

# Z3 Fire Safety & Extinguisher Education & Training Program

Ages Pre-K & Up

Z3 Training Solutions  
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E-Learn & Hands-On



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DID YOU  
**KNOW**



# Safer at Work?

## **Legal Basis for this Training**

*Occupational Safety and Health Administration  
(OSHA)*

Occupational Safety and Health Standards

### **29 CFR Part 1910**

Subpart "L" - Fire Protection  
Standard 1910.157

"Portable fire extinguishers"

**OSHA  
Safety Regulations**

### **1910.157 (g)(1)**

Where the employer has provided portable fire extinguishers... the employer shall provide an educational program to familiarize employees with general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting.

**Companies by law must provide education programs when it provides fire extinguishers to employees.**



# Question - Where Does Fire Occur Most

At Work or At Home?

## Property types

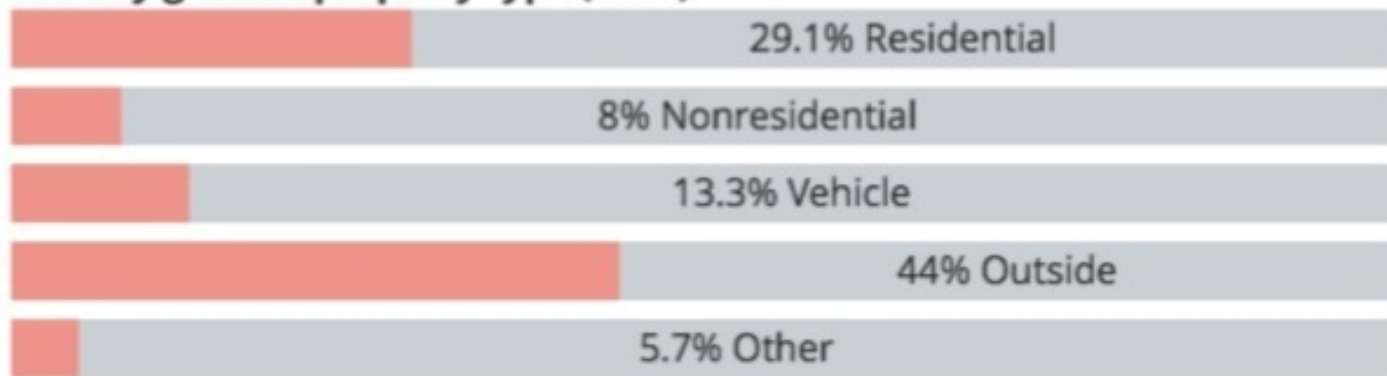
"Residential" is the leading property type for fire deaths (75.7%), fire injuries (79.1%) and fire dollar loss (52.2%)



[FEMA Fire Statistics](#)

**Answer: At Home**

## Fires by general property type (2011)



## The Challenge

**To Train Families To Effectively Use Portable Fire Extinguishers In Their Homes**



**The good news** is that we are surrounded by fire extinguishers. We pass them at school, work and hopefully at home.

**The bad news** is that according to FEMA ... "the majority of Americans don't know how to use a fire extinguisher, even if they have one in their homes!"

**This is a dangerous knowledge gap.**

# Untrained People

Can not use fire extinguisher/s effectively because they **LACK JUDGEMENT** concerning:

- Fight or Flee Analysis
- Escape Route/s
- Choosing correct fire extinguisher/s
- Effective usage of portable fire extinguisher
- Limitations of portable fire extinguisher



**UNFAMILIAR with PASS METHOD**



# The Solution

## Bridge the Gap



A properly used fire extinguisher can save lives and protect property by putting out \*incipient or a small fire and contain it until the fire department arrives.

But what is the point of owning one if when the time comes to use it you don't know how to?

To help bridge this gap, Z3 Training Solutions provides a Fire Safety & Extinguisher Training Program. The program integrates two types of learning environments, online (eBook) and instructor-led. Now, families "on the go" can learn the principles of Fire Safety & Prevention prior to meeting in person to receive the necessary hands-on skill building-fire extinguishing training.

After completing the hands-on section of the program, families will be confident knowing that should the need arise to operate a fire extinguisher, they will be up to the task and most importantly it won't be their first time.



