



Department of Energy  
Carlsbad Field Office  
P. O. Box 3090  
Carlsbad, New Mexico 88221

OCT 23 2017

Mr. John E. Kieling, Bureau Chief  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, NM 87508-6303

Subject: Live Fire Extinguisher Refresher Training Documentation in Accordance with Attachment 25 of the Information Required by Paragraph 31 of the Settlement Agreement and Stipulated Final Order No. HWB 14-21 (CO), Dated March 18, 2016

Reference: Information Required by Paragraph 31 of the Settlement Agreement and Stipulated Final Order No. HWB 14-21 (CO), March 18, 2016

Dear Mr. Kieling:

The purpose of this letter is to provide the live fire extinguisher biennial refresher training documentation in accordance with Attachment 25 of the referenced submittal by the Respondents. Attachment 25 provided a work plan stating that the training documentation for live fire extinguisher biennial refresher training would be submitted to the NMED by October 30, 2017.

Enclosed is the approved course material for SAF-502FR, "Fire Extinguisher Live Fire Training Refresher."

We certify under penalty of law that this document and all attachments were prepared under our direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact Mr. George T. Basabilvazo at (575) 234-7488.

Sincerely,

Signatures on File

Todd Shrader, Manager  
Carlsbad Field Office

Bruce C. Covert, Project Manager  
Nuclear Waste Partnership LLC

Enclosure

cc: w/enclosure  
R. Maestas, NMED \*ED  
D. Biswell, NMED ED  
CBFO M&RC  
\*ED denotes electronic distribution

## 1. SAF-502FR

### 1.1 Fire Extinguisher

#### *Live Fire Training - Refresher*

A slide thumbnail with a light gray background. The title "Fire Extinguisher Live Fire Training - Refresher" is centered in a large, bold, black font. Below the title, the text "Course Code: SAF-502FR", "Revision 0", and "Approval Date: August 31, 2017" is displayed in a smaller black font. In the bottom right corner, there is a green button with the text "Click Here to Start" and a green arrow pointing downwards.

**Fire Extinguisher  
Live Fire Training - Refresher**

Course Code: SAF-502FR  
Revision 0  
Approval Date: August 31, 2017

[Click Here to Start](#)

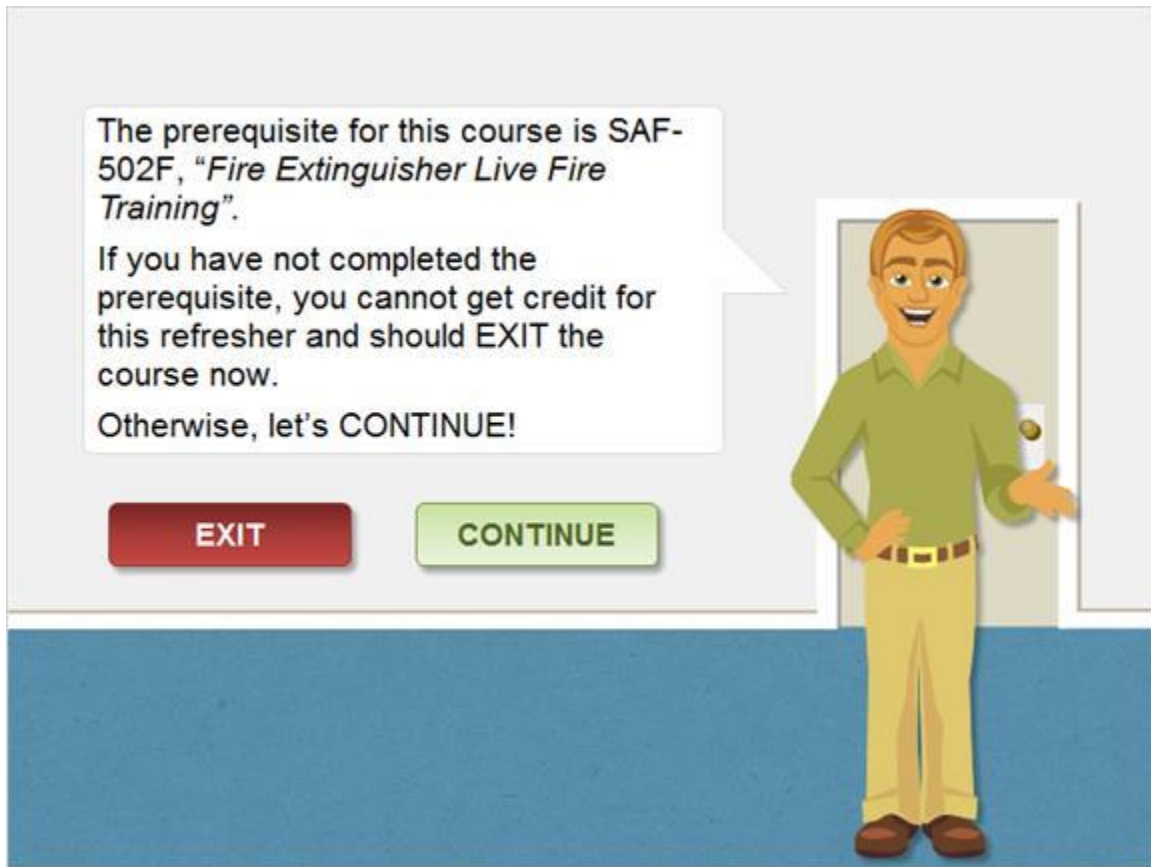
Notes:

