

## **INTRODUCTION**

The Fire Code and Fire Department rules regulating non-production laboratories date back to 1966. The 1966 rule regulated the storage and use of chemicals in college, university, hospital, and research and commercial laboratories, and required that such laboratories operate under the supervision of a certificate of fitness (C-14) holder.

In July of 2008, a new Fire Code was adopted in New York City. Similar to the former code, this code also regulated the storage and use of chemical in laboratories, and adopted with certain modifications, the requirements of National Fire Protection Association Standard (NFPA) 45, entitled "Fire Protection for Laboratories Using Chemicals". Unlike the former rule, the new Fire Code and NFPA Standard 45 are applicable to ALL non-production laboratories, including those in grade schools and high schools, not just those found in colleges, universities, hospitals, and research and commercial laboratories. Similar to the former rule, the 2008 Fire Code requires that ALL non-production laboratories be operated under the supervision of a certificate of fitness holder. For laboratories that were NOT previously required to operate their laboratories under the supervision of a certificate of fitness holder, such laboratories had until July 1, 2009 to have the responsible individuals obtain such certificate.

All new non-production laboratories established on or after July 1, 2008 are required to be in compliance with the 2008 Fire Code. Non-production laboratories approved by the Fire Department prior to July 1, 2008 do not have to, and in some case could not, comply the design and installation requirements of the 2008 Fire Code. Such laboratories are considered to be "pre-existing laboratories" and are required to comply with the design and installation requirements in effect at the time the laboratory was established. Throughout this study material you will see references and requirements that are applicable to "pre-existing laboratories". It is important that you understand what this means. Generally, original permits for laboratories issued by fire department prior to July 1 2008 would be subjected to compliance with the former rule requirement. Generally, original permits for laboratories issued after July 1 2008 would be subject to compliance with the new fire code. Therefore, it is possible that there can be two different kinds of non-production chemical laboratories in the same building, both supervised by one certificate of fitness holder. The certificate of fitness holder will have the responsibility of distinguishing and ensuring compliance with the different code requirements.

On the other hand, both new and pre-existing laboratories are required to comply with the operational and maintenance requirements of the 2008 Fire Code. Operational and maintenance requirements include such things as permits, certificate of fitness, signage, housekeeping, periodic testing and portable fire extinguishers.

In addition to the C-14 (non-production laboratory) certificate, the Fire Code requires, and the Fire Department administers, a variety of certificate of fitness exams that cover the types of hazardous materials generally found within a non-production laboratory. These include:

- (a) C-91 (covers most hazardous materials with the exception of flammable liquids, combustible liquids, compressed gases and cryogenic gases).
- (b) C-98 (covers flammable and combustible liquids).
- (c) G-46 certificate (covers non-flammable gases).
- (d) G-97 certificate (covers non-flammable cryogenic gases).
- (e) G-98 certificate (covers flammable gases).

As you can see, it would be quite a hardship for most laboratories if their personnel were required to secure multiple certificates of fitness. For this reason, the Fire Code allows for a single certificate (C-14) that qualifies the person to provide supervision for all storage and use of hazardous materials within non-production laboratories. This certificate is required when the storage of flammable or combustible liquids within a laboratory or chemical storage room exceeds 1 gallon or flammable gas storage exceeds 75 SCF. If you operate a laboratory and store and/or use less than these amounts, you are not regulated by the Fire Code as a non-production laboratory.

For laboratories that store and/or use hazardous materials in quantities not regulated as a non-production laboratory, a different certificate of fitness may be required, if the threshold values established by the Fire Code for other types of hazardous materials are exceeded. For example, a laboratory, not regulated as a non-production laboratory, having; any amount of a highly toxic material (e.g. sodium cyanide); flammable solid (e.g. magnesium) in excess of 1 pound; or "class 3" oxidizer (e.g. nitric acid, fuming) in excess of 10 pounds would require supervision by a C-91 certificate holder.

The C-91 certificate of fitness examination has been specifically developed to cover the storage, handling and use of hazardous materials in industrial, manufacturing and maintenance type applications, not non-production laboratories. The C-14 exam has been developed to only address the specific fire safety concerns, and unique code requirements, associated with the storage, handling and use of hazardous materials in non-production laboratories.