\* in an initial stage; beginning to happen or develop

**Learn it for Life @ Z3 Training Solutions**

# Introducing A Blended Learning Program

## Fire Safety & Extinguisher Education & Training Program

### Part 1 Education

This Ebook is designed to familiarize the reader with the general principles of fire, fire prevention, fire classification, causes of fire, and fire extinguisher theory.

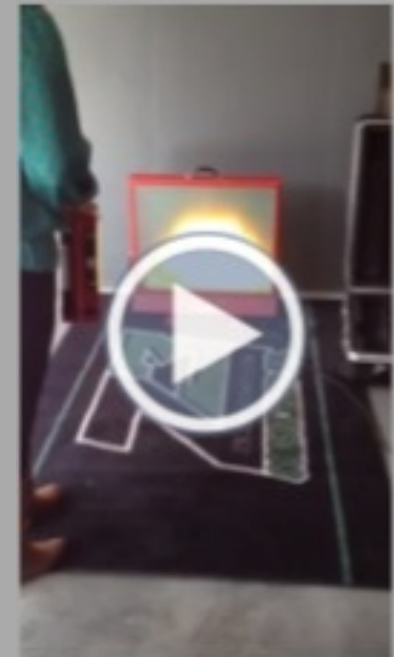


**Part 1 eBook**

### Part 2 Training

#### **Hands-On / Skill Building Workshop**

To learn how to effectively operate a fire extinguisher there is no substitute for hands on training. Part 2 of the program emphasizes teaching the hands-on skill building techniques necessary to effectively operate a portable fire extinguisher.



**Part 2 Hands-On**



# Watch ABC World News Video Featuring a piece about the FEMA WARNING



## The Storyline

*Do you know how to use a fire extinguisher?*



**NOTE** This is not a small fire. This news story illustrates how ineffective people can be when asked to use a fire extinguisher for first time. This is not the kind of fire people should attempt to put out on their own.