## 1.2 Welcome

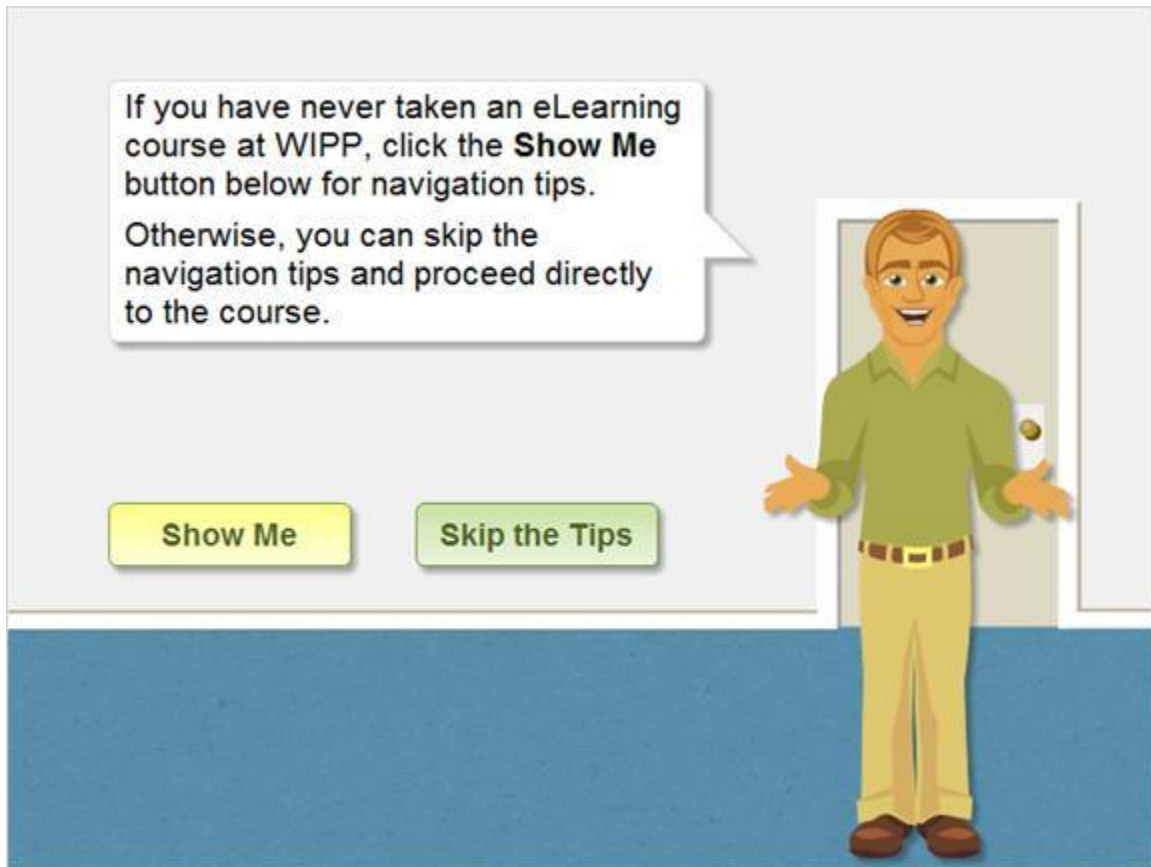


Notes:

### 1.3 Prerequisites



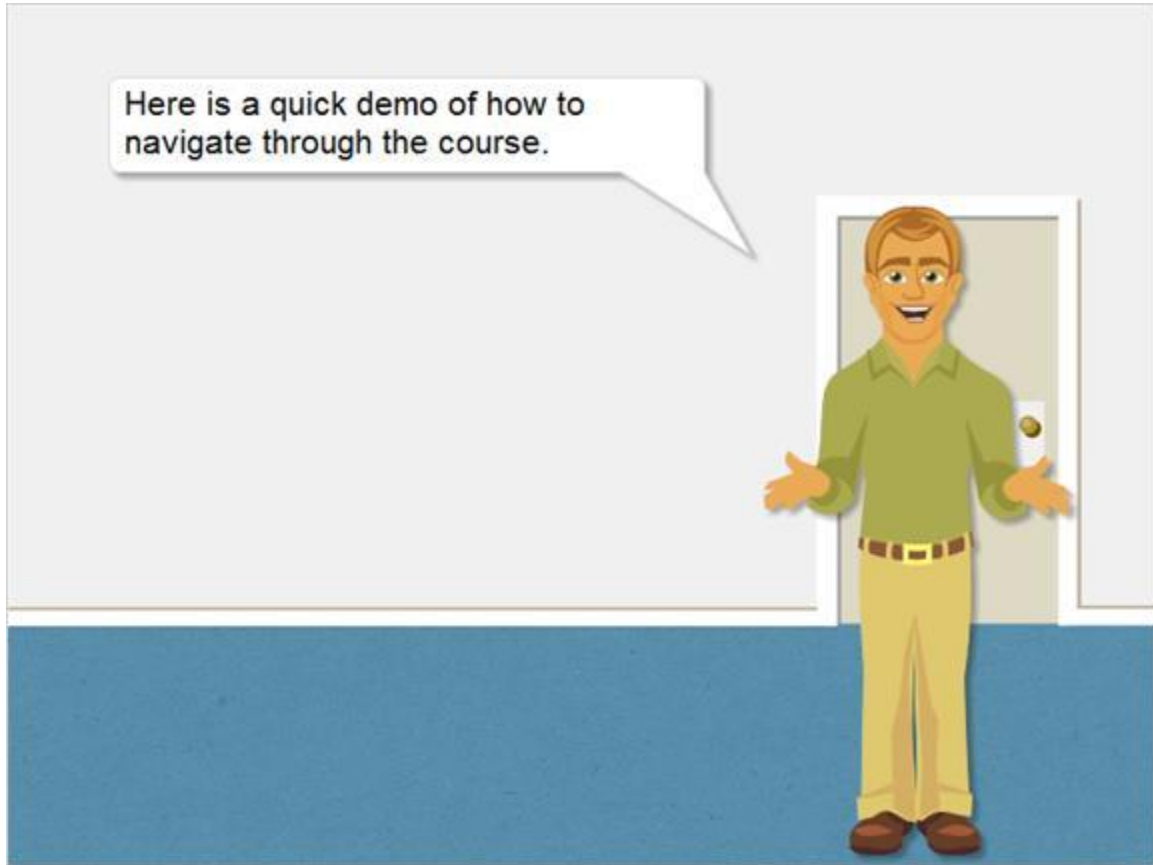
## 1.4 Tips to Proceed



Notes:

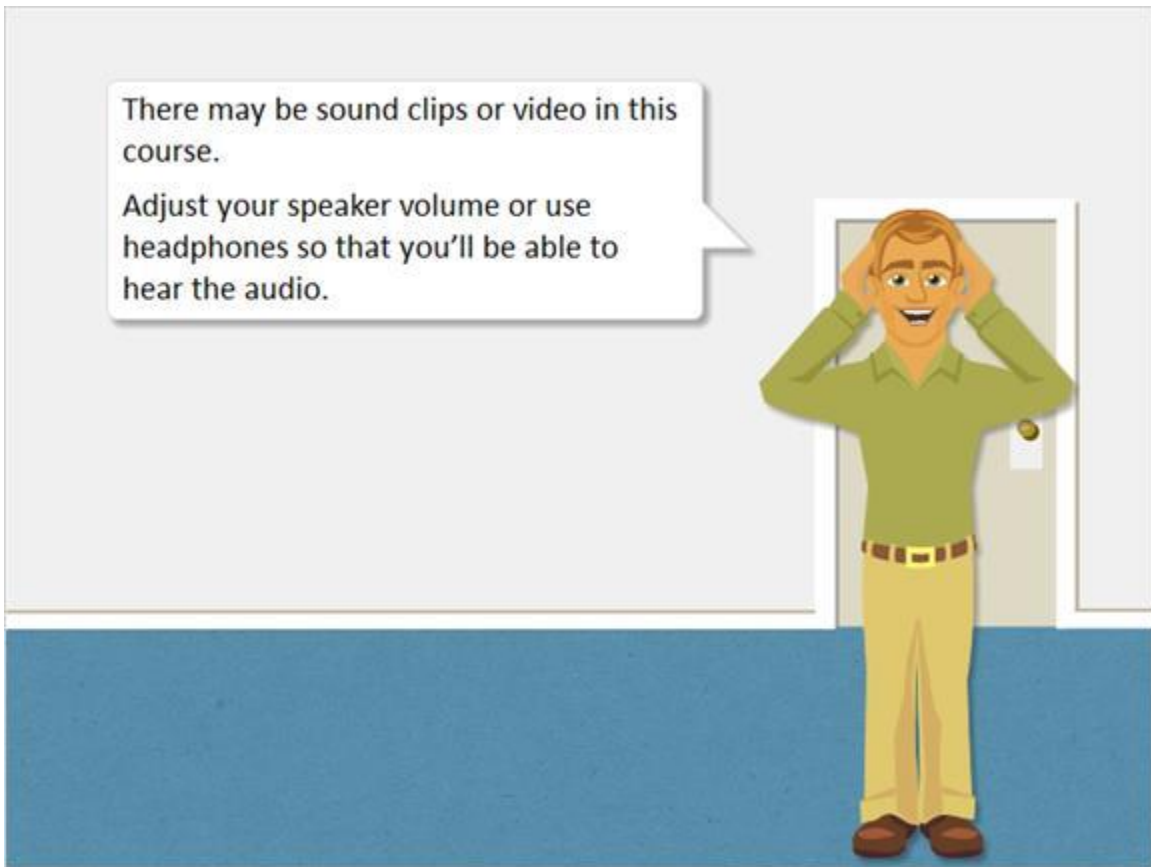
## 2. Navigation

### 2.1 Navigation Tips



Notes:

