

FIRE DEPARTMENT • CITY OF NEW YORK



STUDY MATERIAL FOR THE EXAMINATION FOR  
CERTIFICATE OF FITNESS  
FOR

Fire Producer  
**E-28**

Fire Performer  
**E-29**

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## **NOTICE OF EXAMINATION**

**Title:** Fire Producers (E-28) and Fire Performers (E-29)

**Date of Exam:** Written exams are conducted Monday through Friday (except legal holidays) 8:00 AM to 2:30 PM.

### **REQUIREMENTS FOR WRITTEN EXAM**

Applicants who need to take the exam must apply in person and bring the following documents:

1. Applicants must be at least 18 years of age.
2. Applicants must have a reasonable understanding of the English language.
3. Applicant must provide two forms of identifications; at least one form of identification must be government issued photo identification, such as a State-issued Drivers' License or Non Driver's License or a passport.
4. Applicants must present a letter of recommendation from his/her employer. The letter must be on official letterhead, and must state the applicant's full name, experience and the address where the applicant will work. If the applicants are self-employed or the principal of the company, they must submit a notarized letter attesting to their qualifications. For more info: [http://www.nyc.gov/html/fdny/html/c\\_of\\_f/cof\\_requirements.shtml](http://www.nyc.gov/html/fdny/html/c_of_f/cof_requirements.shtml)
5. Applicants must present a completed application for certificate of fitness (A-20 Form). <http://www.nyc.gov/html/fdny/pdf/a20.pdf>
6. Applicants must be currently employed and have a letter from their employer to sit for the exam.
7. Special requirement for the E- 28 Certificate of Fitness:
  - a. To qualify and make an appointment: paperwork must be submitted in advance to Explosives Unit
  - b. Must have resume detailing experience
  - c. 2 letters of recommendation from E-28 holders
  - d. A certificate from FDNY acceptable fire performer's safety course
  - e. 3-5 years festival experience or prior permitted work in NYC

Special requirement for the E-29 Certificate of Fitness:

- a. To qualify and make an appointment: paperwork must be submitted in advance to Explosives Unit
  - b. Must have resume detailing experience
  - c. 1 letter of recommendation from an E-28 holder
  - d. A certificate from FDNY acceptable fire performer's safety course
8. **APPLICATION FEE:**  
Pay the **\$25** application fee in person by one of the following methods:

- Cash
- Credit card (*American Express, Discover, MasterCard, or Visa*)
- Debit card (*MasterCard or Visa*)
- Personal or company check or money order (*made payable to the New York City Fire Department*)

For fee waivers submit: **(Only government employees who will use their C of F for their work-related responsibilities are eligible for fee waivers.)**

- A letter requesting fee waiver on the Agency's official letterhead stating applicant full name, exam type and address of premises; **AND**
- Copy of identification card issued by the agency

A convenience fee of 2.49% will be applied to all credit card payments.

## 9. **EXAM INFORMATION**

The **E-28** exam will consist of **30** multiple-choice questions, administered on a "touch screen" computer monitor. It is a time-limited exam. Based on the amount of the questions, you will have \_\_\_\_ minutes to complete the test. A passing score of at least 70% is required in order to secure a Certificate of Fitness. Call (718) 999-1595 for additional information.

The **E-29** exam will consist of **20** multiple-choice questions, administered on a "touch screen" computer monitor. It is a time-limited exam. Based on the amount of the questions, you will have \_\_\_\_ minutes to complete the test. A passing score of at least 70% is required in order to secure a Certificate of Fitness. Call (718) 999-1595 for additional information.

Please always check for the latest revised booklet at FDNY website before you take the exam.

[http://www.nyc.gov/html/fdny/pdf/cof\\_study\\_material/e\\_28\\_st\\_mat.pdf](http://www.nyc.gov/html/fdny/pdf/cof_study_material/e_28_st_mat.pdf)

10. If all the requirements are met and pass the exam a certificate will be issued the same day. Applicant who fails the exam will receive a failure report. To retake the exam applicants will need to submit a new application and payment.

**Special Note:** Both exams will also consist of a series of verbal questions.

## **RENEWAL REQUIREMENTS**

All renewals must go through the Explosives Unit in order to verify criminal background.

Please note that in person renewals are not recommended. Call the Explosives Unit for more information.

E-28/E-29 Certificates of Fitness are valid for a period of **one year** from the date of issuance. At the end of this period, the certificate expires unless the commissioner approves its renewal. Please be advised that certificate renewals shall be at the discretion of the commissioner in the interest of public safety. The department may review the certificate holder's qualifications and fitness. E-28/E-29 holders must ensure that their original Certificate of Fitness card is available for inspection at all times by the FDNY.

The renewal fee is \$5. FDNY also reserves the right to require the applicants to take a re-examination upon submission of renewal applications. Certificate of Fitness can be revoked at any time.

You may receive a courtesy notice of renewal 90 days before the expiration date. However, it is your responsibility to renew your Certificate. It is very important to renew your C of F before it expires. Renewals submitted 90 days (up to one year) after the expiration date will incur a \$25 penalty in addition to the renewal fee. Certificates expired over one year past expiration date will not be renewed a new exams will be required.

**To change a mailing address:**

Submit a letter requesting the change of mailing address and a copy of your C of F and a \$5.00 fee.

**To request a replacement certificate:**

Submit a driver's license or passport, social security number and mailing address and a \$5.00 fee.

**Renewal online**

If you are an individual, make sure you have your 12 digit Certificate of Fitness Access ID. This can be found on your Renewal Notice. If you do not have your Renewal Notice, your Access ID is your 8 digit Certificate of Fitness number and the last four digits of your social security number.

**Renewal fee can be paid by one of the following methods:**

- Credit card (American Express, Discover, MasterCard, or Visa)
- Debit card (MasterCard or Visa)
- E-check

Fee exempted applicants cannot renew online only by mail or in person.

If all the requirements are met, the certificate of fitness will be mailed out within 10 days.

For online renewal go to:

<https://paydirect.link2gov.com/FDNYCOF/ItemSearch>

**Renewal by mail**

Mail your Renewal Notice (if you did not receive a Renewal Notice, a copy of your certificate), along with your fee payment Personal or company check or money order (made payable to the NYC Fire Department)

**For fee waivers submit:** *(Only government employees who will use their C of F for their work- related responsibilities are eligible for fee waivers.)*

A letter requesting fee waiver on the Agency's official letterhead stating applicant full name, exam type and address of premises; *AND*  
Copy of identification card issued by the agency and if applicable, supporting documents to:

**NYC Fire Department (FDNY)**

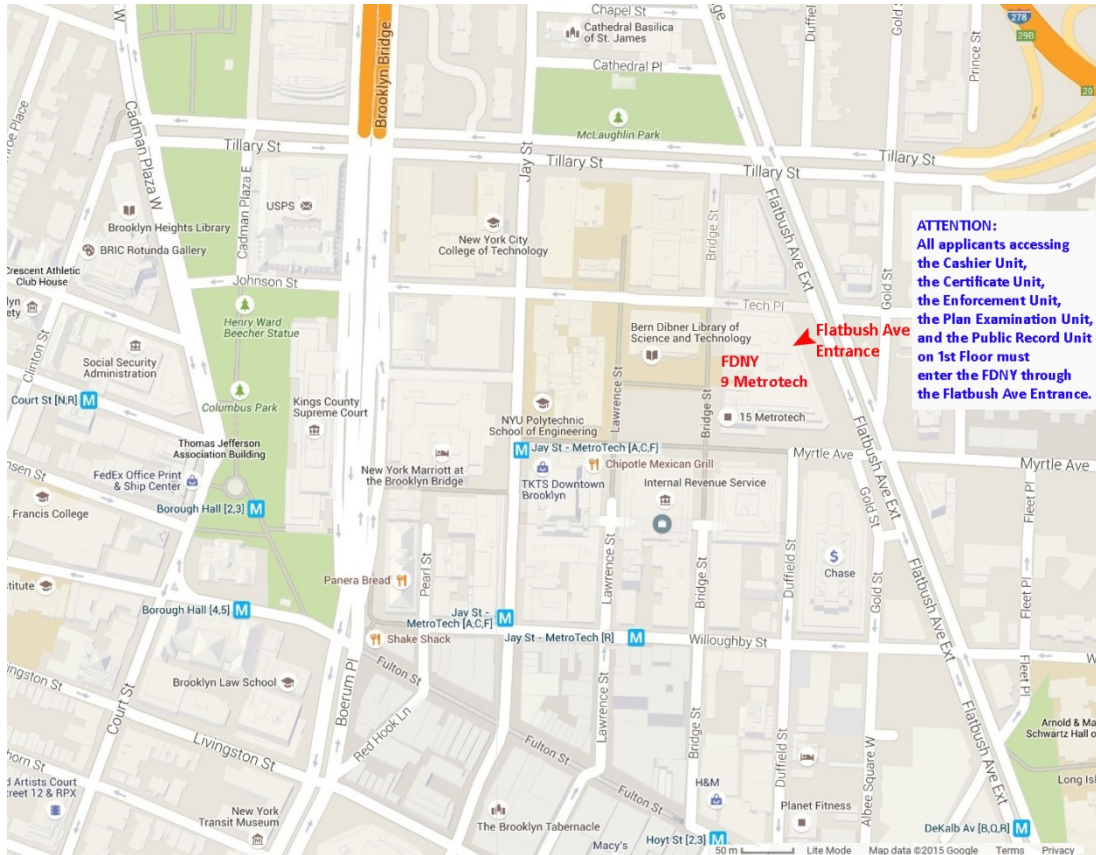
Explosives Unit

9 MetroTech Center, 1st Floor

Brooklyn, NY 11201

If all the requirements are met, the certificate of fitness will be mailed out within four to six weeks.