At least one C-14 Certificate of Fitness holder shall be present on each of floor of the laboratory unit on which laboratory operations requiring a permit are being conducted. For example, if a group of laboratories on any particular floor is run by the same researcher or Department, then it is possible to have one person provide the required oversight (personal supervision) over all laboratories on that floor. It is also conceivable to have one person provide coverage of all laboratories on a floor even if those are operated by different researchers or Departments. However, if that person is not designed to assume responsibility for every lab on that floor, or if you have a situation where there are multiple researchers, Departments or different tenants on that floor, then more than one person holding a certificate of fitness would be required on that floor to adequately provide the required coverage. Furthermore, if there are laboratories on any particular floor that operate outside of normal business hours (typically, 8 am to 6 pm) or on weekends (Saturdays, Sundays and holidays), personnel holding certificates of fitness would be required to provide coverage (personal supervision) of those laboratories during these "off-peak" periods.

Irregardless of whether a Certificate of Fitness holder is designated by the owner to supervise the operations of a single laboratory or multiple laboratories, it is important to understand that each laboratory is required to be in compliance. The Certificate of Fitness holder, in conjunction to the building owner, is responsible to monitor the operation of such laboratories to help ensure compliance.

The C-14 Certificate of Fitness holders are responsible for making sure that all fire safety regulations and procedures are obeyed on the premises. All Permits and Certificates of Fitness shall be readily available on the premise for inspection by Fire Department representatives.

This booklet consists of four parts (i.e. Definition, Core fire safety requirements, Safety guide of two most common hazards, and Checklist), renewal form, and six appendixes. For maintaining a safe laboratory environment, you should become knowledgeable with the entire booklet. The test covers the main body (the four parts) of the booklet and any tables. **The tables which appear in the booklet will be provided to you when you take the test at Metrotech, however, the booklet will not provide to you during the test.** Therefore, if you are successful on the test, you will be authorized to supervise a non-production chemical laboratory.

**At time of renewal, all current C-14 Certificate of Fitness holders must submit a signed form, attached to this document on page 52, certifying that have read this study material. Renewal application with the required form must be mailed to the Public Certification Unit, 1st floor, 9 MetroTech Center, Brooklyn, NY 11201. No Certificate of Fitness will be renewed without the required certification form or a retake of the examination.**

The operation of a non-production chemical laboratory is required to comply with the following fire department code and rule sections:

- Non-production chemical laboratories: **[Fire Code Section 2706]**
- Standard on fire protection for laboratories using chemicals: **[NFPA 45, 2004 edition]**
- Flammable and combustible liquids: **[Fire Code Chapter 34]**
- Flammable gases: **[Fire Code Chapter 35]**
- Flammable solids systems and facilities: **[Fire Code Chapter 36]**
- Compressed gases: **[Fire Code Chapter 30]**
- Corrosive materials: **[Fire Code Chapter 31]**
- Cryogenic liquids : **[Fire Code Chapter 32]**
- Highly toxic and toxic materials systems and facilities: **[Fire Code Chapter 37]**
- Organic peroxides storage and facilities: **[Fire Code Chapter 39]**
- Oxidizer systems and facilities: **[Fire Code Chapter 40]**
- Pyrophoric materials systems and facilities: **[Fire Code Chapter 41]**
- Unstable (Reactive) materials systems and facilities: **[Fire Code Chapter 42]**
- Water-reactive solids and liquids systems and facilities: **[Fire Code Chapter 44]**
- Former laboratory rule for pre-existing laboratories **[Rule Section 4827-01(g)(1)]**

## **Supervising Non-production Chemical Laboratories (C-14)** **(New)**

The study materials include information taken from the New 2008 New York City Fire Code (FC) Section 2706, Fire Department Rules Section 4827-01(g)(1) and NFPA Standard 45, (2004 Edition) Fire Protection for Laboratories Using Chemicals.

### **IMPORTANT DATES:**

- The new C-14 test will replace the old C-14 test and become available on **January 18th, 2011**.
- The old C-14 study material and the old C-14 test will be no longer available after **January 14th, 2011**.
- All current C-14 Certificate of Fitness holders must submit a signed renewal form (**see attached**) certifying that have read the new C-14 study material Starting **2/1/2011**. Renewal application with the required form must be mailed to the Public Certification Unit, 1st floor, 9 Metro Tech Center, Brooklyn, NY 11201. No Certificate of Fitness will be renewed without the required renewal form or a retake of the new C-14 examination.

**Supervising Non-production Chemical Laboratories**  
**C-14**  
**RENEWAL FORM**

Date \_\_\_\_\_

I hereby certify that I have fully read the new C-14 examination study material and understand its content. I understand that the rules and regulations have changed since I was first issued my certificate of fitness and I understand that non-production laboratories must be regulated in accordance with these new rules and requirements.

I also understand that the Department reserves the right to require me to take a re-examination upon submission of renewal applications, and that failure to submit this document with my renewal application may require me to retake the examination.

\_\_\_\_\_  
Name (Print)

\_\_\_\_\_  
Certificate of Fitness Number

\_\_\_\_\_  
Signature