



NY Fire Consultants, Inc. ***Fire Safety Message***

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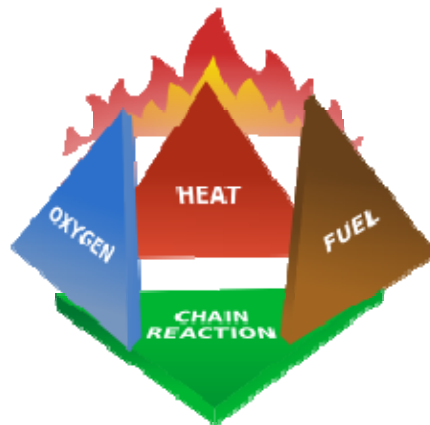
January 2008

The Fire Triangle

In order to understand how fire extinguishers work, you first need to know a little bit about fire.

Four things must be present at the same time in order to produce fire:

- Enough oxygen to sustain combustion,
- Enough heat to raise the material to its ignition temperature,
- Some sort of fuel or combustible material, and
- The chemical, exothermic reaction that is fire.



Fire Triangle

Oxygen, heat, and fuel are frequently referred to as the "fire triangle." Add in the fourth element, the chemical reaction, and you actually have a fire "tetrahedron." The important thing to remember is: take any of these four things away, and you will not have a fire or the fire will be extinguished.

Essentially, fire extinguishers put out fire by taking away one or more elements of the fire triangle/tetrahedron.

Fire safety, at its most basic, is based upon the principle of keeping fuel sources and ignition sources separate.

Chemistry of Fire

Ignition Temperature: The ignition temperature of a substance (solid, liquid, or gaseous) is the minimum temperature to which the substance exposed to air must be heated in order to ignite or cause self-sustained combustion. Ignition temperatures of the same substance vary according to the percentage composition of the vapor or gas-air mixture, shape, and size, of space where the ignition occurs, rate and duration of heat, kind and temperature of the ignition source, oxygen concentration, and other effects of materials that may be present. Therefore, given ignition temperatures should be looked upon as approximations.

Flash Point: The flash point of a liquid is the lowest temperature of the liquid at which it gives off vapor sufficient to cause a flammable mixture with the air near the surface of the liquid or within the vessel used. Some solids, such as camphor and naphthalene, change from solid to a vapor at ordinary room temperature and therefore have flash points while still in the solid state.

Fire Point: The lowest temperature at which a substance continues to burn in air (is usually a few degrees above the flash point).

Vapors: Vapors in the process of combustion are the gaseous substance given off by the material that is burning. In burning wood, heat causes the resinous substance in the wood to vaporize. The vapors combine with the oxygen of the air, and the flame from the kindling ignites the combustible vapor-oxygen gas. The heat from the fire heats the wood, which in turn liberates more vapors and thus sustains the fire until the wood is consumed.

Flammable or Explosive Limits: In the case of gases or vapors which form flammable mixtures with air (or oxygen), there is a minimum concentration of vapor in air below which flame does not occur when the vapor-air mixture comes in contact with a source of ignition; thus, it is too "lean" to ignite. Most flammable vapors and gases also have a maximum proportion of vapor or gas in air above which flame does not occur (too "rich" to ignite). A few materials, like ethylene oxide, decompose and burn with no oxygen present.

Flammable (Explosive) Range: The range of combustible vapor or gas-air mixtures between the upper and lower flammable limits is known as the "flammable range" (or "explosive range").

Summary of the Principles of Fire:

- (1) There must be an oxidizing agent, combustible material, and a source of ignition for combustion to take place.
- (2) Combustible material must be heated to its ignition temperature before it will burn.
- (3) Combustion will continue until-
 - (a) The combustible material is removed or consumed.
 - (b) The oxidation agent concentration is lowered below that essential.
 - (c) The combustible material is cooled below its ignition temperature.

HEAT TRANSFER

A number of the natural laws of physics are involved in the transmission of heat. One is called the Law of Heat Flow; it specifies that heat tends to flow from a hot substance to a cold substance. The colder of two bodies in contact will absorb heat until both objects are at the same temperature. Heat can travel throughout a burning building by one or more of three methods: conduction, convection, and radiation. The following sections describe how this transfer takes place.