**EXAM SITE:**      **FDNY Headquarters, 9 MetroTech Center, Brooklyn, NY.**  
**Enter through the Flatbush Avenue entrance (between Myrtle Avenue and Tech Place).**





## **ABOUT THE STUDY MATERIAL**

This study material will help you to prepare for the written examination for the E-28/ E-29 Certificate of Fitness exam for Fire Producers and Fire Performers. This study material includes information taken from the New York City Fire Code as well as industry safety standards. The study material does not contain all the information you need to know in order to perform the responsibilities of minor special effects safely. It is your responsibility to become familiar with all applicable laws, rules and regulations of the federal, state and city agencies having jurisdiction, even though such requirements are not included in this study material. You need to be familiar with New York City Fire Code Chapter 3 which regulates the used of open flames in all buildings, structures and premises and Chapter 33: Section 3309 which regulates the use of special effects. **It is critical that you read AND understand this booklet to help increase you chance of passing this exam.**

## **ABOUT THE TEST**

You must pass a multiple choice and verbal test to qualify for the certificate of fitness. A score of 70% correct is required in order to pass the multiple choice section of the test. All questions have four answer options. Only **one** answer is correct for each question. If you do not answer a question, or if you mark more than one answer to a single question, your answer to that question will be scored as incorrect. Read each question carefully before marking your answer. There is no penalty for guessing.

## **SAMPLE QUESTIONS**

**Which of the following are allowed to be used while taking a Certificate of Fitness examination at 9 Metro Tech Center?**

- I. cellular phone
  - II. study material booklet
  - III. reference material provided by the FDNY
  - IV. mp3 player
- 
- A. III only
  - B. I, II, and III
  - C. II and IV
  - D. I only

Only reference material provided by the FDNY is allowed to be used during Certificate of Fitness examinations. Therefore, the correct answer would be A. You would touch "A" on the computer terminal screen.

**If the screen on your computer terminal freezes during your examination, who should you ask for help?**

- A. the person next to you
- B. the firefighters
- C. the examiner in the testing room
- D. the computer help desk

If you have a computer related question, you should ask the examiner in the testing room. Therefore, the correct answer would be C. You would touch "C" on the computer terminal screen.

**If you do not know the answer to a question while taking an examination, who should you ask for help?**

- A. the person next to you
- B. the firefighters
- C. the examiner in the testing room
- D. you should not ask about test questions since FDNY staff cannot assist applicants

You should not ask about examination questions or answers since FDNY staff cannot assist applicants with their tests. Therefore, the correct answer would be D. You would touch "D" on the computer terminal screen.

## **Introduction**

Fire performances anywhere are dangerous, especially in a heavily populated city such as New York. Improper use or storage of equipment, chemicals, and explosives creates a risk to individuals and property.

All required FDNY permits and Certificates of Fitness must be obtained prior to performing any special effect. Additionally, every Certificate of Fitness holder must have his or her valid certificate in possession (not expired E-28/ E-29) while performing any kind of special effect. The performance of any special effect without FDNY approval, permits, or a valid certificate of fitness is unlawful and subject to disciplinary action.

The FDNY commissioner holds the right to revoke a Permit or Certificate of fitness at any time, for good cause, including but not limited to unintended or inappropriate flame spread during a performance. With potentially dangerous situations, enforcement action may be taken.

NFPA 160 states that the minimum age for all flame effects operators shall be at least 21 years of age. For the purpose of this exam it is expected that the E-28 Producer is a minimum of 21 years and the E-29 Performer is a minimum of 18 years of age.

It is important to remember that even in the safest of environments with all safety protocol in place there is inherent danger associated with fire performances. The following guide will assist in making the likelihood of an accident less likely and provides information on possible steps to follow if a fire accident were to occur.

Whenever there is a question, especially in regards to safety, always contact FDNY Explosive Unit for further instruction.

\*

<b>E-28 Fire Producer</b>	<b>E-29 Fire Performer</b>	<b>Fire Safety Personnel (FSP)</b>
<ul style="list-style-type: none"> <li>• Has completed a safety course approved by FDNY Explosives Unit</li> <li>• Has detailed resume and at least 2 letters of recommendation from E-28 holders</li> <li>• Has done prior permitted work in NYC or 3-5 years festival experience</li> <li>• Has experience overseeing a troupe</li> <li>• Is an expert</li> <li>• Can lead a performance</li> <li>• Can serve as coordinator of a performance</li> <li>• Can supervise a troupe</li> <li>• Can serve as fire safety personnel</li> <li>• Can train and supervise acts in training (<i>training time determined by E-28</i>)</li> <li>• Can train and supervise FSP</li> </ul>	<ul style="list-style-type: none"> <li>• Has completed a safety course approved by FDNY Explosives Unit</li> <li>• Has detailed resume and at least 1 letter of recommendation from an E-28 holder</li> <li>• Can perform under an E-28</li> <li>• Can perform in a troupe led by an E-28</li> <li>• Can perform alone (w/o supervision of an E-28)</li> <li>• can serve as fire safety personnel</li> <li>• Can train and supervise FSP (up to 2)</li> </ul>	<ul style="list-style-type: none"> <li>• should have a F-03, F-04, E-28 or E-29.</li> <li>• Can be trained by E-28 for short-term work</li> <li>• Can be under the general supervision of an E-28</li> </ul>

\*All specifics are at the discretion of the FDNY Explosives Unit

#### **a. Worst Case Scenario**

*Heather Nance: When Tragedy Happens*

I wasn't planning on doing fire, it was a last minute decision. I didn't have a fire safety with me, but...you get a little cocky and confident and you're like, "I've done this a million times. I'm just gonna do one or two blows and that's it. It's easy. I do this all the time. My towel is right there, I know where it's at. If anything happens, I'm just gonna put myself out." What you don't take into consideration then is what if your face is on fire, or you can't see.



## b. Definitions

**COMBUSTIBLE.** Capable of being burned. Can be fiber or liquid.

**COMBUSTIBLE LIQUID** - For purposes of transportation, a combustible liquid, as defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point at or above 100°F (38°C), classified as follows:

**Class II.** Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

**Class IIIA.** Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

**Class IIIB.** Liquids having closed cup flash points at or above 200°F (93°C).

**DANGER AREA.** The immediate area surrounding the special effect, pyrotechnic performance, fire performance and/or fueling area. The distance of the danger area depends on the actual effect that is taking place.

**EXCESS FUEL.** More fuel than necessary for performance.

**FIRE.** A rapid, persistent chemical reaction that releases heat and light, especially the burning of a combustible substance in the presence of oxygen. For purposes of this code, a flame used in any lawful, properly operating device, equipment or system or other controlled setting shall not be considered a fire.

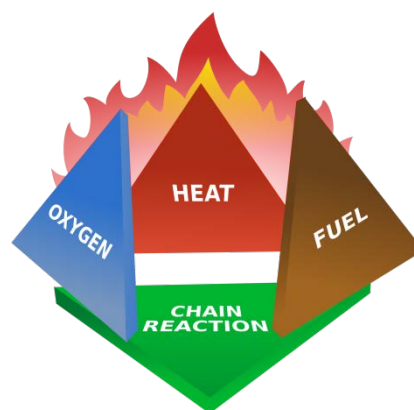
Fire can be explained in two ways, the Fire triangle and the Fire tetrahedron (as seen below).



### **Fire Triangle**

The Fire triangle identifies the three needed components for a fire: heat, oxygen and fuel. If one of these components are removed the fire will be extinguished.

vs.



### **Fire Tetrahedron**

The fire tetrahedron is a four-sided geometric representation of the four factors necessary for fire: fuel, heat, oxygen, and uninhibited chemical chain reaction.

**FLAME-RESISTANT MATERIAL (Fire resistive).** Material that resists burning, delays heat penetration, and can withstand heat. They will burn slowly due to being either inherently flame resistant or by being treated with a flame retardant chemical.

Material that meets the criteria for flame resistance as set forth in NFPA 705 or NFPA 701, either because it is inherently flame-resistant or because it has been subjected to a flame-retardant treatment. Flame resistant material is capable of passing NFPA 705 or Test 1 or Test 2 as described in NFPA 701.

**FLAME RETARDANT MATERIAL (Fire retardant).** Material that slows burning across the surface of a combustible product.

**INHERENTLY FLAME RESISTANT FABRIC.** Meet NFPA 701 (Test 1 or 2) or NFPA 705 without a chemical being applied and should retain inherent flame resistance for the life of the product. (Field test done to verify status)

**FIREGUARD.** A person holding a certificate of fitness for such purpose, who is trained in and responsible for maintaining a fire watch.

