Cambridge Local Emergency Planning Committee

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Flammable Storage - Intro

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The Cambridge LEPC Biotech Subcommittee publishes Bulletins as part of our agenda of providing Biotechs doing business in Cambridge and the Cambridge FD mutually helpful information.

Background:

Storage of combustible and flammable materials (flammables) is an important aspect of the Biotech business, as well as being an important safety concern for the company and the Cambridge Fire Department (CFD).

Purpose:

In addition to providing guidance regarding flammable storage, this bulletin provides updated information regarding the recent changes in flammable storage permitting and licensing requirements outlined in 527 CMR 14.03 (Massachusetts Fire Prevention Regulations for the Storage of Flammable and Combustible Materials).

There are a number of questions that you should ask yourself when either planning for the storage of or reviewing the current status of flammable storage at your facility:

1. How much combustible and flammable material can I store at my facility; and where can I store it in the facility?
2. How do I have to store it? (e.g., flammable storage cabinets, inside flammable storage rooms, etc.)
3. Am I prepared for an emergency involving flammables stored in the facility? Is there an emergency plan (emergency action plan, contingency plan, chemical hygiene plan) in place?

4. How do I obtain the proper permits and licenses for the storage of flammables?

We will try to address these questions.

Flammable and Combustible Materials:

Flammable and combustible materials are defined in the table below (taken from 527 CMR 14.02 -Massachusetts Fire Prevention Regulations):

Class IA Flammable Liquid	Liquid having a flash point below 73°F and boiling point below 100°F
Class IB Flammable Liquid	Liquid having a flash point below 73°F and boiling point at or above 100°F
Class IC Flammable Liquid	Liquid having a flash point at or above 73°F and below 100°F
Class II Combustible Liquid	Liquid having flash point above 100°F and below 140°F (cont.)
Class IIIA Combustible Liquid	Liquid having flash point at or above 140°F and below 200°F
Class IIIB Combustible Liquid	Liquid having flash point above 200°F
Flammable Gas	A mixture of 13% or less (by vol.) with air forms a flammable mixture or flammable range with air is wider than 12%
Flammable Solid	Solid, non-explosive, which is liable to cause fires through friction, absorption of moisture, spontaneous chemical change, or retained heat from processing

Note: many typical flammables, such as methanol, acetone, ethanol, and hexane, are Class I

Storing Flammables at Your Site:

Generally speaking, the design, construction, fire prevention systems, and location of an area in which flammable and combustible materials are to be stored at the facility will determine how much of each type of flammable and combustible materials you can store in that area. These limits are spelled out in the Massachusetts Building Code (780 CMR). Check out the details, e.g. Class I liquids cannot be stored in a basement location and the amounts allowed on a given floor (elevation) varies.

Once you have determined the amount and type of flammable and combustible materials you can store in the area, NFPA Codes (e.g., NFPA 30 – Flammable and Combustible Liquids Code) will tell you how you will need to store the materials (e.g., flammable storage cabinets, specially designed inside storage rooms, etc.). See Table A below.

Compliance with these codes will be reviewed before the CFD will issue flammable storage permits and sign-off on license applications.

Since these codes can be complex, it's a good idea to involve the CFD, the architect, and potentially a fire protection engineer upfront or during modifications in the design process for the space in question. It's difficult when construction is complete and you find you have to limit the material you can store due to code specifications or have to increase fire protection, etc. in order to store the amount of materials you wish.

Planning for Emergencies:

A large part of this process is your emergency preparedness. Your emergency plan(s) will be reviewed by the CFD before a permit will be issued or a sign-off on a flammable storage license application will be made.

You will need to:

1. Create and/or revise facility maps indicating hazardous material storage areas, evacuation routes, and emergency equipment;
2. Create and/or revise a list of flammable materials at the site;
3. Create emergency procedures to notify personnel of an emergency and what they should do (e.g., evacuation plan); and
4. Draft procedures to handle certain types of emergencies (e.g., fires, chemical spills, etc.)

At least annually, you need to review your emergency plans, maps and inventory. You need to inform the CFD of revisions and changes to your information, in order to ensure appropriate administrative follow up and emergency response. Permits are renewed annually via an onsite inspection by the CFD, at which time you will be specifically asked about changes to your materials storage.

Flammable Storage Permitting & Licensing:

Storage/use of **any quantity** of flammable and combustible materials requires a **permit** from the CFD. The permit is issued for the entire facility or portion of the facility that the company occupies. If the quantities of materials to be stored exceed the limits in the table listed under Getting a License below (taken from 527CMR 14.03), the facility is required to obtain a flammable storage (garage & gasoline) license from the Cambridge License Commission **in addition to the permit** issued by the CFD. Lead-time is important as a permit or license can takes weeks or over a month to get – so plan ahead!