Conduction

Heat may be conducted from one body to another by direct contact of the two bodies or by an intervening heat-conducting medium. An example of this type of heat transfer is a basement fire that heats pipes enough to ignite the wood inside walls several rooms away. The amount of heat that will be transferred and its rate of travel depend upon the conductivity of the material through which the heat is passing. Not all materials have the same heat conductivity. Aluminum, copper, and iron are good conductors; however, fibrous materials, such as felt, cloth, and paper, are poor conductors.

Liquids and gases are poor conductors of heat because of the movement of their molecules, and air is a relatively poor conductor. This factor is why double building walls and storm windows that contain an air space provide additional insulation from outside air temperatures. Certain solid materials, such as fiberglass, shredded into fibers and packed into batting make good insulation because the material itself is a poor conductor and there are air pockets within the batting.

Convection

Convection is the transfer of heat by the movement of air or liquid. When water is heated in a glass container, the movement within the vessel can be observed through

the glass. If sawdust is added to the water, the movement is more apparent. As the water is heated, it expands and grows lighter, hence, the upward movement. In the same manner, as air near a steam radiator becomes heated by conduction, it expands, becomes lighter, and moves upward. As the heated air moves upward, cooler air takes its place at the lower levels. When liquids and gases are heated, they begin to move within themselves. This movement is different from the molecular motion discussed in conduction of heat and is responsible for heat transfer by convection.

Heated air in a building will expand and rise. For this reason, fire spread by convection is mostly in an upward direction; however, air currents can carry heat in any direction. Convection currents are generally the cause of heat movement from floor to floor, from room to room, and from area to area. The spread of fire through corridors, up stairwells and elevator shafts, between walls, and through attics is caused mostly by the convection of heat currents. If convection heat encounters a ceiling or other barrier that keeps it from rising, it will spread out laterally (sideways) along the ceiling. If it runs out of ceiling space, it will travel down the wall toward the floor, being pushed by more heated air that is rising behind it. Convection heat encountering a ceiling is commonly referred to as mushrooming. Convection has more influence upon the positions for fire attack and ventilation than either radiation or conduction.

Although often mistakenly thought to be a separate form of heat transfer, direct flame contact is actually a form of convective heat transfer. When a substance is heated to the point where flammable vapors are given off, these vapors may be ignited, creating a flame. As other flammable materials come in contact with the burning vapors, or flame, they may be heated to a temperature where they, too, will ignite and burn.

Radiation

Although air is a poor conductor, it is obvious that heat can travel where matter does not exist. The warmth of the sun reaches us even though it is not in direct contact with us (conduction), nor is it heating up gases that travel to us (convection). This method of heat transmission is known as radiation of heat waves. Heat and light waves are similar in nature, but they differ in length per cycle. Heat waves are longer than light waves, and they are sometimes called infra-red rays. Radiated heat will travel through space until it reaches an opaque object. As the object is exposed to heat radiation, it will in return radiate heat from its surface. Radiated heat is one of the major sources of fire spread to exposures, and its importance as a source of fire spread demands immediate attention at location where radiation exposure is severe.

Fire Spread

Growth Stage (incipient)

During the growth stage a fire increases in size from small flames to full fire that involves the entire room. It may take several seconds to several hours for this to occur. Fire Growth is dependent on:

- Combustible content (fuel load).
- Oxygen supply (ventilation openings).
- Size of room.
- Insulation of room.

During the growth stage, flammable gases released by the burning material collect at the ceiling level and mix with oxygen. The heated gases are pushed under pressure from the fire area into uninvolved areas. When this mixture ignites flashes of flame can be seen in this layer of smoke. This condition is known as *rollover*. *Rollover* should serve as a warning that the fire area may *flashover*. As the fire progresses through the growth stage and into the fully developed stage the potential for flashover exists. Flashover is defined as *the sudden involvement of a room or area in flames from floor to ceiling caused by thermal radiation feedback*. Radiation feedback from the ceiling and walls heats the smoke and gases given off by the burning materials and the combustible contents of the room. When the contents have been heated to their ignition temperature, sudden and simultaneous ignition of the area can occur.