# What we need to know

**What "fire" is (1&2)**

**Combustion process / rapid oxidation**

**Extinguishment theory**

**Leading causes of fire**

**Fire classifications ABCDK**

**Fire Extinguisher anatomy/usage/placement 1/2**

**Fire safety - plan / prevention / practice**

**Escape routes / decision-making**

**Choosing the right fire extinguisher**



# Continued - What We need to know

**Checklists**

**Children & Seniors**

**Safer at Work?**

**Where fire occurs most**

**Why hands-on / skill-building?**

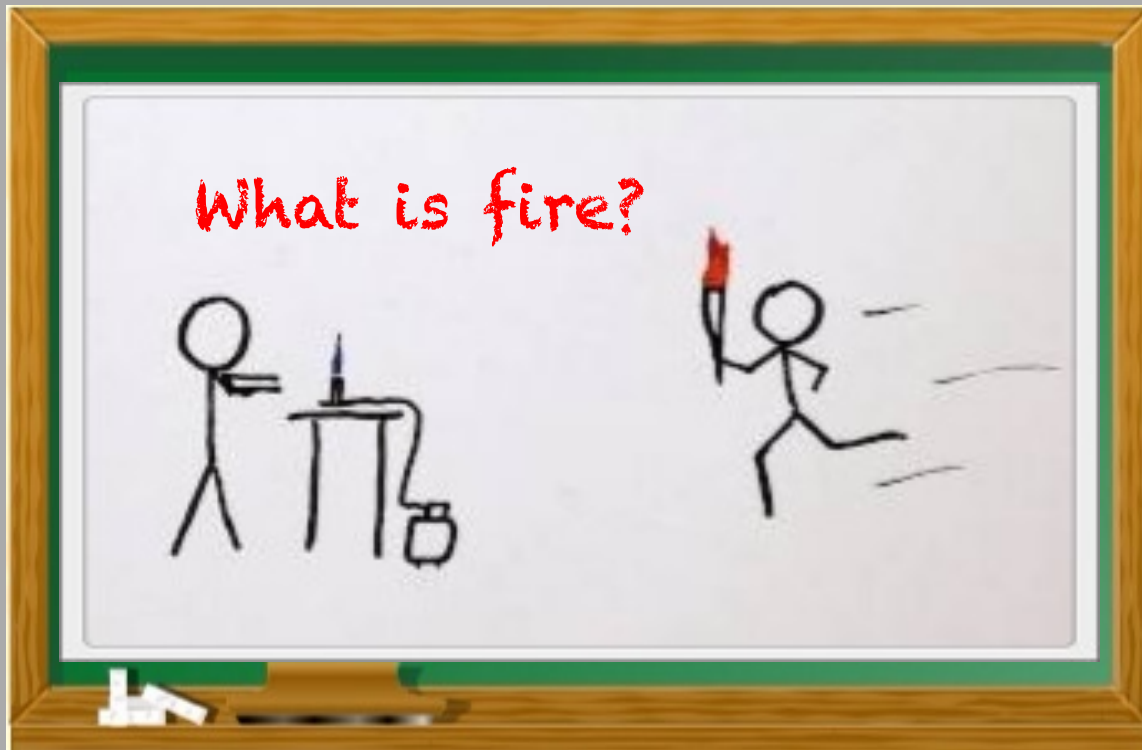
**No Substitute for Hands-On Training**

**Safe at Home**

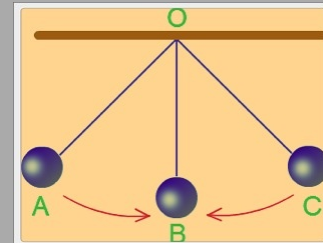


# What is Fire? (1)

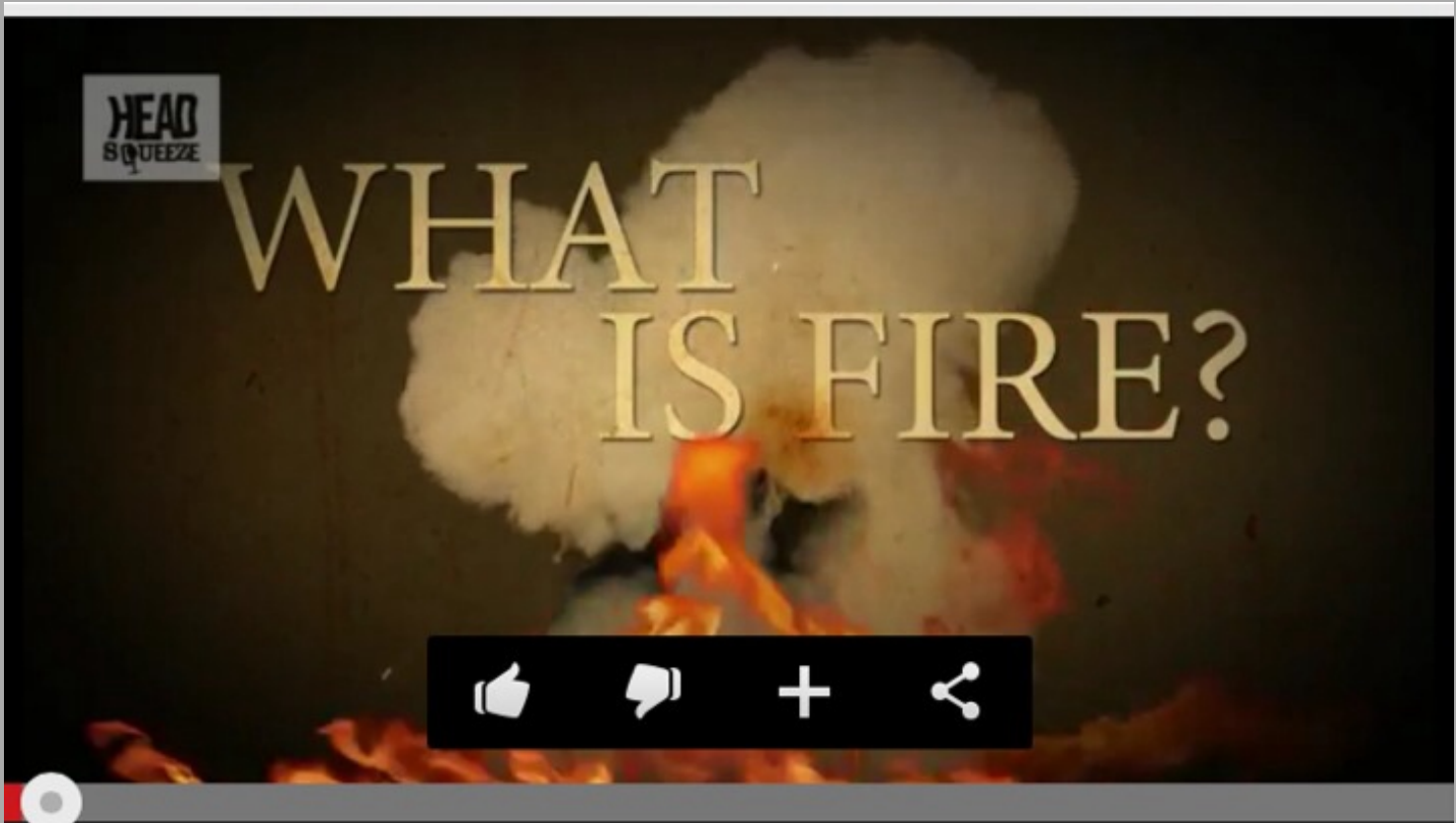
Before we define "fire" as it relates to this program. We want to share with you a one minute video that defines fire on a grander scale - "physics"