**FIRE SAFETY PERSONNEL (FSP aka SPOTTER).** See Fireguard.

For the purpose of this exam Certificate of fitness F-03 / F -04 or E-28 / 29 ( as well as a trained person for a temporary show) can serve as a fire guard for fire performers. Keep in mind once you take the F-03 you are able to purchase a F-04 Certificate of Fitness without taking another exam.

**FLAMMABLE.** Easily ignited and quick burning. Can be in liquid or solid form.

**FLAMMABLE LIQUID-** For purposes of transportation, a flammable liquid defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point below 100°F (38°C), classified as follows:

**Class IA.** Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C).

**Class IB.** Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).

**Class IC.** Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

**FLASH POINT.** The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.

**GENERAL SUPERVISION.** Supervision by the Certificate of Fitness holder who is responsible for performing the duties of the certificate holder but need not be personally present on the premises at all times. When using hazardous special effect materials, when COF is not present, material must be ***locked and secured***.

**HANDLING.** The movement of a material in its container, the removal of the material from its container, or any other action or process that may affect the material, other than its storage or use.

**HAZARD AREA.** The anticipated area within the venue where a flame effect is ignited, including an appropriate safety perimeter.

**HOLDING AREA.** An area where flame effect material or loaded flame effect devices are held prior to use.

**MATERIAL SAFETY DATA SHEET/ SAFETY DATA SHEET (MSDS/SDS).** A document prepared in accordance with the regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.1200 or a federally approved state OSHA plan which sets forth information concerning a hazardous material. It contains health and physical hazards of the material used, procedures that should be followed in case of an emergency and safety work practices. MSDS does not show the cost of the hazard.

**OPEN FLAME.** A flame that is generated by any material or device in a sustained and controlled manner and that is not securely enclosed by noncombustible material, such as a candle that is unenclosed or enclosed in a globe or lantern, or a gas light lantern, but not a flame contained in a furnace or other similar approved device, equipment or system. Torches operated in accordance with FC Chapter 26 and lighted smoking paraphernalia shall not be considered an open flame.

**PERMIT.** A written statement issued by the commissioner and FDNY Explosives Unit authorizing the manufacture, storage, handling and use or transportation of hazardous materials, or other material, or to conduct an operation or to maintain a facility, for which a permit is required by the NYC Fire Code.

**PERSONAL SUPERVISION.** Supervision by a Certificate of Fitness holder who is required to be personally present on the premises, or other proximate

location acceptable to the FDNY, while performing the duties for which the certificate is required.

**RECLAMATION.** The process of removing excess fuel from a prop using a spinning motion of an unlit prop in a device or structure to catch the excess, spun off fuel.

**SAFETY ZONE.** Area where audience is able to watch performance. Area is a safety distance from the *danger zone* and set by a FDNY Explosive Unit inspector.

**SPIN OFF.** The process of removing excess fuel from a prop by using a spinning motion of an unlit prop or manipulating prop in a way that burns off excess fuel.

**SPOTTER.** see Fire Safety Personnel

**VAPOR PRESSURE.** The pressure exerted by a volatile fluid.



### **Class of Flammable and Combustible Liquids Reference Chart**

As per the Fire Code, there are 3 classes of flammable liquids and 3 classes of combustible liquids defined in the following table.

#### **Class of Flammable and Combustible Liquids**

		<b>Flash point</b>	<b>Boiling point</b>	<b>Examples</b>
<b>Flammable liquids (Class I liquids)</b>	<b>Class IA</b>	< 73°F	< 100°F	Gasoline, Acetaldehyde, Ethyl ether, formate, Pentane
	<b>Class IB</b>	< 73°F	≥ 100°F	Acetone, Ethanol, <b>Denatured alcohol, Isopropyl alcohol</b>
	<b>Class IC</b>	≥ 73°F but < 100°F	Not Applicable	Turpentine, Butyl alcohol, Hydrazine, Styrene, Xylene
<b>Combustible liquids (Class II &amp; III liquids)</b>	<b>Class II</b>	≥ 100°F but < 140°F	Not Applicable	<b>Kerosene</b> , Diesel, WD-40 lubricant
	<b>Class IIIA</b>	≥ 140°F but < 200°F	Not Applicable	Butyric Acid, Creosote Oil, <b>Lamp Oil</b>
	<b>Class IIIB</b>	≥ 200°F	Not Applicable	Formalin, Glycerine, Picric acid, Propylene glycol

## **Part I. General Information**

### **1. Permits**

Permits must be kept on the premises at all times. It must be readily available for inspection by any FDNY or NYPD employee.

A permit is required to store, handle or use any quantity of fuel and supplies for fire effects purposes.

A fire effects permit shall be obtained for each display or other event involving the conduct of fire performances by the sponsor of the display or other event

or, with the sponsor's written authorization, by a person holding a Certificate of Fitness as a Fire Producer or Fire Performer (E-28/ E-29).

**Keep in mind that permits are site specific.**

The permit shall be issued in the name of the applicant and shall specify the name of the sponsor, the date, time and location of the display or other event, the number and kind of pyrotechnic articles or devices to be discharged or otherwise used, or other materials, articles or devices used to create fire effects, and such other terms and conditions as the commissioner may prescribe as necessary or appropriate for the safe conduct of the display or other event.

The commissioner may issue a production company special effects permit (for fire performance) to a television, motion picture or theatrical production company that regularly conducts fire effects at a designated location within a specific building or structure.

In order to apply for a fire effects permit, a Letter of Intent/ Permit Application is required. Information on the Letter of Intent/Permit application can be found in Part IV of this document.

Other permits may be necessary for production or performance (e.g. a permit for the use of a fire hydrant). You must check with other agencies such as the Department of Buildings (DOB), Department of Labor (DOL), New York State, or the Temporary Place of Assembly (TPA) Unit of the FDNY.

## **2. General requirements for Fire Effects**

As a safety requirement, it is important to have an assistant to serve as a "watch person" or "fire guard": when conducting fire performances. There are several general safety requirements put forth in the NYC Fire Code that must be followed when conducting special effects.

- The quantity of the materials and/or devices used must be the **minimum** amount necessary to produce the desired effect.
- The FDNY Commissioner may require a demonstration of the materials and/or devices used to create a fire effect.
- The FDNY Commissioner may require Fire Department personnel and apparatus to monitor the preparation and use of fire effect in the interest of public safety.
- The FDNY Commissioner may state that there is a **maximum** amount of special effect materials and/or devices that are allowed to be store in any approved facility. The location and design of the facility must be approved by the FDNY Commissioner.
- All special effect materials and/or devices must remain in their approved containers until required for use (while in temporary storage)

- The shortest time practical must be used between the time of removal from storage to the actual use of the fire effect
- Never leave any pyrotechnic material and/or devices unattended unless it is in a secured storage facility.
- If pyrotechnic material is removed from its original packaging, the replacement container must be properly labeled

### **3. Fire Performances**



Fire performances are possibly the most dangerous acts and potentially injury occurring acts in which the E-28/E-29 is responsible. It is also very important to understand and remember that experimenting without experience or guidance can be fatal.

Fire performances involve the control, use and handling of fire. These performances can include fire breathing, fire eating, fire sticks, juggling, poi, fans, and many other forms of fire manipulation.

#### **a. Fire Breathing**

The performer breathes aspirated fuel from his mouth and into a lit torch creating a breathtaking blast of flames that can reach more than 25 feet in the air.

#### **b. Fire Eating**

The performer places a lit torch into their mouth and then either snuffs the flame or controls the flame by using their fingers, palm, or other body parts to trail or transfer it.

*All of the materials below must be checked regularly and frequently for deterioration of the metal and the wicks attached:*

**c. Fire Staff**

- metal stick with a Kevlar wick
  - Staff: metal or wooden tube ranging in length with wicking material on both ends. They are typically used individually, in pairs and sometimes three or more
  - Dragon staff

**d. Juggling**

- any object that can be juggled such as (not an all-inclusive list)
  - Fire ball: juggling balls that are either solid balls dipped in fuel (juggled with protective gloves) or balls that are designed with the flame in the center of the ball
  - Torches: made of wood and/or metal with a wick attached at one end. The wick is saturated with a flammable and ignited before use
  - Fire (devil) sticks: are constructed with an aluminum core and have fuel-soaked wicks on the ends to allow them to be set on fire for visual effect.

**e. Poi**

- a pair of roughly arm-length chains with handles attached to one end, and bundle of wicking material on the other

**f. Fans**

- a large metal fan with one or more wicks attached to the edges.

**g. Ropes and Whips**

- jump ropes, floggers, cracking whip, etc...

**h. Fire Fingers**

- finger attachments with wicks at the end  
considered the easiest prop to learn and easily incorporated into existing choreography

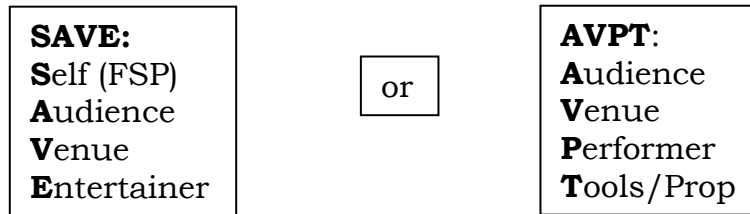
**i. Weapons**

- swords/knives/spears: some are designed to be balanced on your head but there are also some designed for on-stage combat
- nunchaku (nunchucks): mixes martial arts with fire spinning
- rope dart/ Javelin: also martial arts weapon

## **Part II. Safety, Handling and Use**

Safety is most important when it comes to Fire Performances. It is important to note that following all safety protocols does not remove all of the risks associated with the profession, it does greatly reduce the possibilities of unsafe situations.