Fully Developed Stage (free-burning)

In the fully developed stage the entire room and contents are involved in fire. If no efforts were made to extinguish the fire, the fire would continue to burn until the available fuel and/or oxygen in the room or area was consumed. Because of limited ventilation, *most structural fires are air regulated, not fuel regulated*. This means that fires will move into the decay stage due to insufficient oxygen. Outside fires are fuel regulated. How long and to what extent an outside fire burns is controlled by the amount of fuel available, not oxygen.

Decay Stage (smoldering)

As available oxygen is consumed, the fire moves into the decay stage. Although some oxygen remains in the fire area, visible flames have started to diminish, and the fire continues to smolder. High heat and smoke conditions remain and the potential for a backdraft is present. A *backdraft* is a smoke explosion which can occur when

additional oxygen is introduced into a smoldering fire and the heated gases enter their flammable range and ignite with explosive force. Firefighters must realize that a backdraft produces violent shock waves which can shatter windows, blow down firefighters and collapse walls.

Warning signs of a possible backdraft include:

- Heavy dense smoke with no visible flame in a tightly closed occupancy.
- Black smoke pushing out around closed doors or window frames.
- Glass stained with smoke condensation and pulsating from the pressure of the fire.
- Reversal of air movement pulling smoke back into a building through a doorway.

NY Fire Safety Institute

NY Fire Consultants, a fire safety consulting firm, has announced that the company has purchased and taken possession of NY Fire Safety Institute (www.NYFSI.com), an accredited Fire Safety Directors school. James T. Bullock, president, said: "I am very pleased with this announcement and I believe this acquisition is an integral step in securing the company's growth potential. This will allow the company to grow beyond the fire safety consulting business by providing fire safety information and training to its clients.

The NY Fire Safety Institute will provide professional, cost effective classes where hotels and office buildings employees can attain the knowledge need for a Fire Safety Director Certificate of Fitness.

Where are Fire Safety Directors required?

In office buildings (class E) whenever there are more than 100 persons above or below the street level or 500 persons in the building.

At least one deputy FSD is required in all buildings for times when the FSD is absent.

In hotels and motels (class J-1) whenever there are more than 30 sleeping rooms or lodgers in the building or more than 15 sleeping rooms above the first floor or any number of rooms in a building over 75 feet tall.

New York City Local Laws 5/73 and 16/84 require a Fire Safety Director certified by the New York City Fire Department to be on duty at most Class E office buildings and most Class J hotels. NY Fire Safety Institute offers a course for the Fire Safety Director Certificate of Fitness issued by the NYC Fire Department. NY Fire Safety Institute has been accredited by the NYC Fire Department since 1995.

Requirements for the Fire Safety Director Certificate of Fitness include satisfactory completion of this course, which is approved by the Fire Department, and satisfactory completion of both written and on-site examinations administered by the Fire Department. Instruction in this course includes an overview of local laws and the development and implementation of a fire prevention and safety plan.

New York City Local Law #26 of 2004 requires that most Class E office buildings have an Emergency Action Plan (EAP) Director in addition to a Fire Safety Director. Applicants must already be Fire Safety Directors and must take our 7-hour course (given over 2 days) and pass the school test. After passing the school test, applicants must take and pass the Fire Department's computer-based test and an on-site test. We also offer this course online so you can go through the course material in your home or office

Fire Safety and Awareness Training

Our Fire Safety Awareness classes will start again Wednesday, January 16, 2008. The classes are scheduled every Wednesday morning and will run as long as we have this tremendous demand. The classes are held at the New Yorker Hotel located on 8th Avenue and West 34th Street. Our staff is comprised of retired lieutenants, captains and chief officers from the New York City Fire Department. The first set of classes is for residential building staff. The seminar will be a PowerPoint presentation approximately 2 ½ hours in duration. A study guide handout and a certificate of completion will be given to each attendee. See page 10 for the registration form. The following topics will be covered:

Residential Fire Safety Plans	Discovery & Reporting a Fire
Fire Extinguishers	Goals of Fire Prevention
Fire Prevention Strategies	Housekeeping Issues
Flammable & Combustible Liquids	Electrical Fire Hazards

Our seminars have been specifically designed to reduce the risk of fire through the promotion of fire safety awareness and basic fire training for all staff. Our training provides the building manager and building staff with an overview of their roles in the event of a fire or emergency. It also provides participants with the necessary knowledge and skills to enable them to deal with small fires safely, by using portable fire extinguishers, and to develop an awareness of the dangers and causes of fire.