[Video](#)



## What is Fire? (2)



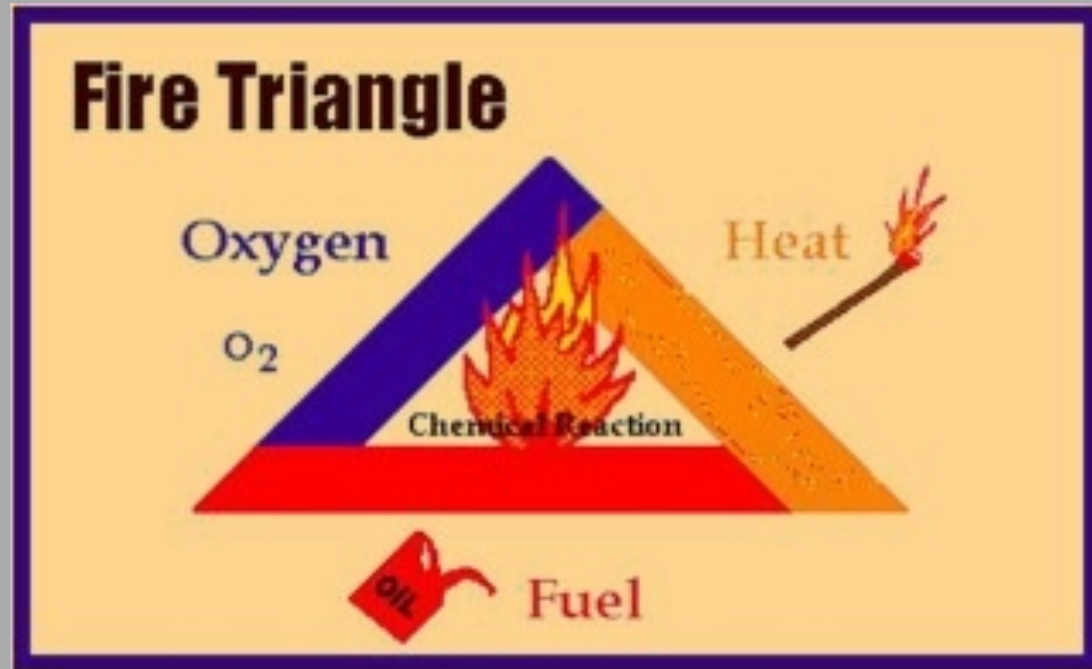
[Watch this Video](#)

**Fire is a rapid chemical reaction.**

Fire is the self-sustaining process of rapid oxidation of a fuel produces heat and light.



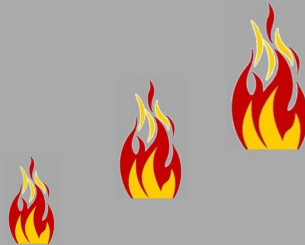
# The Combustion Process



This is referred to as the "Fire Tetrahedron"

Oxygen + Heat + Fuel + Chemical Reaction = **Fire**

Each component is equally important to start a fire.



# Rapid Oxidation

An apple rotting or nail rusting is an example of **slow oxidation** of a fuel.



A candle burning is controlled and **moderate oxidation** of a fuel.

Fire is a result of **RAPID and uncontrolled oxidation** of a fuel.



An explosion is **ultra-rapid oxidation** of a fuel.