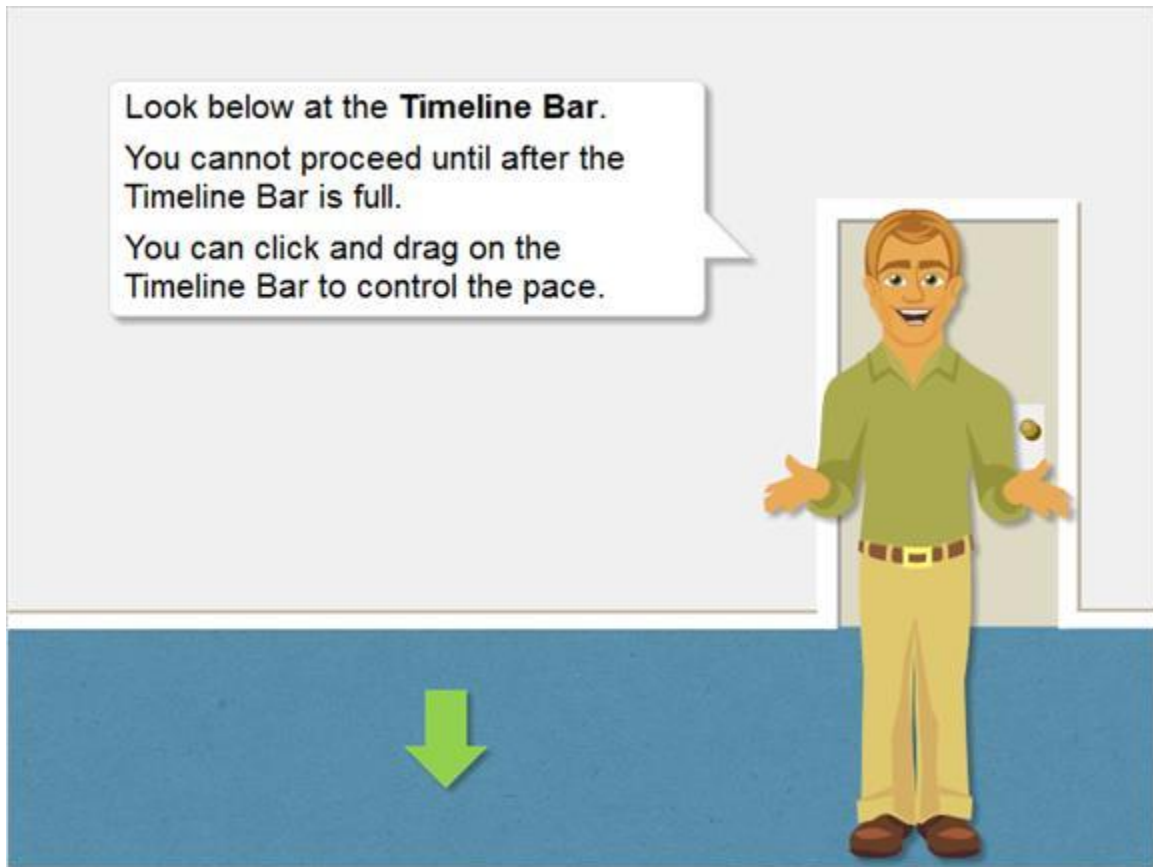
## 2.2 Speakers or Headphones



Notes:



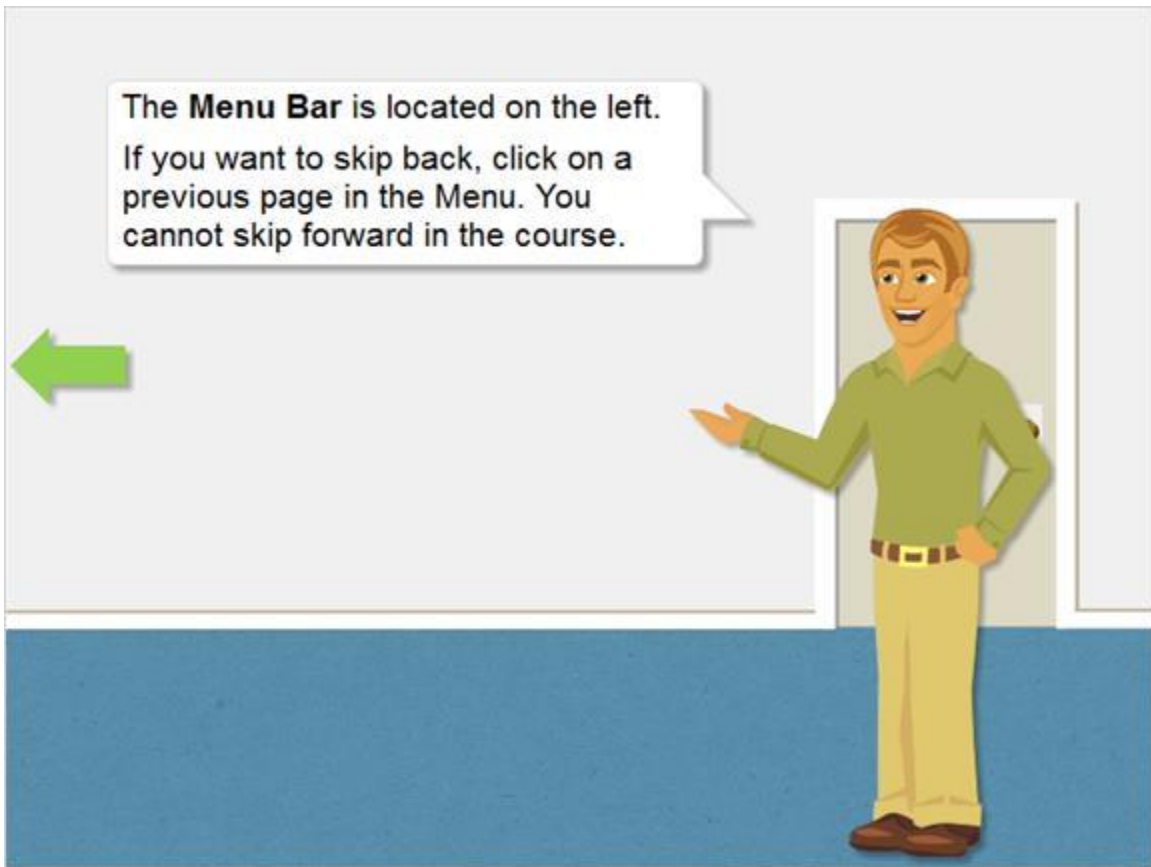
## 2.3 Timeline Bar



Notes:

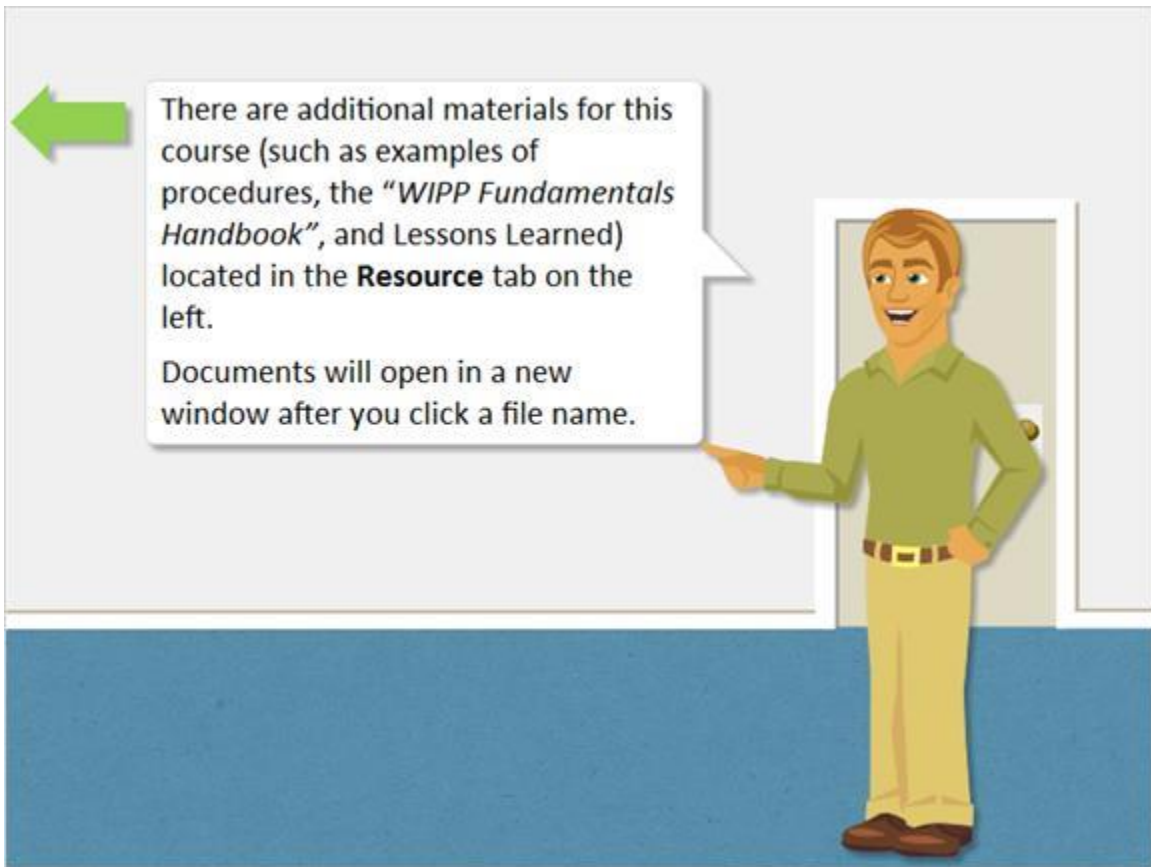


## 2.4 Menu Bar



Notes:

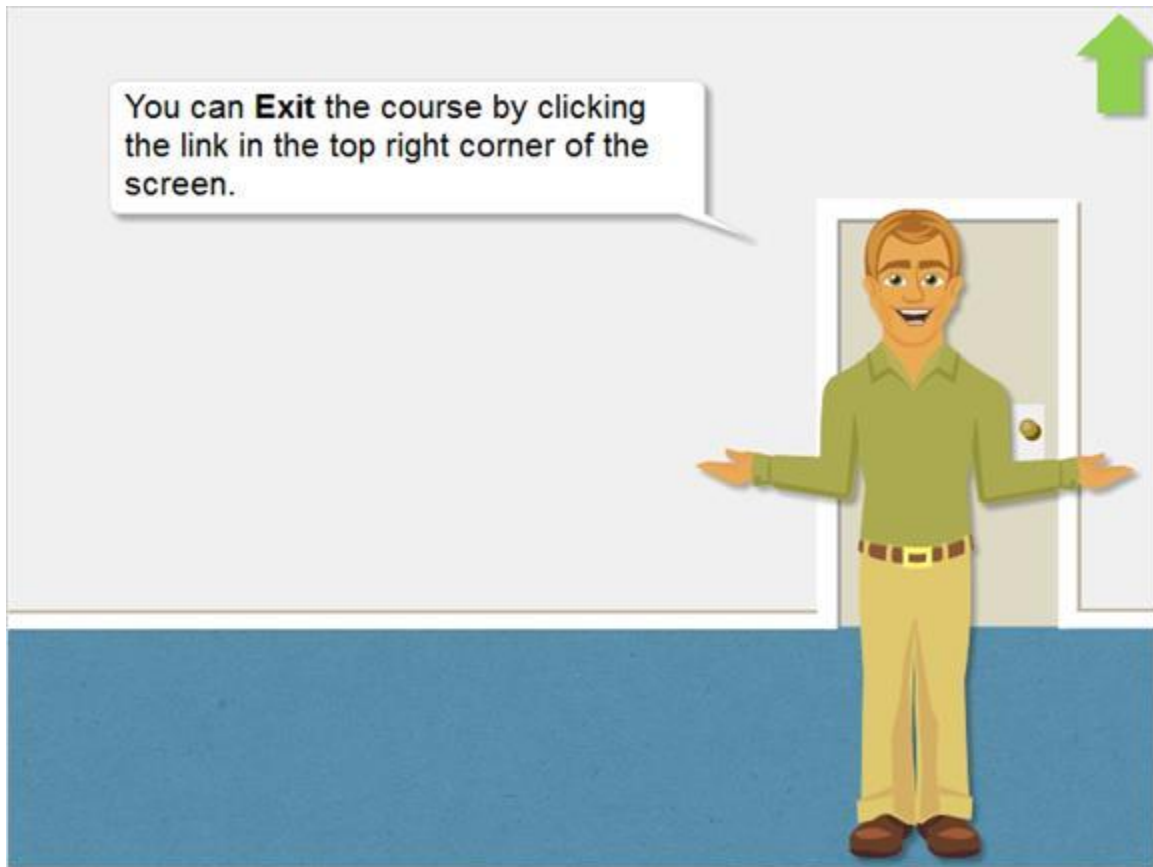
## 2.5 Resources



### Notes:

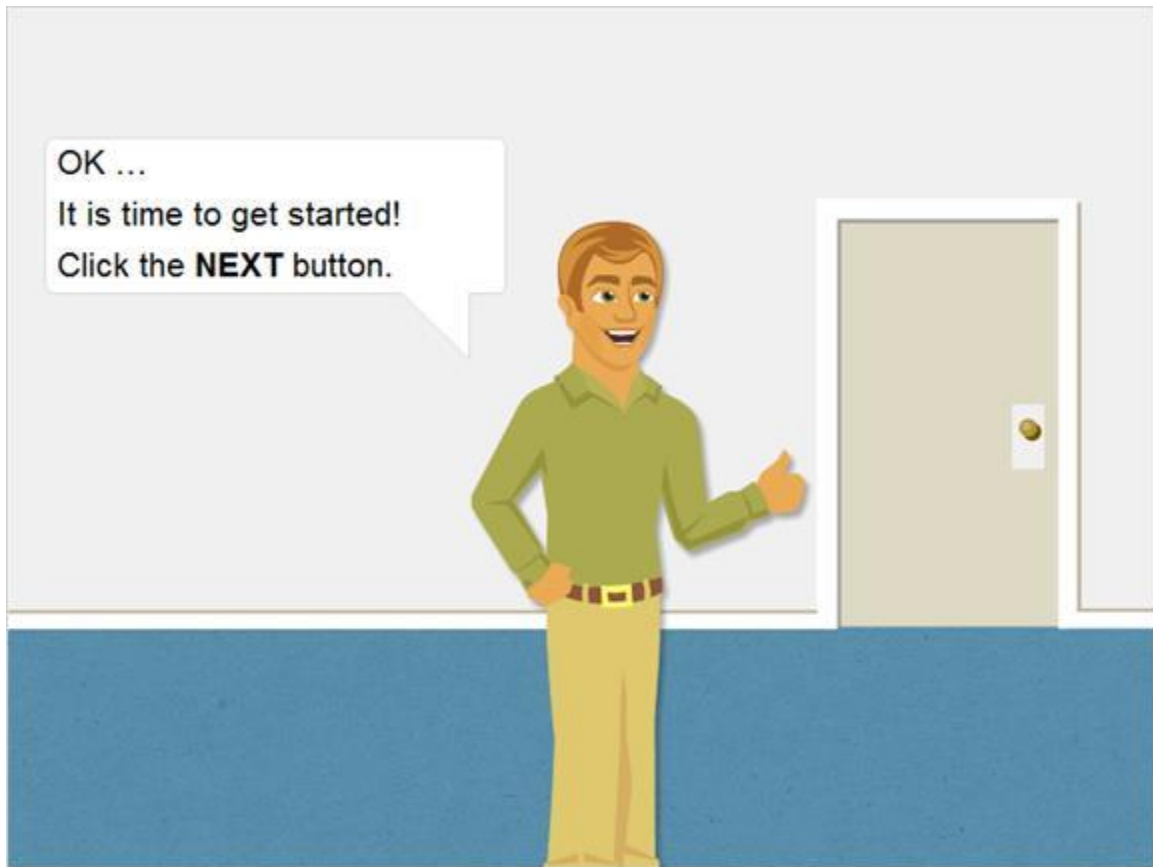
make a hyperlink to the Study Guide , found on the WIPP Tech Training

## 2.6 Exit



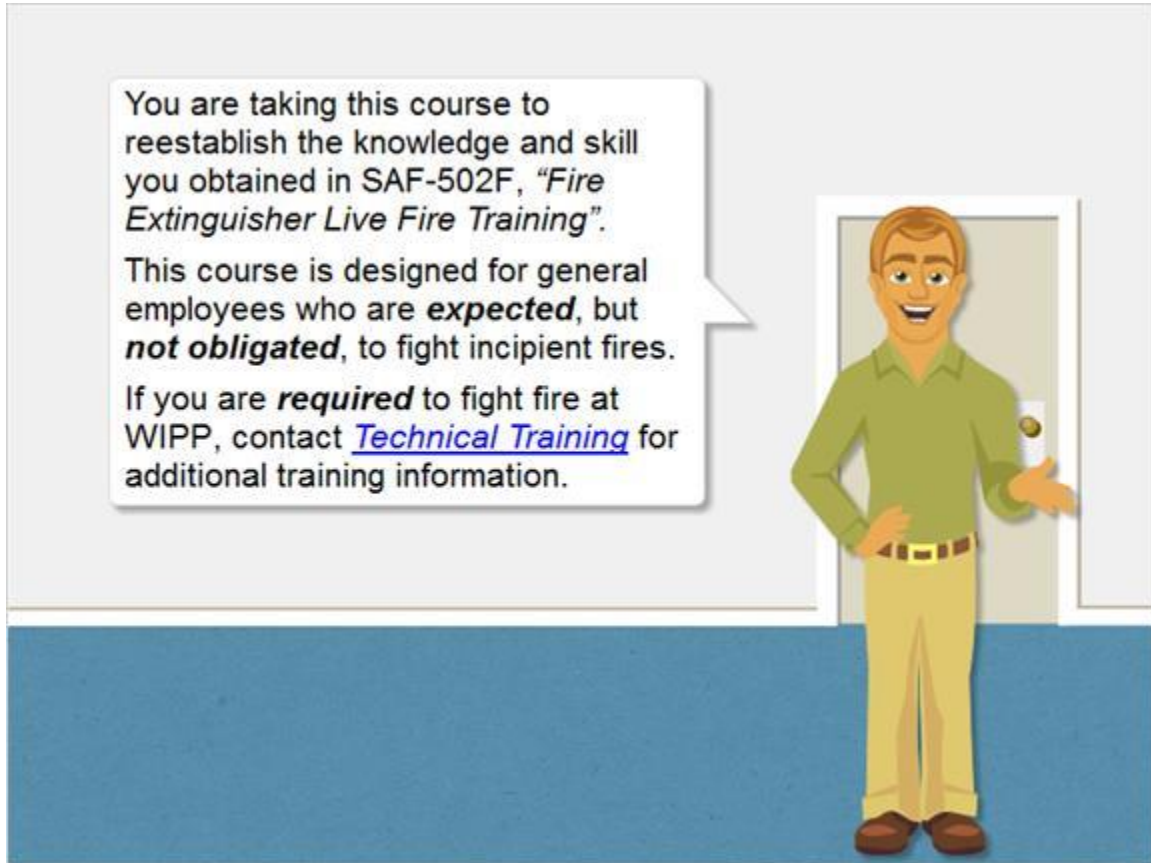
Notes:

## 2.7 Time to Go!



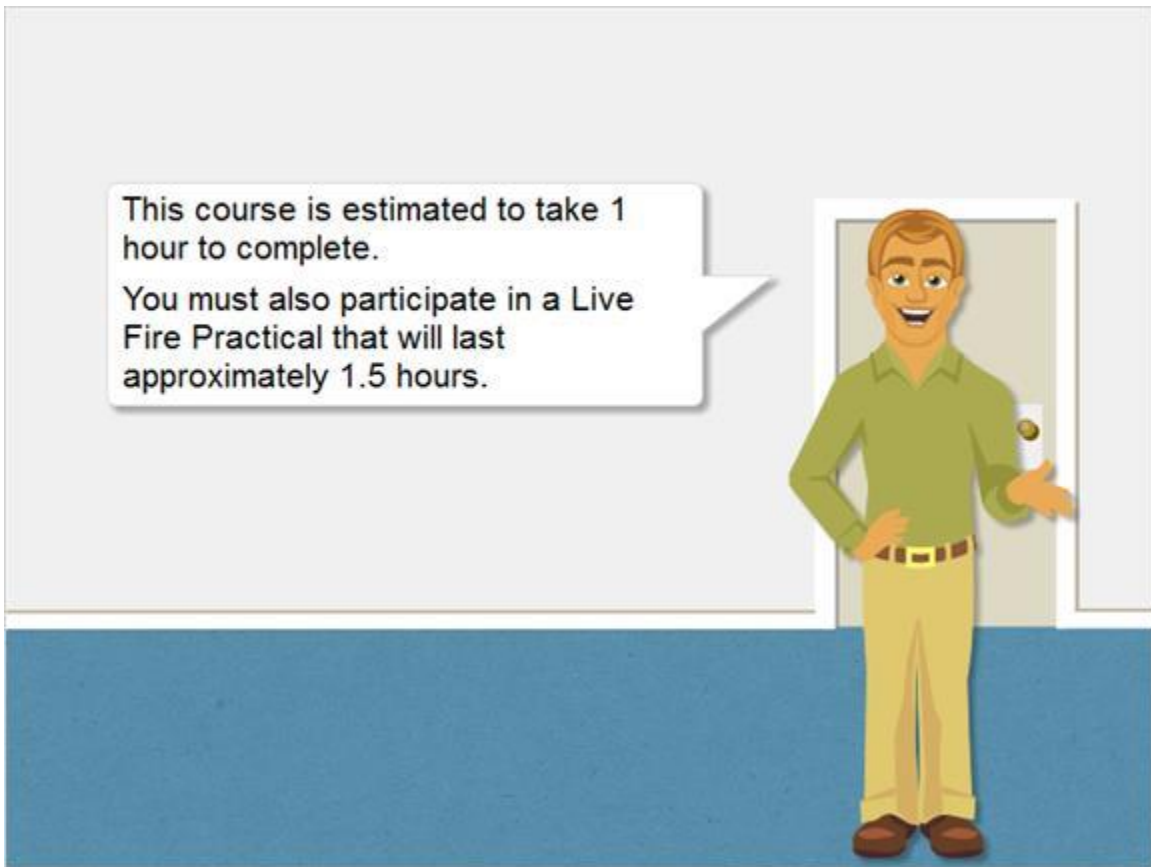
### 3. Completion Requirements

#### 3.1 Target Audience



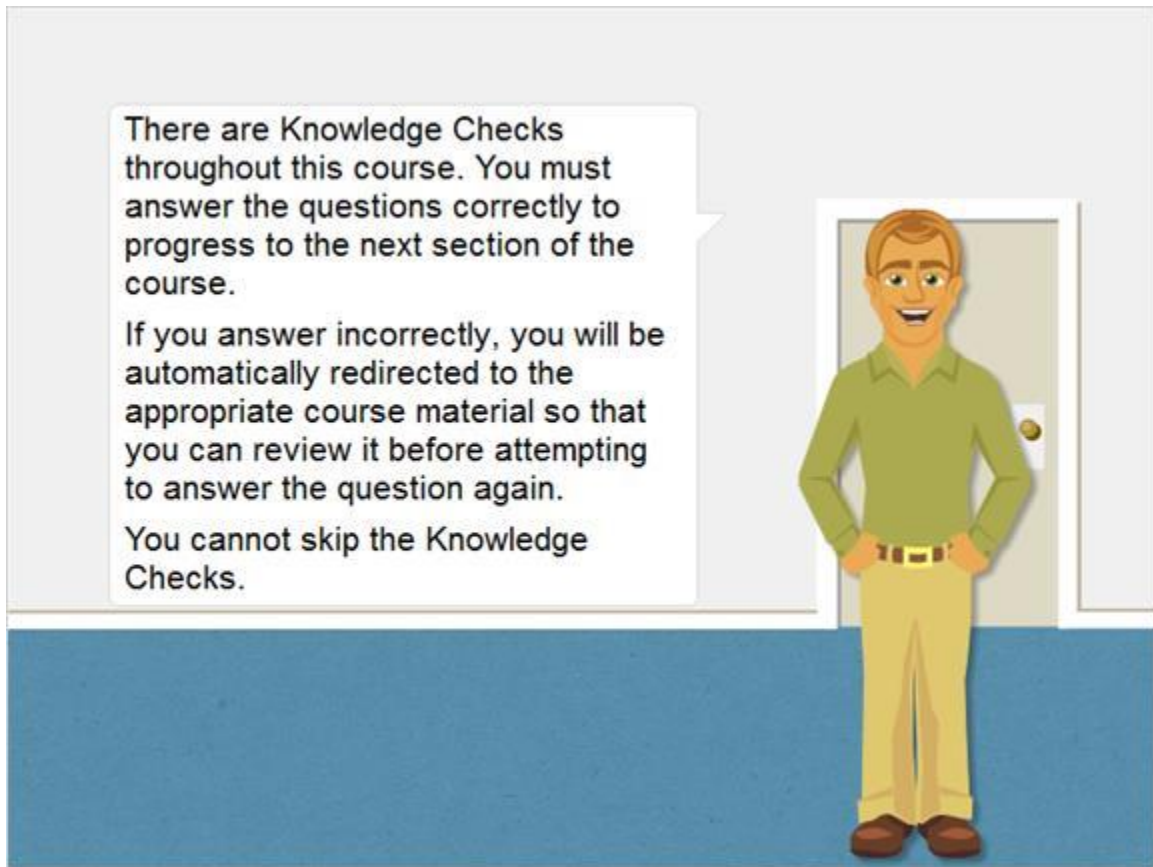
Notes:

### 3.2 Duration



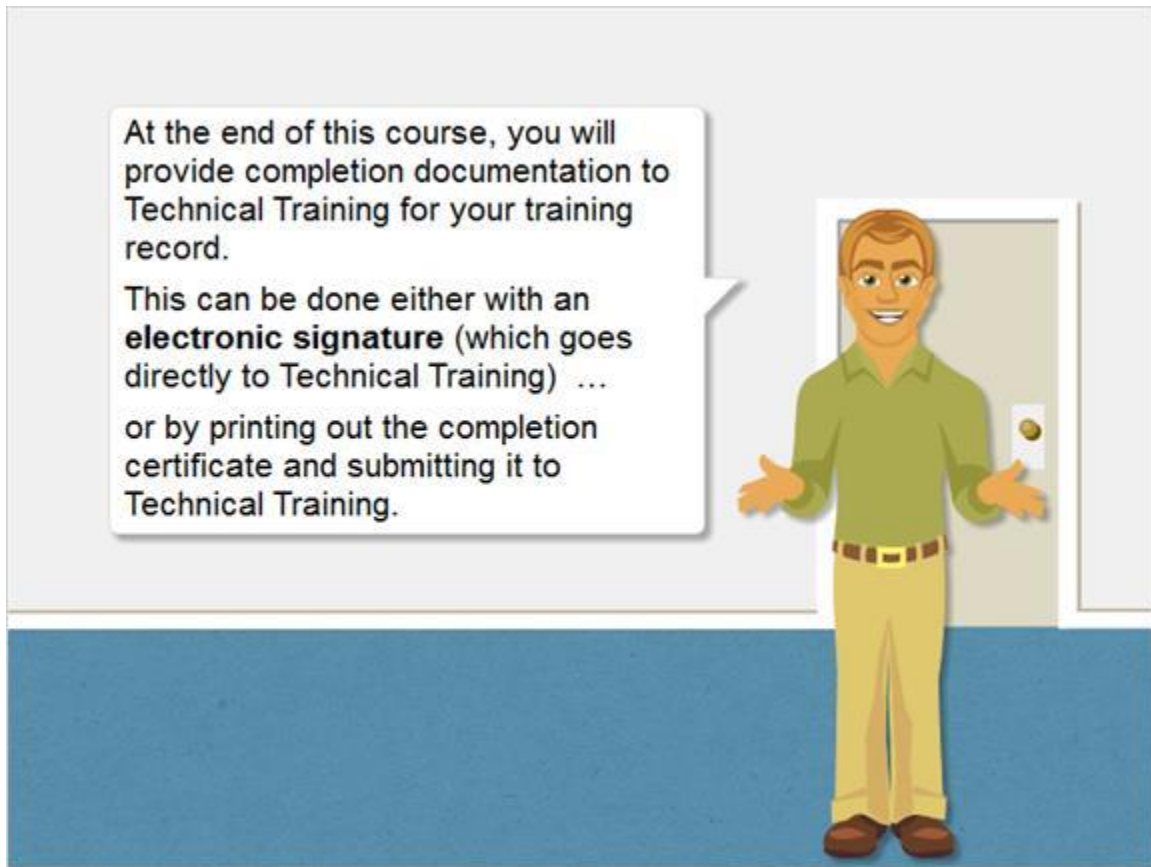
Notes:

### 3.3 Knowledge Checks

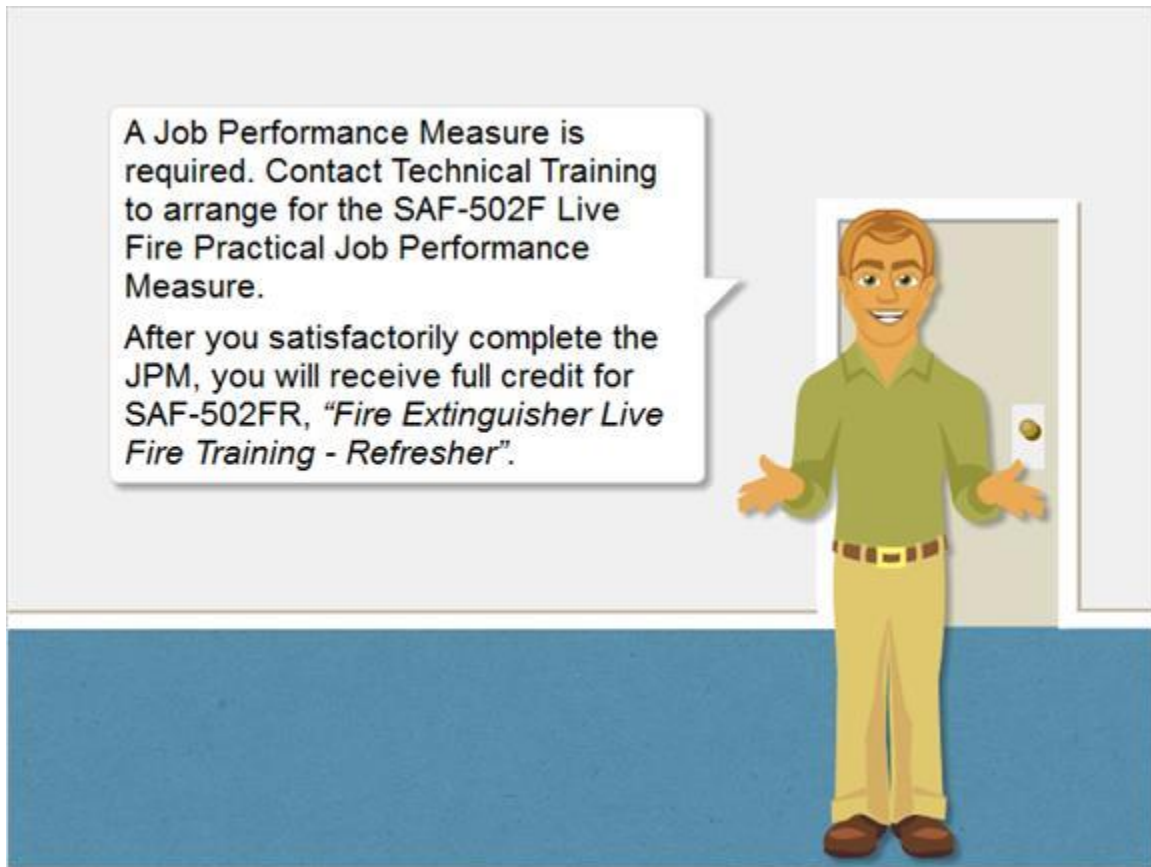




### 3.4 Completion Documentation



### 3.5 Job Performance Measure



## 4. Objectives

### 4.1 Terminal Objective

#### Terminal Objective

Upon completion of this course, the student will have the necessary knowledge and skills to use a portable fire extinguisher.

The course will review applicable regulations and procedures, fire classifications and characteristics, incipient stage fire hazards, when not to fight a fire, fire extinguishers types and how to properly operate a portable hand-held fire extinguisher demonstration.



Notes:

## 4.2 Enabling Objectives

### Enabling Objectives

1. Review applicable regulations and WIPP procedures.
2. Name the elements of a Fire Tetrahedron.
3. Differentiate fire classifications.
4. Explain the purpose of a fire extinguisher.
5. Identify different fire extinguisher types.
6. Define an incipient fire.
7. Recognize when not to fight a fire
8. Summarize how to operate a fire extinguisher.



## 5. EO 1: Regulations and Procedures

### 5.1 OSHA Regulations

#### OSHA Regulations

**29 CFR 1910.157, "Fire Protection"**, requires that where the employer has provided portable fire extinguishers for employee use in the workplace, the employer shall also provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting.

## 5.2 WIPP Procedures

### WIPP Procedures

**WP 12FP.01, "WIPP Fire Protection Program"**, states that key focal points of the WIPP FP Program include providing appropriate fire safety and emergency response training to all employees.

### 5.3 Knowledge Check

(True/False, 10 points, 1 attempt permitted)

#### Knowledge Check

29 CFR 1910.157 requires all employees to fight incipient stage fires.

☐ True

☒ False

Correct	Choice
	True
X	False

**Feedback when correct:**

That's right! 29 CFR 1910.157 does not require employees to fight fires.

**Feedback when incorrect:**

Wrong. 29 CFR 1910.157 only requires the employer to provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting.