Registration forms
on pages 10 & 11

On February 2008 we will be adding an additional course on non-fire emergencies. This training will cover subjects such as Bomb Threats, Chemical Spills, Power Outages, Shelter In Place, Steam Explosions, Suspected Terrorists and Suspicious Letters or Packages.

For additional information please call 718-432-1600

Fire safety training for hotel staff

This 2-½ hour fire safety course is aimed at members of staff in hotels (including new employees) to assist them in identifying and reducing the risk that fire presents in the workplace.

Course overview

The course examines the phenomenon of fire that all of us can recognize, but the majority of people fail to fully appreciate.

Aim

The training aims are to provide students with a greater awareness of the threat posed by fire to people, property and the business community. By combining the recognition of individual responsibilities to report fire related hazards and how to initiate the appropriate actions should a fire occur, the risks to employees and the workplace will be reduced.

Dates

Monday mornings starting March 3, 2008

Cost

\$75.00 per student

Location

New Yorker Hotel located at 8th Avenue and West 34th Street, suite 1570

Learning objectives

- Knowledge of a fire-safe workplace
- Knowledge of how to prevent fire and limit fire spread
- Be able to recognize the importance of effective evacuation
- Be able to identify the requirements of an effective fire action plan

Who should attend?

All employees will benefit from the training, particularly fire brigades, new employees and security personnel. It is also valuable for those individuals intending to become a Fire Safety Director.

Program

- Employee safety duties
- Combustion, fire spread and fire prevention
- Fire drills and evacuation training
- Fire action plans

Fire Safety and Awareness Training

Registration forms on page 10 and 11

Mondays	AM	Hotel Fire Awareness (starts 3/3/08)
Tuesdays & Thursdays		Fire Safety Director (starts 1/8/08)
Wednesdays	AM	Residential Fire Safety Awareness (1/16/08)
Wednesdays	PM	Residential Non-Fire Emergencies (starts 2/6/08)

Training

As a business owner or manager, you have the responsibility of ensuring that your staff understands the safety risks present within the workplace. You are also required to ensure that they are equipped with the knowledge and skills to handle a potentially dangerous situation. Training can prepare your staff by enabling them to prevent or safely respond to such situations.

Beware!

Not renewing your NYC certificates and permits will provide city inspectors with an opportunity to pay your building a visit.

The fine for a "failure to renew" violation will cost you, for a first time offense, at least \$250 - \$500. The subsequent inspections may cost you much more. In our experience it is rare for an inspector to issue only one violation during a visit. If one is found, multiple violations are usually issued. This can add up to significant penalties! The key is to not give an inspector a reason to visit. Keep your building's registrations up to date.

Best of all, a Cityfile representative will populate your current data into their website, where all data is available 24/7. Don't give city inspectors an excuse to inspect your building; let them go to the building next door.

We at NY Fire Consultants suggest you call Cityfile today at (212) 732-2300 to schedule a fifteen-minute presentation; it will be well worth your time.

NY Fire Consultants Services:

<u>Fire and Life Safety Consulting</u> Fire and Life Safety Inspections Fire Safety Plans for Residential Buildings (LL 10 of 1999) Fire Safety & Evacuation Plans Commercial (Class E) Buildings	<u>Emergency Procedures Manuals Fire & Evacuation Preparedness Training</u> Hotel Staff Building Service Employees
<u>Emergency Action Plans</u> FDNY Submissions Training Drills	<u>Interior Fire Alarms Consultants</u>
<u>Expert Witnesses Provided</u>	<u>Violations Correction & Removal</u> Environmental Control Board Fire & Building Department Housing Preservation & Development
	<u>Fire Consultantants Construction Protects</u>

NY Fire Consultants, Inc. 165 McBaine Ave., Staten Island, NY 10309 718-432-1600



NY Fire Consultants, Inc.