# The Extinguishment Theory



**Removing at least one of the four elements of fire stops the combustion process.**

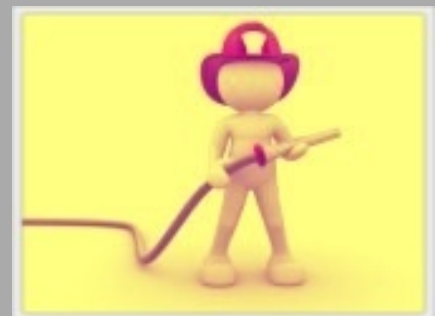
**Water is commonly used for temperature reduction.**

**Spreading the coals of a campfire or shutting off a gas supply valve are examples of fuel removal.**



**Placing a lid on flaming grease in a frying pan is an example of oxygen exclusion.**

**Multipurpose dry chemical agents work by interrupting the chemical reaction that supports combustion.**





# Leading Causes of Fire

## 10 Most Common Causes of Fires

1. Cooking
2. Kids - Playing with Fire
3. Smoking
4. Heating
5. Electrical
6. Candle
7. Fireplaces
8. Dryer
9. Flammables
10. Christmas Trees



Forty percent of all house fires are caused by cooking related incidents.

Note how effectively the ABC type fire extinguisher works to put out a dangerous grease fire.



# Fire Classifications

## CLASS "A"

Class "A" fires involve common combustibles such as wood, paper, cloth, rubber, trash and plastics. They are common in typical commercial and home settings, but can occur anywhere these types of materials are found.



**CLASS "A"** - Extinguishers suitable for Class "A" fires should be identified by a triangle containing the letter "A"; if color-coded, the triangle will be green.



# Fire Classification

## Class "B"

Flammable and combustible liquids and gases. Includes all hydrocarbon and alcohol based liquids and gases that will support combustion.



## Class "B"

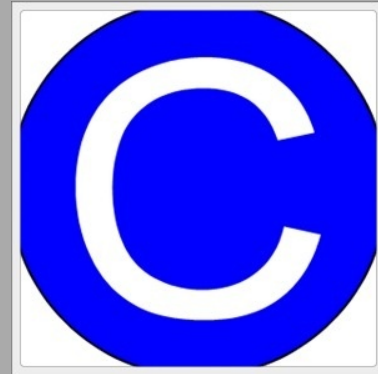
A red square with a capital "B" and a pictogram of a fuel can are commonly used to symbolize Class "B" fires.



# Fire Classification

## Class "C" - Electrical

Includes all fires involving energized electrical equipment.



## Class "C"

A blue square with a capital "C" and a pictograms with a electrical plus and outlet are commonly used to symbolize Class "C" fires.



# Fire Classification

## Class "D" - Combustible Metals

Examples of these types of metals are: zirconium, titanium, potassium, and magnesium.



## Class "D"

A yellow star with a letter "D" is commonly used to symbolize Class "D" fires.



# Fire Classification

## Class "K"

### Commercial Kitchens

Fires in unsaturated cooking oils in well insulated cooking appliances.