**Always Remember:**



**1. Clothing, Costumes, Makeup**

It is important to understand that there is no such thing as **fire proof clothing or material**. Clothing is either **Fire retardant** or **Fire resistant** (slowing burning vs. resisting burning or delaying heat penetration).

There are three factors when considering clothing for fire performers as well as spotters.

**a. Fiber content**

What are the clothes made of? Natural or synthetic fibers or blends?  
There are advantages and disadvantages to both.

- a. **Natural fiber** (cotton, wool, leather) do not catch fire as easily. Natural fibers do not melt so they are not that type of danger to skin if they do happen to catch on fire. If by chance they do burn, the end result is ashes.
- b. **Synthetic fibers** (polyester, nylon) hold on to static electricity and will melt when burning which is a significant danger to skin.
  - There are a selection of synthetic fibers that have been created especially for fire protection such as aramids, Kevlar, nomex, and carbonex. These fibers are very protective and perform differently under fire than their purely synthetic counterparts.
- c. **Blends** burn and melt like the synthetic fabric that is present.

**b. Characteristics**

The characteristics of the clothing that are important to consider is the weave, weight, and structure of the fabric being used.

- a. **Weave:** the tighter the weave of the fabric, the more protective the clothing will be in case of fire.
- b. **Weight:** the heavier the fabric is, the more fire resistant it may be.
- c. **Structure:** always check clothing for strays including fraying of jeans, drawstrings, and or buckles that may be sticking out and impair your safety.

**c. Fit**

Clothing should fit snugly. Baggy and/or loose fitting clothing can catch fire more easily. Certain costumes that include capes, skirts and blouses should not be used as they can possibly get in the way of the fire props and catch fire.

Consider the shoes as well as hairstyles while performing. Shoes such as flip flops, loose sandals or shoelaces can get in the way and cause falls and/or accidents. In indoor facilities consider performing barefoot. Hair should always be secured and wrapped up (cap, or bandana). Pin and/or braid back (buns are not advised) long hair to keep it out of the way.

All types of aerosols or alcohol based products must be avoided when preparing for a fire performance. This includes: bug spray, hairspray, sun block, deodorants, etc...

When considering makeup for performances, avoid glue around your face. It is capable of melting and can cause severe burns. Jewels, eye lashes and things of the such, that can possibly be glued should be avoided.

All jewelry should be kept at a minimum. Earrings and necklaces that hang can also become hazards to a fire performance.

When performing acts that cause flames to touch your body, it is recommended to use a protective gel. These gels prevent or delay heat transfer to the body.

**2. Performance Area**

It is important that several requirements are explained to the venue before you book and/or conduct a performance. Some of these requirements are:

- Information on how to obtain a permit
  - What are the FDNY Explosive Unit requirements
  - How to request and send information to FDNY Explosive Unit (Letter of intent Part IV of this document)
- Your duties as an E-28 or E-29 holder
  - Fire Safety Personnel requirements
- Share checklist (located in Part IV of this document) with venue owner/client.

*Venues that plan on having a regular fire act should be encouraged to have a fire producer E-28 holder on staff.*


## Performance Area Preparation

When preparing for a performance it is important to make sure all safety equipment is in place.

- Fire Extinguishers: these should be fully operable and stationed at all points of performance area. (*see performance area diagram, Part IV of this document*)
- FSP (fireguard/spotter) with Duvetyne blankets: should also be at all points of performance area for easy access to extinguish fire props and or other burning items. (*see performance area diagram, Part IV of this document*)
- First Aide Kit: should be available complete with eyewash, burn cream, aloe, gauze and a phone to reach emergency services if necessary
- MSDS for all fuels and chemicals in use for the show. This is very important in the event emergency medical staff is required for treatment of an injured individual.
- Ventilation: the type and amount of fuel used will determine appropriate ventilation. Exhaust fans, purge systems, open windows may help with ventilation. FDNY Explosives Unit will suggest and determine ventilation needed for safest performance outcome.

The performance area also known as the *spin zone* should be a predetermined area with a significant distance from the audience (***industry standard is at least a 15 foot radius***). Things to consider are:

Outdoor Performance Area	Indoor Performance Area
<ul style="list-style-type: none"><li>• Have you checked manholes:<ul style="list-style-type: none"><li>-are they covered</li><li>-are they safe from leaks?</li></ul></li><li>• All open grates as well as intake vents must be covered and protected.</li><li>• Are combustible materials such as piles of leaves, garbage, etc... cleaned up and removed?</li><li>• Is there anything overhead including tree limbs or overhangs?</li></ul>	<ul style="list-style-type: none"><li>• Are you a safe distance from all electrical panels?</li><li>• has fire alarm system been set to appropriate setting?</li><li>• Lamp oil and white gas are not recommended for wicks (indoors). 91% or 99% alcohol are best.</li></ul>

<b>Outdoor and Indoor Performances</b>	
<ul style="list-style-type: none"> <li>○ Is there a safe distance from flammable soft goods such as furniture, curtains, etc.</li> <li>○ Will you be able to maintain your distance from the audience while performing? <ul style="list-style-type: none"> <li>- Static vs. Non- static (dynamic) props: Non static (dynamic) props should never be spun towards audience no matter the distance.</li> </ul> </li> <li>○ Is the ground unobstructed? Free from dips, holes, trip hazards?</li> <li>○ Floor (stage area) should be protected when performing fire performances on the floor</li> </ul>	
	<p>Either black wrap or foil is often used to protect stage or floor area from such burn.</p>

### **Weather and Surroundings**

It is important to take the environment around you into consideration when preparing to perform a fire act. Weather conditions as well as indoor sources of climate change such as fans and air conditioners can have an effect on the safety of your performance.

Fog, mist and rain can cause changes in direction of the fuel which is a danger to performers breathing fire. Wind, fans and air conditioning can change the direction of the flame and create a hazard. It may be wise to consider changing performance and audience perimeter when under such conditions.

### **3. Equipment**

It is important to always check equipment before each and every performance. Each chain, link, and wick as well as all possible moving parts need to be checked for weakness and to ensure that they are in good, stable condition. Any sign of wear, a replacement should be considered.



#### 4. Fuel

The choice of fuel is just as important as the performer's technique. Fire performers can consider several factors when choosing a fuel, including:

- Flash point (whether fuel ignites at a high or low temperature)
- Toxicity
- Taste and smell
- Color and visibility of flame
- Amount and thickness of smoke

Once the fuel is chosen, it is important to know details about your fuel. You should be aware of specific fuels and its uses, how it burns, and the correct way to fuel/ refuel your props as well as the proper way to store it. Most of this information can be found on a MSDS/SDS.

Never use diesel or automotive fuel for fire performance.

Class I fuels are not recommended for breathing fire as it may cause 'blow back.' Class III fuels have been determined to be safer and are highly recommended. There are several fuels that are recommended, each having its own pros and cons.

##### **a. Fuel: Uses and how it burns**

Some of the most commonly used fuels are:

- White gas (naptha)  
also known as camp fuel, it is classified as a Class 1B Flammable product. This fuel should NEVER be used for fire breathing. It has a very low flash point so it ignites instantly which makes it useful for props with wicks that are spun rapidly.

Although it has the shortest burn time, it burns very hot and bright. It is not recommended to use pure white gas indoors. It can be mixed with isopropyl alcohol for indoor use.

- Lamp oil (UPLO, paraffin)  
also known as paraffin or tiki torch oil is a class IIIA combustible product. It is usually used for fire breathing due to the fact that it has a higher flashpoint and longer burn time.

It must be used carefully because spinning with Lamp oil can cause slippery residue making surfaces slick and a danger to performers. It will give off a lot of soot residue when used.

- Kerosene  
is a Class II combustible. It is widely used because of its long burn time. It may be one of the cheapest and easily available products

but kerosene gives off a very large amount of smoke, smell and soot residue.

- Denatured alcohol  
also known as “methylated spirits” is a class IB Flammable product. It is ethanol with additives which make it poisonous, foul smelling, and bad tasting. It has a short burn time and gives off a dim blue flame.
- Isopropyl Alcohol  
also known as rubbing alcohol is a Class IB Flammable liquid. Commonly used for eating and breathing. It can be found in 70%, 91% or 99%. Not to be used on spinning props as the addition of oxygen will cause the prop to extinguish quickly.

Isopropyl Alcohol burns clean, with the least amount of residue. There is not too much smoke or smell associated with it.

