.

WASTE DISPOSAL REQUIREMENTS

All flammable and combustible waste must be disposed of as hazardous waste through the Brandeis University hazardous waste program (**Call 62561, leave message**).

DECONTAMINATION PROCEDURES

Wash hands and arms with soap and water immediately after handling any chemical.

Clean work areas carefully when done. Dispose of contaminated material in the hazardous waste storage container. Do not dispose of waste with incompatible material. Paper towels or other similar material may pose a fire risk when contaminated. Proceed with caution when working with flammables and combustibles around other organic material (paper, wood, cloth).