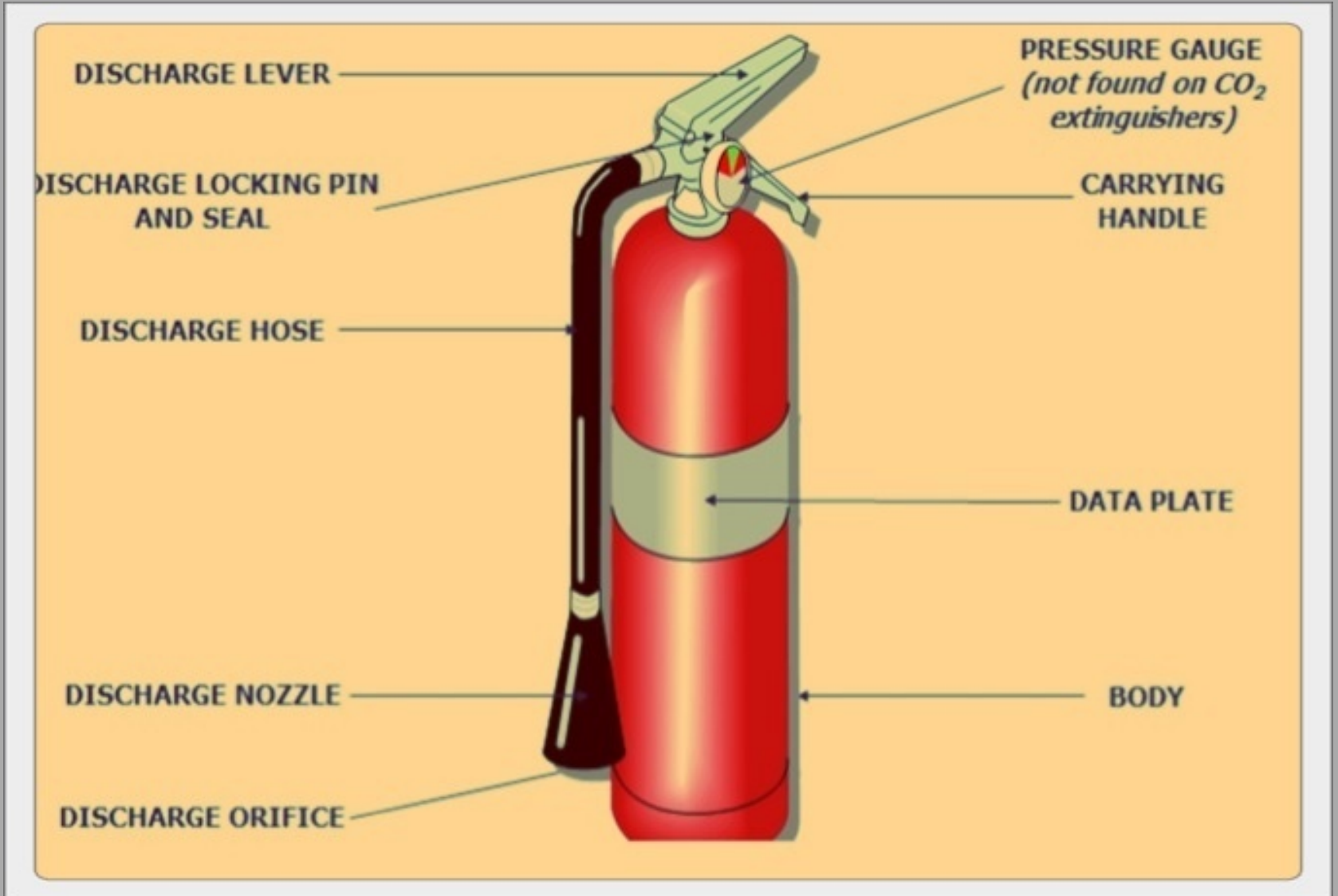
## Class "K"

The new cooking media formulations used in commercial food preparation require a special wet chemical extinguishing agent that is specially suited for extinguishing extremely hot fires that have the ability to reflash. The common pictogram used is a "K"



# Anatomy

## Portable fire extinguisher



# How to Use a Fire Extinguisher

In the hands-on section of our training program, you will learn how to install and inspect a fire extinguisher. **Then you will learn the skills to effectively operate a portable fire extinguisher.**

This FEMA produced video touches on how to use a fire extinguisher utilizing the PASS technique.



[Watch this Video](#)



# Fire Types by Location (1)



For use with ordinary materials like cloth, wood and paper. Found in homes & business.



For use with combustibile and flammable liquids like grease, gasoline, oil and oil-based paints.  
Found in homes & business.



For use with electrical equipment like appliances, tools, or other equipment that is plugged in.  
Found in homes & business.



For use with flammable metals  
Found in factories



For use with vegetable oils, animal oils and fats in cooking appliances.  
Found in commercial kitchens (restaurants, cafeterias, catering businesses)

# Fire Extinguisher Location (2)

## Placement

**The National Fire Protection Association recommends an extinguisher for each floor.**

Every home needs at least one fire extinguisher, and most should have at least two or three. The number of fire extinguishers that you should have in your home depends on the size of your home and if your home is a multi-level home or not.

### **Where Fire Extinguishers Should Be Placed**

Make sure you have one in the kitchen or very close to it. Most home fires occur in the kitchen, and quick access to a fire extinguisher is critical.

You should have a fire extinguisher next to the front and rear exits of the house. You should consider placing a fire extinguisher in the main hallway. A centrally located fire extinguisher is a good idea if it can be reached easily from most points in the house. If your house has a second or third story, make sure that you place at least one fire extinguisher on each floor.



# Fire Safety & Prevention



A fire safety plan should include protection, prevention and safety devices.



# Plan Prevent Practice

## Planning



- Draw a floor plan.
- Choose family meeting place.
- Insure plan consider mobility issues & young children.