- × Gasoline and Diesel  
Although readily accessible, should never be used in fire performances

Common Name	Brand Name	Intended use	Fire performance use	Associated dangers	Class	Flash point	Boiling point
White gas Camp fuel	Coleman Crown	Camp stoves lanterns	fire spinning outdoor and mix for indoor. Fire eating. <b>NOT SAFE FOR Breathing</b>	Can cause flash back, Can ignite in container	IB	0°F -<18°C	IBP >100°F
Ronsonol	ronsonol, Ronson	liquid lighter fluid	Has been used for breathing	Contains Benzene: Carcinogenic	IB	39.2°F	212-311°F
Zippo	Zippo	liquid lighter fluid	Has been used for breathing	Carcinogenic	IB	<73°F	IBP >90°F
Denatured alcohol	Klean Srtip, Klean Strip Green (less Methanol), Sunnyside, Crown	Solvent	Fire spinning, preferred for colored flame.	Poisonous, can cause chemical pneumonia	IB	45°F	147°F
Isopropyl alcohol	rubbing alcohol (70%, 91%, 99%)	cleaning, first aid, sanitizer	static fire installation outdoor and especially indoor. Can be used for eating and breathing		IB	71°F	180°F
Kingsford	Kingsford	charcoal lighter	Has been used for breathing	Can be fatal if swallowed. can cause chemical poisoning. Carcinogenic	II	104°F	No Data
Kerosene, K-1	Marathon Crown klean strip Sunnyside	home heating fuel	fire spinning outdoors	Contains Benzene: Carcinogenic	II	120°-190°F	360°-550°F
lamp oil Paraffin Mineral oil	tiki, lamplight ultra-pure medalian	Oil lamps, tiki torches	fire spinning outdoor and mix for indoor. Fire breathing. Some lamp oil mixes include citronella and should be avoided. <b>Ultra-Pure Lamp Oil is the most recommended for fire breathing</b>	Can set off fire alarms- very smokey. Can cause asphyxiation. Causes surfaces to be slippery	IIIB	205°F	490°-592°F
B100	Technol	pure vegetable based biodiesel	Fire breathing	N/A	III		
Cornstarch	Argo, Maizena	Cooking ingredient	Fire Breathing	Can cause asphyxiation.	III		
Gasoline		Automotive fuel		Contains octane. <b>NOT TO BE USED</b>	IA	< 73°F	<100°F
Diesel		Automotive fuel		Contains crude oil. <b>NOT TO BE USED</b>	II	≥100°F- 139°F	N/A

Highly recommended

Not recommended

### **b. Transporting**

Never use glass to transport fuel as it can break and cause a hazardous condition. Plastic can be used for short-term holding but only with certain types of fuel. Plastic melts which is important to be keep in mind while using. The best material container to transport fuel is a metal container. Metal is not capable of breaking or melting.

### **c. Storage**

When possible, try to keep fuel in its original container. The advantages of the original container are it is properly labeled including warnings and first aid information.

When putting fuel into other containers, the container should be a paint can type with a lid. It should be housed inside of a secondary containment bucket which is a larger container with a self-closing or manual lid (such as a spackle bucket).



This is useful especially when using the can to dip as it can catch drips and spills. It is also a great preventative measure to avoid dangerous fuel spills. If by chance fuel does spill, see the Clean Up methods section of this document (item G).

Sometimes performers choose to mix fuel. Mixed fuel should be stored and labeled by the most dangerous fuel in the mixture.

For long term storage is it advised to use liquid storage cabinet, marked flammable and labeled with the most dangerous fuel in the cabinet.

#### Liquid storage cabinets

Where the Fire Department requires that liquid containers be stored in storage cabinet, such cabinets and storage shall be in accordance with the followings:

The cabinet must be listed in accordance with UL 1275. All cabinets must be provided with a conspicuous label in red letters on contrasting background which reads: FLAMMABLE-KEEP FIRE AWAY. The door must be well fitted, self-closing and equipped with a three-point latch. The bottom of the cabinet must be liquid-tight to a height of at least 2 inches. The combined total quantity of liquids in a cabinet must not exceed 120 gallons. Maximum 3 cabinets is allowed to be located in a single fire area, except that in a



Group F occupancy (e.g. a factory and industrial occupancy or repair garage), additional cabinets are allowed to be located in the same fire area if the additional cabinets (or groups of up to 3 cabinets) are separated from other cabinets or groups of cabinets by at least 100 feet.

#### **d. Refueling (on stage and fueling depot)**

Some performances may require an open source of fuel on stage or close by for continuous refueling and no break in performance. It is required that this fuel be under the **personal supervision** of a FSP (fireguard or spotter). This container of extra fuel must be in a secondary container on top of a layer of duvetyne. Another option is to have several wicks already fueled, stashed in zip-top bags.

When in a venue with a Fuel Depot (see Fuel Depot layout diagram), it will normally be located a distance from the spin zone/performance area. It is recommended that the Fuel Depot (when indoors) be located in a well-ventilated, sprinklered room with proper safety signage. It will have a specific traffic pattern to avoid performers running into each other with already fueled props. The layout and flow of this area should be discussed in a safety meeting prior to performance.

Never use public areas for fueling props unless they have been designated and approved by FDNY Explosive Unit for such purpose. (sidewalks, streets, doorways, bathrooms, etc.)

There should be a fueling monitor (FSP, fireguard, spotter) to help performers dip as well as a sink close by to wash off fuel that may have gotten on performer's hands.

It is important to fuel your prop with the appropriate method. Some props require dipping, some may use a metal gutter or PVC pipe and some may require the fuel to be poured onto them.



Push to dispense bottle:

Can be used to safely dispense flammable liquids. Once you turn the bottle upside down and press against the brass flange the liquid can be dispensed.

### **e. Spin off (Reclamation)**

The purpose of spinning off is not only to decrease the dangerous of props being over-fueled but it is also used to conserve fuels and protect the environment.

There are a few different spin off/ reclamation methods.

- **Zip-top bag:**  
This method is the highest recommended. It can be achieved by enclosing the fueled wick in a zip-top bag and spinning the prop in a circular motion. Once no more fuel is being collected in the bag you can remove the prop and pour the excess fuel back into the dipping can. It is advised to dispose of the bag after as the fuel can lead to the degradation of the bags materials.
- **Paint can:**  
Although not advised, some use a one gallon paint can for fuel reclamation/spin off. The handle of a paint can is not made to support that spinning of the can and can possibly be a danger to those around you.
- **Squeezing:**  
Using either a one-time use disposable nitrile glove or a multi-use fluid resistant glove, you can squeeze the excess fluid from the wick back into your dip can. The fuel can cause gloves to deteriorate so it is best to replace gloves each time.
- **Tossing:**  
Props such as staffs or batons can be lit and thrown in the air (in a controlled way) to assist with excess fuel burn off.
- **Reclamation Station:**  
At larger festivals, there may be a fuel reclamation station. These are environmentally friendly structures that allow for fuel spin off and reclamation of fuel for secondary use.



## **5. Fire Safety Personnel Duties: Spotting (Safeties)**

Prevention is key when it comes to fire safety while performing.

The fireguard is also known as the spotter or fire safety personnel. The fireguard is responsible for keeping not only the performer safe, but for doing safety checks that also keep the venue and audience safe as well.

For this exam, the fireguards should assist in preparing the area for the fire performance. The performance and fuel areas should be properly barricaded. There should be a clear distinction between the safety zone and danger zones.

Fireguards should be aware of the FDNY permit issuance and ensure that it is followed. Fireguards also may be asked to snuff props and assist with clean up including fuel being replaced in its proper containers.

Although fire performers are responsible for their own safety checks, the fireguard should also check to make sure there are:

- proper PPE (gloves, bandanas, fire resistant/resistive clothing, etc...)
- flame resistant clothing on performers
- no aerosols or alcohol based products on or around performer
- all safety equipment including but not limited to:
  - 10 feet of fire resistant fabric available/ wet towels
  - a minimum of 2 current CO2 10: BC fire extinguishers.
  - first aide kit with burn treatments
  - MSDS

Fireguards (spotters/FSP) must also monitor:

- that safety distances are maintained.
- the fueling and inspection of all props.
- Fire alarm system in proper mode and if offline monitored by S-95 holder.

Fire guards (spotters/FSP) should check the venue for:

- Flammables cabinet
- oily rag/snuff container
- proper signage
- designated fueling area.
- flammable materials around prior to show (alcoholic drinks and napkins)

- Compressed gases canisters
- trip hazards
- slippery floors due to fuel.

## 6. Extinguishing

Regardless of why you are extinguishing a prop (emergency or basic extinguishing) it is very important to REMAIN CALM. Most props can and should be extinguished with the use of a safety blanket (Duvetyne). Unfortunately Fire Safety Personnel may need to use a fire extinguisher as a last resort.

Safety Blankets or Damp Towel:

There should always be multiple blankets available for fire performances. Blankets should be designated and clearly labeled for extinguishing versus fire safety. Putting out tools can transfer fuel onto duvetyne making them more flammable and hazardous for use as a safety blanket.

Blankets can be used to put out props when a performance is done but the fuel has not quite burned out. This can be done by placing duvetyne on the ground and placing the lit prop in the middle while folding the remaining blanket over, essentially snuffing out the fire.