Getting a Permit:

If your company will be storing and using flammable materials, you MUST apply for a flammable storage permit. For **first** time submissions, contact Deputy Chief Brian Gover of the LEPC, 617/349-4944. For repeat submissions, contact: Fire Prevention Office, 617/349-4918. They will provide you with an application form to complete. Along with the **first time** application form you will need to provide:

1. A Chemical Hygiene Plan,

2. An Emergency Contingency Plan,
3. A Listing of the amounts of the various flammable and combustible liquids, (the list should be arranged by Classification and in gallons) flammable solids, and flammable gases showing their class and flash point, and
4. A site plan showing the storage locations for flammable and combustible materials. (There may be additional requirements for flammable gas storage)
5. A completed 24-hour emergency contact form
6. A letter from the health care facility that is contracted to be the Occupational Health Service provider for the lab facility.

Once the application is in process the CFD will inspect the proposed storage area and either recommend changes or issue the permit.

Permits are renewed annually via an annual site inspection by the CFD, at which time you will be specifically asked about changes to your materials storage. There is a fee for initial and annual permits. The annual permit fee is currently $50.00.

Getting a License:

If your company will be storing and using flammable materials in quantities exceeding those in the table below, you MUST apply for a flammable storage **License** in addition to a flammable storage permit. If you do not trip the limits but are in a multi-tenant facility where the total amounts do, make sure your landlord is following this procedure. Only one License is issued for a building regardless of how many tenants are in the building.

Maximum amounts without obtaining a license:

Category	*Amount*
Class I liquids (Containers < 60 gal.)	*793 gallons*
Class I liquids (Containers > 60 gallons, fixed installation, not intended for processing)	*10,000 gallons*
Class II liquids	*10,000 gallons*
Class IIIa liquids	*10,000 gallons*
Class IIIb liquids	*10,000 gallons*
Flammable gases (Within building)	*3,000 cubic feet*

Flammable gases	*10,000 cubic feet*
Flammable solids	*100 pounds*

Contact the Cambridge License Commission (CLC) at (617) 349-6140 for a license application. The following approvals must be obtained before the application form is considered complete:

1. The CFD will need to sign-off on the license application and stamp the site plans indicating the location flammable storage; and
2. The Zoning Commission must sign-off on the application.

In addition to completing the license application form, you will need to provide the CLC with:

1. An 8 ½ x 11 inch site plan indicating the location in which flammables are to be stored, the exact location of the facility (street address, nearest cross street, and abutting properties; and
2. A hearing and advertising fee of $175.

Once you have all the information and approvals required for the license application, the CLC will schedule your appearance at a public hearing. The CLC will publish notification in the local newspaper of the date on which a public hearing will take place addressing your request for license. You must formally notify (via certified mail – return receipt requested) the abutters and those on the opposite side of the street within seven days regarding the date and subject of the public hearing and submit copies of such notifications to the CLC. You will then be required to make an appearance at the public hearing to address any questions regarding your application. Once the CLC has approved your application a license will be issued.

Licenses are renewed annually by returning a signed statement to the Cambridge License Commission and payment of the renewal fee.

Please contact Deputy Chief Gover, 617-349-4944 with questions on the information below. *Table A*

NFPA 30 *Flammable and Combustible Liquids Code*
Maximum Allowable Size of Containers and Metal Portable Containers
(from NFPA 30, Table 4-2.3, NFPA 45, Table 7.2.3.2)

Container Type	Class IA	Class IB	Class IC	Class II	Class III
Glass	1 pt (500 ml)	1 qt (1L)	1.1 gal (4 L)	1.1 gal (4 L)	5 gal (20L)
Metal (other than DOT drums) or approved plastic	1.1 gal (4L)	5 gal (20L)	5 gal (20L)	5 gal (20L)	5 gal (20L)
Safety cans	2.6 gal (10L)	5 gal (20L)	5 gal (20L)	5 gal (20L)	5 gal (20L)
Metal container (DOT spec.)	60 gal (227L)	60 gal (227L)	60 gal (227L)	60 gal (227L)	60 gal (227L)
Approved metal portable tanks	660 gal (2498L)	660 gal (2498L)	660 gal (2498L)	660 gal (2498L)	660 gal (2498L)
Polyethylene (DOT spec.34)	1.1 gal (4L)	5 gal (20L)	5 gal (20L)	60 gal (227L)	60 gal (227L)

Capacity of Storage Cabinets (NFPA 30, section 4.3)

4.3.1 Not more than 120 gal (454L) of Class I, Class II, and Class IIA liquids stored in a storage cabinet.

4.3.2 Not more than 3 (or 6 if sprinkler system per NFPA 13) storage cabinets located in any fire area. In an industrial occupancy, additional storage cabinets can be located in the same fire area if a minimum separation of 100 feet is maintained between each group of not more than 3 cabinets.

Liquid Handling, Transfer, and Use (NFPA 30, Section 5.4)

5.4.3.5 The maximum total quantity of flammable and combustible liquids permitted at any one work area, outside of an approved storage area must not exceed the greater of:

1. one day's supply;
2. 25 gallons (94.6L) of Class IA liquids;
3. 120 gallons (454.2 L) of Class IB, IC, II, or III liquids;
4. two portable tanks not exceeding 660 gallons (2498.4 L) of Class IB, IC, II, or IIIA liquid; or
5. 20 portable tanks each not exceeding 660 gal (2498L) of Class IIIB liquids.