## Prevention



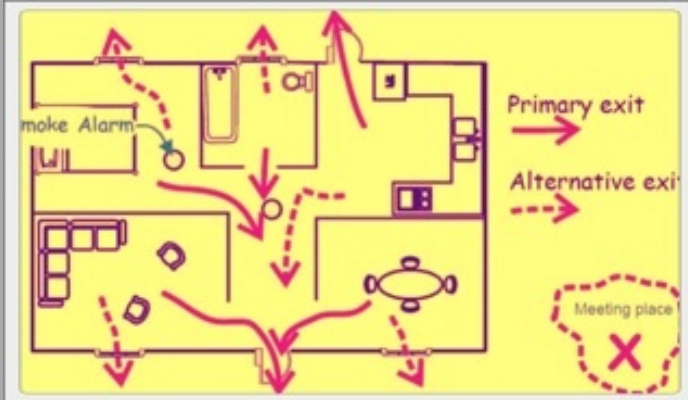
- Place at least one smoke alarm on every level of home.
- Test smoke alarms once a month.
- Replace smoke alarms as specified by manufacturer.

## Practice



- Practice getting out by all exits.
- Always stay low to avoid smoke.
- Feel any closed doors for heat before opening.
- If door feels warm or you see smoke or fire. - use second exit. Use ladder if second floor.
- If door feels cool, open door slightly and exit.

# Make Your Escape Route Map



Draw Your Family's Map

[Link to FEMA Grid](#)



[See FEMA public service announcement](#)

# Escape Routes continued

Fire can spread rapidly so be ready

## Action & Items

Two Ways Out  
Practice - Stay Low

Windows/Doors Open  
Easily

Set Meeting Place

Fire Proof Safe  
(Keys, Docs, Meds)

Time- Be Quick  
Get Escape Ladder  
Designate 911 Caller



# **Making The Right Decision**

Means asking the right questions

**Am I trained in the use of extinguishers?**

**Do I know what is burning?**

**Is the fire spreading too rapidly?**

**Has too much smoke and heat filled the area?**

**Do I have a clear path of escape?**



# Choosing the Right Fire Extinguisher/s

Those attending Z3's Hands-on Workshop will be able to discuss in detail their specific requirements concerning extinguisher selection and placement.



Residential users should use multipurpose fire extinguishers that are labeled "B-C" or "A-B-C."

**Z3 provides sales and inspection services for "A-B-C" multipurpose fire extinguishers. Z3 also carries extinguishers for D & K class fires.**







# Make a Checklist

**Fire can spread rapidly through your home. Sit down with your family and put together a household plan.**

**You need to know all possible exits and escape routes.**

**Print out this FEMA checklist and call your family together to put the plan in writing.**





## Home Fire Safety Checklist

Keep your home safe from fire. Put a check in front of each statement that is correct for your home.

**Smoke Alarms**

- There is one smoke alarm on every level of the home.
- There is one smoke alarm inside and outside each sleeping area.
- Smoke alarms are tested and cleaned monthly.
- Smoke alarm batteries are changed as needed.
- Smoke alarms are less than 10 years old.

**Cooking Safety**

- Stay in the kitchen when you are frying, grilling or broiling food.
  - Keep an eye on what you fry.
- Cooking area is free from items that can catch fire.
- Kitchen stove hood is clean and vented to the outside.
- Pots are not left unattended on the stove.

**Electrical and Appliance Safety**

- Electrical cords do not run under rugs.
- Electrical cords are in good condition.
- Circuit-protected, multi-prong adapters are used for additional outlets.
- Large and small appliances are plugged directly into wall outlets.
- Clothes dryer lint filter and venting system are clean.

**Candle Safety**

- Candles are in sturdy fire proof containers that won't be tipped over.
- Blow out all candles when adults leave the room or go to bed.
- Children and pets are never left alone with candles.

**Carbon Monoxide Alarms**

- Carbon monoxide alarms are located on each level of the home.
- Carbon monoxide alarms are less than 7 years old.

**Checklist**

# Teaching Our Children

Teach your children how to be safe around fire. Children that know proper fire safety early in life will know how to utilize these skills when they become teenagers and adults.



**The National Fire Protection Association (NFPA) provides excellent fire safety information for parents and kids. [Visit NFPA](#)**



This popular kids site features "Sparky The Fire Dog" who provides information for children of all ages.

[Visit Sparky](#)

# Fire Safety & Older Adults

House fires give off thick black smoke. It is easy to become disoriented and go the wrong way when trying to get out. In a fire it's the smoke that causes fatalities. Smoke deadens senses causing people not to wake up. Most fires happen at night. This is why smoke alarms are mandatory.