Always extinguish props one at a time and *never pat or fan* to extinguish, only smother to suffocate fire. Always keep blanket on a few extra seconds for greater assurance that the prop has been extinguished

Fire Extinguisher:

As mentioned above, a fire extinguisher should be used as a last resort but always in larger fire emergencies. An ABC (Dry Chemical, is good for larger or structural fires) or a BC (no residue, is preferred for smaller fires) extinguisher must be available at each performance.

Water extinguishers **must not** be used on fuel fires.

When using extinguisher, use it cautiously. Never spray a fire extinguisher into a persons face as it can cause asphyxiation.

Blankets:	Damp Towels:	Fire Extinguishers:
<ul style="list-style-type: none"> <li>• Covers prop</li> <li>• Removes oxygen</li> </ul>	<ul style="list-style-type: none"> <li>• Removes oxygen</li> <li>• Cools down prop</li> <li>• Removes chemical</li> </ul>	<ul style="list-style-type: none"> <li>• Covers Fuel Source</li> <li>• Removes or displaces oxygen</li> <li>• Lowers heat of reaction</li> </ul>



## 7. Clean Up

The responsibility of clean-up is not only for the FSP (spotter, fireguard) but also for the performers. All materials used for clean-up should be disposed of properly to not only avoid physical but also environmental hazards. Contaminated rags must be correctly disposed of in oily rag containers or as deemed appropriate by product's MSDS/SDS.

### **During Performance**

Throughout the performance it is important that the FSP (spotter, fireguard) continuously clean up oils that may have dripped or been spun onto the floor during the performance. This can make the floor slippery causing a hazard.

### **Spills**

You must immediately clean up accidental spills.

Always keep in mind that any materials used to clean up a spill will be highly flammable and should be treated that way. The towels used must either be disposed of with a controlled burn, cleaned if applicable, or thrown away in the appropriate manner (according to MSDS).

Fuel is not good for drainage system and pipes. Fuel should never be disposed of in sinks or into sewer systems. Towels or cloths with fuel on them should be hand washed.

## 8. Safety with Fire Performances

- **Never** breathe in with a fire torch or fuel in your mouth, or when you are blowing or breathing fire.
- **Never** blow fire if the wind is too strong and never blow in the direction of the wind at any time.
- **Always** watch out for the audience being too close to the torches and/or performers.
- **Never** use wadding/cotton/old-rag to bind torches as these are flammable.
- **Always** squeeze all of the excess fuel from the flame tool.
- **Always** Make sure that the torches are secure so that no burning parts are able to fall off.
- **Never** use ordinary/standard rope to bind a torch. It will burn through and untie in the performer's mouth.
- **Always** travel with fuel in a properly "approved" fuel canister marked to identify its contents (i.e. **"PERFORMANCE FUEL"**) so that it is not mistakenly used for anything other than its intended purpose.

- **Never** practice or perform alone. An experienced companion is best. That person should know how to summon help and have some idea of first aid.
- **Always** use safety signals: verbal and physical.
- **Always** have fire extinguishers extremely close.
- **Never** spray a fire extinguisher at a person's face.
- **Always** have an appropriate size and supply of suppression cloth.
- **Always** inspect all materials and articles before use.
- **Always** remove all trip hazards.
- **Never** have additional people around the fire performance. **ONLY** those necessary for the performance.
- **Always** check for hot spots once the fire performance has been extinguished.
- **Always** have a fireguard with an extinguisher in every possible direction the performer can run.
- **Always** protect utilities when indoors (such as sprinkler heads, electrical wiring, etc...)

### **Part III. Health Hazards and First Aide**

Anytime fuel comes in contact with your skin you should IMMEDIATELY wash it with soap and water. Additionally, you should always shower, brush your teeth, blow your nose, and clean your clothes EVERY time you work with fire. It is important to get clean to prevent fuel from seeping into your blood through your skin or mouth.

Although some the symptoms and health hazards are immediate (acute); others can take years to develop (chronic). They all can be deadly in their most severe forms, and can happen to anyone, from the well-seasoned professional to the novice performer. Therefore they should be taken seriously.

Performers should know to: refer to MSDS, call 911 and/or poison control 800-222-1222.

#### **Acute/Chronic:**

**Burns:** are a reality for all fire performers. A burn can range from a barely noticeable burn to possibly life changing external burns and even deadly internal burns.

**First Aide/Treatment:** Treatment for minor burns is usually to run cold water on the affected area and follow by either aloe or a burn treatment ointment. Try to keep burn clean and covered loosely with a bandage (or uncovered when able) to give it an opportunity to heal.

For more severe burns it is important that you seek medical treatment from a physician.

**Swallowing:** is always a possibility with using fuels to breathe fire. The more that is ingested the greater the hazard.

**First Aide/Treatment:** Call 911 and poison control 800-222-1222 immediately. **DO NOT INDUCE** vomiting. **DO NOT ADMINISTER** milk or any other fluid.

It is best to seek medical treatment.

### **Acute:**

1. Slight burns: such as singed facial hair

**First Aide/Treatment:** burn treatment from first aide kit

2. Nausea or stomach ache: This can be caused by the accidental ingestion of even a small amount of fuel or even a small amount of fuel may have mixed with saliva and ingested.

**First Aide/Treatment:** It is best to try and prevent issues from ingesting fuel by taking a caplet of activated charcoal, drinking a dairy product such as milk or cream, eating something starchy such as bread or non-fried potatoes), or taking an antacid before and after your fire breathing.

Depending on how much was ingested, poison control may need to be called.

3. Dry Mouth (also known as Cotton mouth): Caused by the fuel

**First Aide/Treatment:** this can be taken care of by drinking plenty of fluids before, during, and after a performance.

4. Dry cough: is very common after fire breathing. This can be a result of smoke inhalation or accidental inhalation of aspirated fuel.

**First Aide/Treatment:** small baby breaths during the coughing bout. Usually it will subside within a day. If it is severe or does not subside after 24 hours you should consult with a physician.

5. Dry skin or a flushed complexion: This could be caused by two issues. One is having an allergy to the fuel used the second is the intense heat of the fire, being in such close proximity to your face or skin. It can resemble a low-grade sunburn

**First Aide/Treatment:** If it turns into a rash it is most likely an allergy and you should no longer use that brand of fuel or use of moisturizer to help.

6. Headache, dizziness or a feeling similar to being drunk, after fire breathing: This may be due to dehydration. This could also possibly be from a technique similar to blowing up a balloon.

**First Aide/Treatment:** if caused by dehydration, drinking plenty of fluids (water). If due to technique, changing your technique is your best solution.

### **Chronic:**

1. Chemical Pneumonia: serious damage to your lung tissue caused by inhalation of aspirated fluids. Symptoms include severe cough, fever, lethargy, nausea, shortness of breath and other flu like symptoms.
2. Dental issues: Gum disease and possible weakened tooth enamel.
3. Stomach ulcers.
4. Fuel Poisoning: This is from the ingestion of too much fuel. Symptoms of this may include vomiting, diarrhea, extreme dizziness, severe nausea, blurred vision, cold sweats, fever, and the shakes.
5. Cancer of the mouth, throat, lungs, kidneys and liver: This is caused by long term exposure to carcinogenic fuels. Always check MSDS of product and fuels used.
6. Acute Respiratory Distress: When bronchial tubes close and there is a shortness of breath.
7. Blowback: When fire follows the spray of fuel or the fuel fumes blow back to your face igniting your flesh and possibly your mouth on fire.

**First Aide/Treatment:** Treatment of all of the above requires the assistance of a physician and possible hospitalization.

## Part IV. Sample Letters, Site Diagram and Safety Checklist

### Letter of intent/Request for a Permit

(Form must be requested from FDNY Explosives Unit. It is available in a PDF fillable format.)

The letter of intent must be requested and emailed to [Explounit@fdny.nyc.gov](mailto:Explounit@fdny.nyc.gov) on Production company letter head and include the following information:  
(sample to follow)

- Addressed to the FDNY Explosives Unit
- Name, title, all applicable phone numbers (office, cell, fax), email address
- Name of Production Company and contact person
- Description of special effect (SPFX) and List of all materials to be used.
- Date, time, location of effect, and site diagram
- Name of Pyro, C of F #, expiration date and copy of card.
- Flame certifications and signed releases (if necessary)
- Proof of general liability insurance (at a minimum of \$1,000,000).
- Mayor's office Schedule A (if necessary)
- Permission from property owner to conduct SPFX
- Requested day/time of inspection