165 McBaine Avenue
Staten Island, NY 10309
(718) 432-1600 (718) 967-8195 fax

Fire Safety & Awareness Training For Residential Building Staff

Wednesdays
10:00 am

- Residential Fire Safety Plans
- Discovery & Reporting a Fire
- Fire Extinguishers
- Goals of Fire Prevention
- Fire Prevention Strategies
- Housekeeping Issues
- Flammable & Combustible Liquids
- Electrical Fire Hazards

New
Class

Non-Fire Emergencies Training For Residential Building Staff

Wednesdays
1:00 pm

- Suspicious Letter or Package
- Bomb Threats
- Suspected Terrorist
- Steam Explosion
- Shelter In Place
- Chemical Spills
- Threatening Behavior
- Power Outage

Starts
February 13th

Both seminars are 2 to 2 ½ hours in duration. A study guide handout and a certificate of completion are provided to each attendee. Course fee is: \$ 75.00 for each course

Central location- Hotel New Yorker West 34th St. & 8th Avenue (Suite 1570)

Mail in Registration Form

Students must Pre-Register

Student Name: _____ Employed by: _____

Work Address: _____

Home Phone: _____ Cell/Pager: _____

Email: _____

SCHEDULE OF CLASSES

Fee: \$ 75.00 for each course

Doors Open 9:30 for AM class and 12:30 for PM class Classes start at 10:00 AM and 1:00 PM
Please circle class or classes you wish to attend AM for Fire Awareness or PM for Non-Fire Emergencies

January 16, 2008	AM	January 23, 2008	AM	January 30, 2008	AM
February 6, 2008	AM	February 13, 2008	AM PM	February 20, 2008	AM PM
February 27, 2008	AM PM	March 5, 2008	AM PM	March 12, 2008	AM PM

Company Checks or Money Orders Payable to: **NY Fire Consultants, Inc.**

Mail payments to: **NY Fire Consultants, Inc.**, 165 McBaine Avenue, Staten Island, NY 10309



NY Fire Consultants, Inc.

**165 McBaine Avenue
Staten Island, NY 10309
(718) 432-1600 (718) 967-8195 fax**

Fire Safety & Awareness Training For Hotel Staff

This 2-½ hour seminar will include but is not limited to the following topics:

- Knowledge of a fire-safe workplace
- Knowledge of how to prevent fire and limit fire spread
- Be able to recognize the importance of effective evacuation
- Be able to identify the requirements of an effective fire action plan

Central location - Hotel New Yorker, West 34th St. & 8th Ave. (Suite 1570)

.....
Mail-in Registration Form

Student Name: _____ Employed by: _____
 Work Address: _____
 Home Phone: _____ Cell/Pager: _____
 Email: _____

SCHEDULE OF CLASSES

Doors Open 9:30 AM	Classes start at 10:00 AM	(Please circle one)
March 3, 2008	March 10, 2008	March 17, 2008
March 24, 2008	March 31, 2008	April 7, 2008
April 14, 2008	April 21, 2008	April 28, 2008

Course fee is \$75.00

Make out company checks or money orders payable to: ***NY Fire Consultants, Inc.***
 Mail payments to: ***NY Fire Consultants, Inc.***, 165 McBaine Avenue, Staten Island NY 10309

Students must pre-register



Personal Life Safety Guide Book

Fireproof Residential Apartment Buildings

The Personal Life Safety Guide Book offers a quick reference for fire and life safety emergencies. A must for residential building staff.

Bomb Threat
Carbon Monoxide
Chemical Spills
Extreme Heat
Fire
First Aid
Gas Leaks
Heart Attack

Person Trapped in Elevator
Poisoning
Power Outage
Robbery or Mugging
Shelter in Place
Suspected Terrorist
Suspicious Packages
Threatening Behavior

HOTEL
EMPLOYEES
GUIDE BOOK
NOW AVAILABLE
CALL

- Overall size 3-1/2 " x 5-1/2"
- Coated card stock
- Emergency telephone numbers can be written on back
- Comes with a vinyl pouch that fits in your shirt pocket

Prices:

<u>100 +</u>	<u>500 +</u>	<u>1000+</u>
\$4.50 ea.	\$4.25 ea.	\$3.75 ea.

Combine building orders and save



Basic Emergency Information at Your Finger Tips

Phone (718) 432-1600
Fax (718) 967-8195
Email: info@NYFireSafe.com