**Older adults have an increased risk of injuries and fatalities in a fire.**

In 2010, older adults (ages 65 and older) represented 13 percent of the United States population but suffered 35 percent of all fire deaths.

**FEMA has prepared specific fire safety messages for Older Adults.**



[Visit FEMA / CDC Site](#)

# No Substitute for Hands-On Training

**Residential & Commercial  
Property Owners**

**Corporations / Government  
Agencies**

**Fire & Police Departments**

**...rely on this system to  
train their personnel.**



# Our Training System

Our system's environmentally sound approach to training provides a realistic flame pattern that requires trainees to use the proper technique to extinguish the flames. Our extinguishers have the same weight, feel, and discharge time of real dry chemical extinguishers without the mess. So training can take place year round. On-Site or Off

## Effective Training

**Simulate class A, B and C fires at ten difficulty levels.**

The system can sense if the trainee is using the correct extinguisher, aiming and sweeping correctly, and if they are an effective distance from the base of the fire. This ensures trainees are prepared in case of a real fire emergency.



# Additional Resources

Visit the national organization below. Each provides a great deal of useful fire safety information.

While "Hands-on" fire extinguisher training is not part of their charters, each organization does encourage citizens to *learn on their own*.



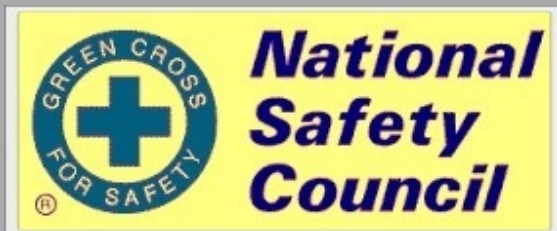
Safety tips from the U.S Fire Administration

[Visit Site](#)

Sparky teaches fire safety.  
Games, coloring and more.



[Visit Site](#)



More Safety Tips For Your Family

[Visit Site](#)

# Let's Review



Prior to attending Z3's hands-on fire extinguisher workshop - we ask that trainees please take a little time to review the following subject areas:

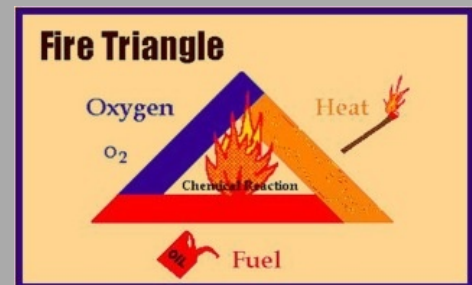
## Fire Classifications



## What is Fire



## Combustion Process



## Extinguishment Theory



Z3's Workshop covers Extinguishment Theory in great detail.

Trainees should feel free to raise any questions concerning these topics and any other fire related questions to our workshop/.

You may also send us questions /comments to [training@z3consultants.com](mailto:training@z3consultants.com)

# Z3 Consultants Inc.

**Z3 Training Solutions is a Division of Z3 Consultants Inc.**

For over 15 years Z3 Training Solutions has provided outstanding Fire Safety and Fire Extinguisher Training Programs. Z3 helps government, commercial, and residential groups acquire the necessary hands-on skills to improve fire prevention and extinguisher operation to protect people, property, and assets.

Z3 Consultants Inc. founded in 1998 is based in Dutchess County, New York. Z3 offers services to Home Owners, Architects, Engineers, Attorneys, Developers and Municipalities

We offer services for all types of inspections to determine compliance with the Uniform Code including, but not limited to, Home Inspections, Electrical Inspections, Backflow Testing, Sprinkler Testing, Fire safety and property maintenance inspections, buildings which contain areas of public assembly, multiple dwellings and nonresidential occupancies.



[Visit Company Website](#)





# Credits

## Federal Emergency Management System - FEMA

*Have Two Ways Out*

*Your First Defense When Fire Starts*

## ABC World News

*Fire Safety: How to Use a Fire Extinguisher*

## CBS Early Morning

*Kitchen Fire 411*

## Minute Physics

*What is fire?*

## Head Squeeze

*What is fire?*



Ebook compiled by KP & GB



# Learn it for Life

**Hands-on skill building workshops  
for homeowners & families.**

**(845) 471-9370**

*Fire Extinguisher Training*

**Z3 Training Solutions Inc.**



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## Message to Workshop Trainees