FDNY Explosives Unit Letter of Intent/ Permit Application																																										
Attn: Chief Inspector James Lauer 9 Metrotech Center RM 3N-2 Brooklyn, NY 11201 (This does not authorize effects. Wait for FDNY approval)																																										
<p>This is a(n): <input type="radio"/> Original <input type="radio"/> Update <input type="radio"/> Cancellation</p> <p>Company Name and Address: _____ Billing Information (if different): _____</p> <p>Production Title: _____ Site Location: _____</p> <p>Type of Inspection: <input type="radio"/> Pre-site/Sout <input type="radio"/> Site Inspection Inspection Date requested: _____ Inspection Time Requested: _____</p> <p>Contact information: _____ Proposed date of Special Effect: _____ Time of special effect: _____</p> <p>Liability Insurance Minimum \$1,000,000 required Name of Insurance Company: _____ Policy Number: _____ Exp. Date: _____</p> <p>PENALTY FOR FALSIFICATION OF ANY STATEMENTS MADE HEREIN IS AN OFFENSE PUNISHABLE BY REVOCATION OF PERMIT, FINE OR IMPRISONMENT AS SET FORTH IN THE ADMINISTRATIVE CODE.</p> <p><b>DO NOT WRITE BELOW THIS LINE</b></p> <p>Permit No.: _____ Examiner: _____ Issued: _____ Approved: _____ Perm. Exp.: _____ Fee \$: _____ Permit written by: _____ Expires: _____</p>																																										
<p>Pyrotechnician Name: _____ Cof number: _____ Cof Expiration Date: _____</p> <p>Attachments (if applicable): <input type="checkbox"/> Copy of Cof card <input type="checkbox"/> General Liability Insurance <input type="checkbox"/> Site Diagram <input type="checkbox"/> Property owner's consent <input type="checkbox"/> Mayor's office schedule A</p> <p><input type="checkbox"/> Signed and notarized release forms <input type="checkbox"/> Flame Proofing certificates <input type="checkbox"/> Certificate of Occupancy <input type="checkbox"/> Certificate of Operation <input type="checkbox"/> Call Sheet</p> <p>Description of effect: _____</p> <p>Notes: _____</p>																																										
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## Letter of recommendation

(available in fillable word .doc form by request)

FDNY Fire Prevention  
Attn: Explosives Unit  
9 MetroTech Center RM #3N-2  
Brooklyn, NY 11201  
718-999-1595

To Whom This May Concern:

I am pleased to recommend \_\_\_\_\_ for the Certificate  
(name of individual)  
of Fitness E-\_\_\_\_\_, \_\_\_\_\_ (S)he has \_\_\_\_\_ years  
(COF type) (Certificate of Fitness Title) (number of years)  
of experience with \_\_\_\_\_ working with fire and  
(Company name)  
pyrotechnic effects.

\_\_\_\_\_ is of good character and is physically able to perform the  
(name of individual)  
duties required of a Certificate of Fitness E-\_\_\_\_\_ holder. (S)he is  
(COF type)  
experienced in the notification and safety guidelines of FDNY Explosive Unit  
as prescribed by the NYC Fire Code.

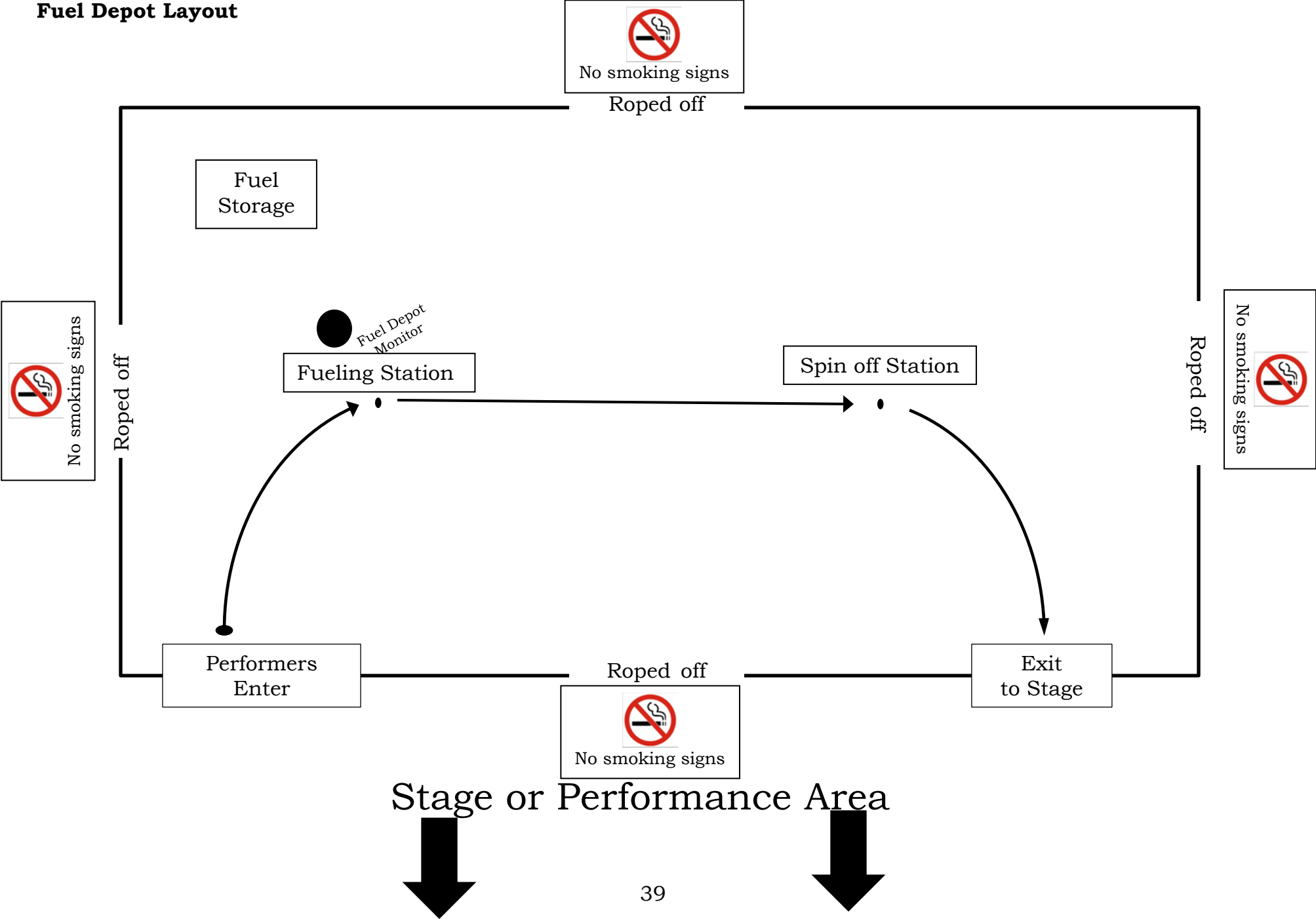
Respectfully,

\_\_\_\_\_  
(Recommender's Signature)

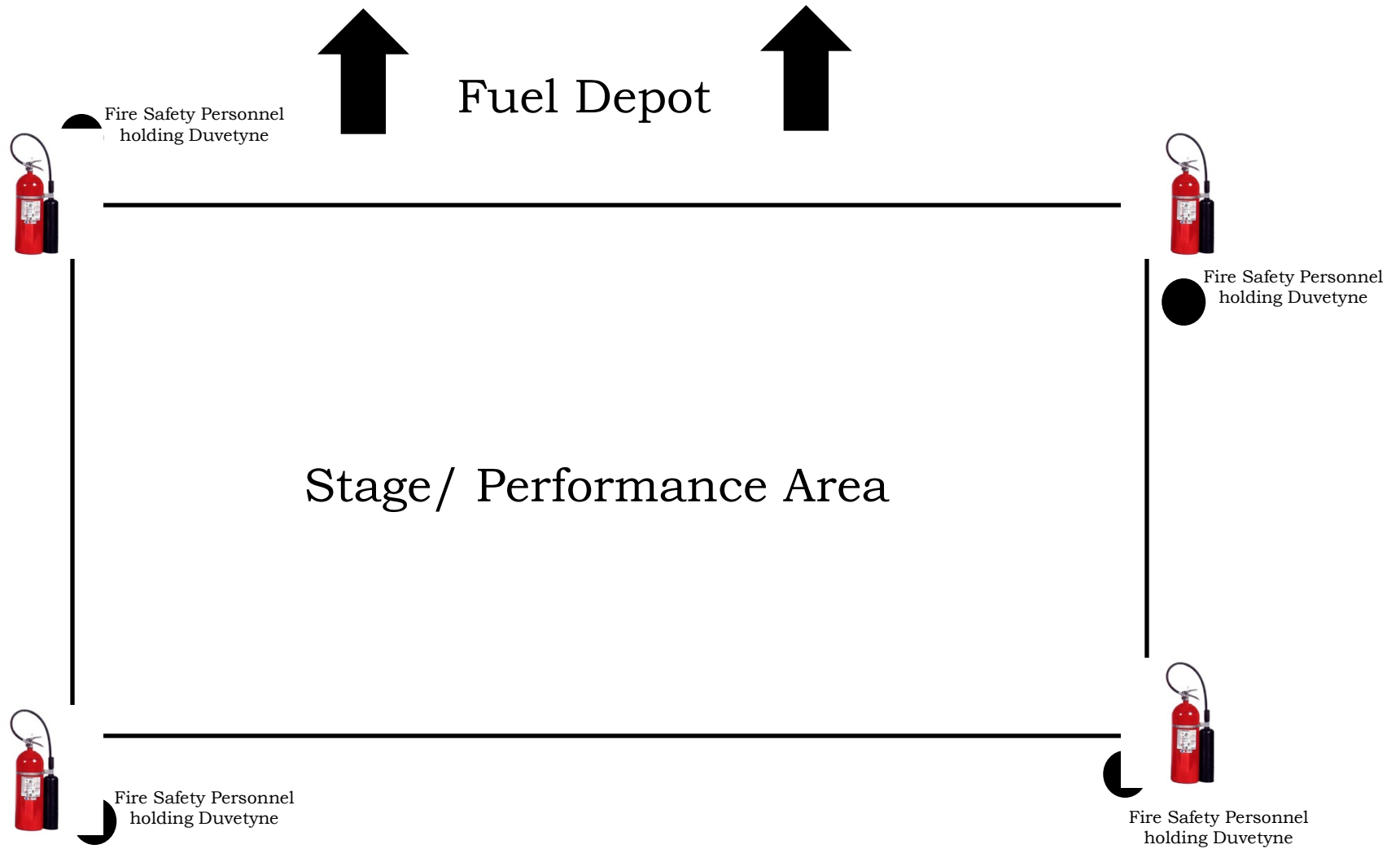
\_\_\_\_\_  
(Print name, Certificate of Fitness #)

**Notary**

**Fuel Depot Layout**



## Performance Area Diagram



**\*Extinguishers**  
**CO<sub>2</sub> Type 10: BC**



## E-28/29 Safety Checklist

Date: \_\_\_\_\_  
 Performer's Name: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 C of F #: \_\_\_\_\_  
 Exp. Date: \_\_\_\_\_

Re: Performance Location: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City & State: \_\_\_\_\_

A. Pre-ignition (Before you start)		<u>Responses</u>	<u>Comments</u>
1. Is your COF C-15 up to date?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes</b> , make sure COF # is listed above <b>If no</b> , <STOP>
2. Do you have a permit from the FDNY Explosives Unit?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes</b> , list number _____ <b>If no</b> <STOP>
3. Is first aid kit available?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>If no</b> , <STOP> and obtain first aid kit
4. Are the MSDS/SDS sheets available for all materials being used?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<b>If no</b> , <STOP>
5. Have you checked your clothing, hair and make-up for fire retardancy/resistance?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6. Have you inspected your props for proper connections/attachments?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7. Have you checked the performers around you?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8. Have you checked the venue? (layout, ceiling height, weather, ventilation)	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9. Are there safety blankets and ABC/BC fire extinguishers?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10. Is there an emergency exit plan?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
11. Is there a safe fueling area?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
12. Safe audience perimeter been set?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
B. Peri-ignition safety (most dangerous, just before/ during wick lighting)		<u>Responses</u>	<u>Comments</u>
13. Are FSPs and safety materials (blankets/extinguishers) in place?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
C. Post- Ignition Safety (immediately before performance)		<u>Responses</u>	<u>Comments</u>
14. Have you spun or burned off excess fuel?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
15. Have you cleaned up possible spills or drips to prevent slips?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
16. Has performance area been protected?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
D. Clean Up (after performance)		<u>Responses</u>	<u>Comments</u>
17. Have all props been extinguished?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
18. Have all fuels been replaced in appropriate containers?	<b>M</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>M</b>	Client/Venue Owner: _____ Signature _____ Date: _____		

**M** – Mandatory, Any **NO** answer on **M** items requires immediate notification to the FDNY, Explosives Unit

*Note: A record of this shall be maintained on premise and be made available for inspection by any member of the New York City Fire Department.*

	Performer's Name	Prop/ Tool
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

	Safety Personnel Name	Role
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		






***Additional Comments/Notes:***

## **V. Fire Safety and Extinguishers**

At least two (ABC or BC) portable fire extinguishers with a minimum 2A rating must be present for pyrotechnic effects.

The Certificate of Fitness (COF) holder or watchperson must be familiar with the different types of fire extinguishers that are present. The COF holder or watchperson must know how to operate the extinguishers in a safe and efficient manner. He/she must know the difference between the various types of fires and the extinguishers appropriate for use in that particular fire. The different classes of fires are described below.

### **Classes of Fire Extinguishers**










CLASSES OF FIRES	TYPES OF FIRES	PICTURE SYMBOL
<b>A</b>	Wood, paper, cloth, trash & other ordinary materials.	
<b>B</b>	Gasoline, oil, paint and other flammable liquids.	
<b>C</b>	May be used on fires involving live electrical equipment without danger to the operator.	
<b>D</b>	Combustible metals and combustible metal alloys.	
<b>K</b>	Cooking media (Vegetable or Animal Oils and Fats)	

A **Multipurpose dry chemical** fire extinguisher may be used to extinguish Class A, B, or C fires.

### **Typical Symbols Painted on Fire Extinguishers**

The symbol with the shaded background and the slash indicate when the extinguisher must not be used. Symbols may also be painted on the extinguisher. The symbols indicate what kind of fires the extinguishers may be

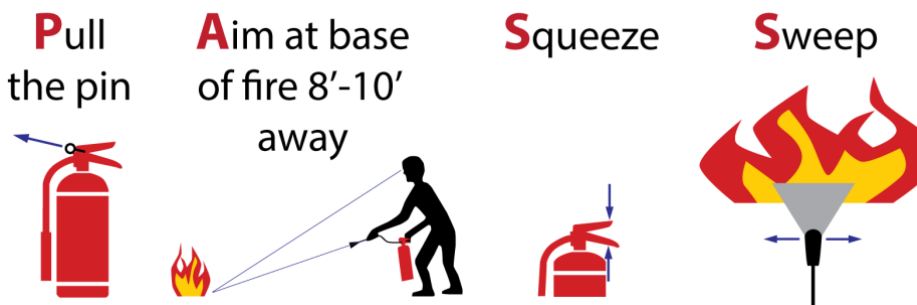
used on. The COF holder and watch person must understand these symbols. Examples of these symbols are shown below.

			Suitable for Class B and Class C fires but not Class A
			Suitable for Class A fires but not Class B or Class C
			Suitable for Class A and Class B fires but not Class C

Generally, operation instructions are clearly painted on the side of the fire extinguisher. They clearly describe how to use the extinguisher in case of an emergency. An example of these instructions is shown below.

**In case of any fire, 911 must be called.**

Fire extinguishers must be used in accordance with the instructions painted on the side of the extinguisher. They clearly describe how to use the extinguisher in case of an emergency. The Certificate of Fitness holder or watchperson should be familiar with the use of portable fire extinguishers. When it comes to using a fire-extinguisher just remember the acronym P.A.S.S. to help make sure you use it properly. **P.A.S.S. stands for Pull, Aim, Squeeze, Sweep.** An example of these instructions is depicted in the picture below.



## Monthly Inspection

A monthly inspection is a "quick check" that a portable fire extinguisher is available and will operate. It is intended to give reasonable assurance that the portable fire extinguisher is fully charged and operable.



done by verifying that:

• fire extinguishers are in their assigned place;  
• fire extinguishers are not blocked or hidden;  
• fire Extinguishers have not been actuated or tampered with;  
• fire extinguishers show no visual sign of damage or abuse that prevents its operation;  
• pressure gauge reading or indicator on the fire extinguisher are in the operable range or position;  
• ensure that the fire extinguishers tags are current;

- Pin and seals are in place;
- Nozzles are free of blockage.
- A basic inspection is a *visual examination* of the portable fire extinguisher.

## Annual Inspection

In addition, fire extinguisher maintenance should be performed once per year. It is a "thorough check" of the extinguisher. It is intended to give maximum guarantee that an extinguisher will operate successfully and safely in the event of a fire. It includes a thorough examination, any necessary repair, recharging and/or replacement. This annual inspection must be performed by W-96 Certificate of Fitness holder employed by a FDNY approved portable fire extinguisher company.

## Notification of unsafe condition

The person responsible for Fire Performances should notify the Fire Producer on hand or Fire Safety Personnel if an unsafe condition has been created. Any person who becomes aware of a fire, explosion, large spill, leak or any other emergency shall immediately report such emergency to the Fire Department (Call 911). No owner or other person shall issue any directive or take any action to prevent or delay the reporting of a fire or other emergency to the Fire Department. After calling the Fire Department, the supervisor or the site safety manager or other designated person should also be notified.

The Certificate of Fitness holder must know the locations of and how to operate all fire extinguishing devices, control devices, and fire alarm stations installed at the facility. In case of a fire, explosion, or emergency, the Certificate of Fitness (C of F) holder must notify the Fire Department by phone immediately. The Certificate of Fitness holder must know the telephone number of the Fire Department Borough Communication Office. The borough phone numbers are listed as follows. These phone numbers must be posted near the phones most likely to be used in case of an emergency.

Manhattan (212) 999-2222  
Bronx (718) 999-3333  
Brooklyn (718) 999-4444  
Queens (718) 999-5555  
Staten Island (718) 999-6666

After notification by phone, the local fire alarm must be sounded. In some cases, the activation of the fire alarm will transmit a signal to the Fire Department via a FDNY approved central station company. The C of F holder shall initiate an orderly evacuation when necessary following a hazardous incident, and take reasonable steps to isolate the hazard until the Fire Department arrives. The Certificate of Fitness holder must answer any questions asked by Firefighters and officers when they arrive. For example, he or she must indicate the location of the fire, describe the type of fire protection devices available, and describe the materials stored on the fire floor. The Bureau of Fire Prevention must be notified as soon as possible after an explosion or fire has occurred. The Bureau of Fire Prevention may require a detailed report on the causes and the consequences of the explosion or fire. Generally, this report must be filed within ten days after the incident.