## 6. EO 2: Elements of Fire

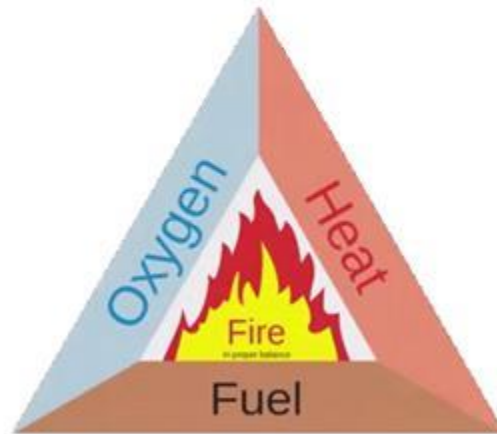
### 6.1 Elements of a Fire Triangle

#### Elements of a Fire Triangle

Fire requires three elements, heat, fuel, and oxygen, to be present.

These three elements typically are referred to as the **Fire Triangle**.

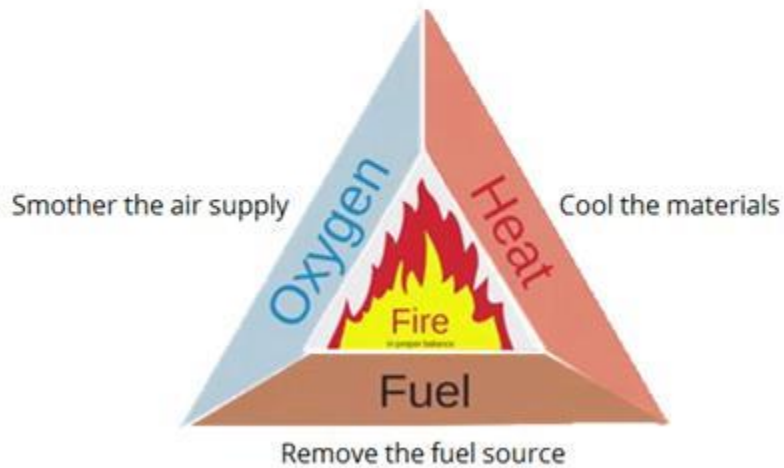
The concept of a fire triangle aids in understanding the cause of fires and how they can be prevented and extinguished.



## 6.2 How Fire Works

Heat, fuel and oxygen must combine in a precise way for a fire to start and continue to burn.

If one element of the Fire Triangle is not present or removed, fire will not start or, if already burning, will extinguish.



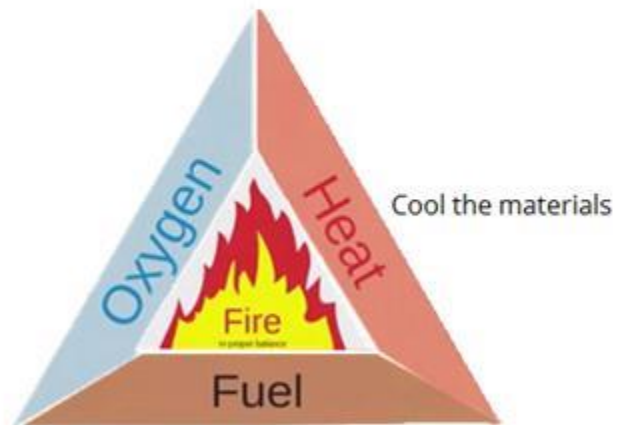
### 6.3 Elements: Heat

#### Elements: Heat

Without sufficient heat, a fire cannot begin, and cannot continue.

Sources of heat can include:

- open flames
- the sun
- hot surfaces
- sparks and arcs
- friction
- chemical action
- electrical energy



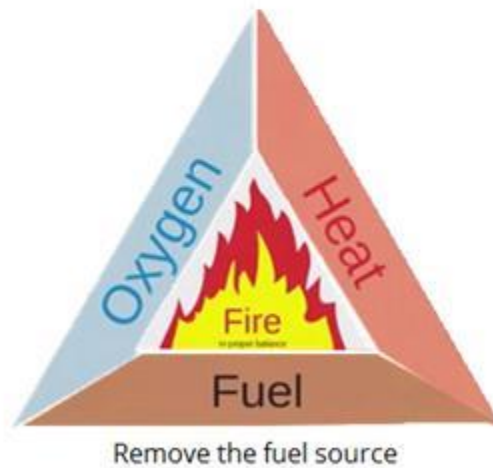
## 6.4 Elements: Fuel

### Elements: Fuel

Fire fuel consists of combustion materials which have (or could be) ignited. Without fuel, a fire will stop.

Fuel can be in the form of

- Gases
- Liquids
- Solids

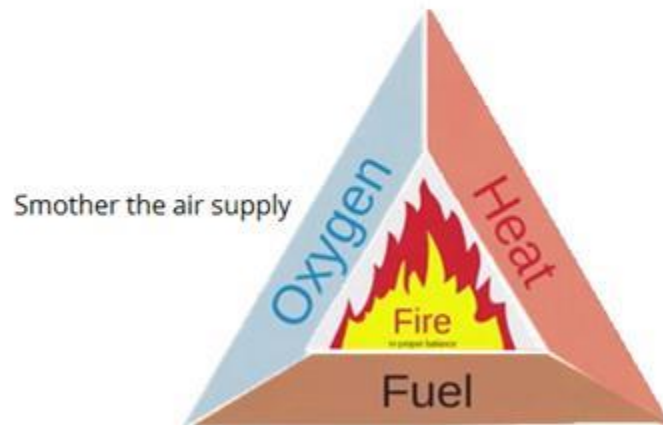


## 6.5 Elements: Oxygen

### Elements: Oxygen

Without sufficient oxygen, a fire cannot begin, and it cannot continue.

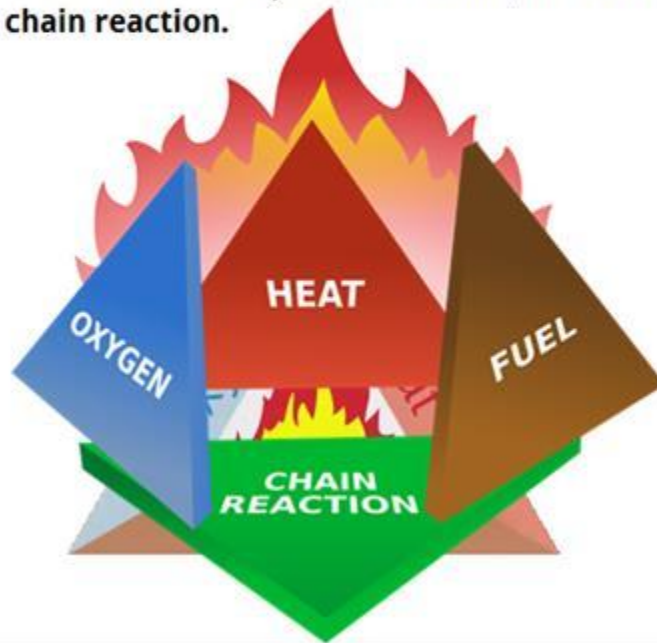
- A fire requires 16% oxygen.
- Some fuels contain oxygen within their makeup to support burning.



## 6.6 Fire Tetrahedron

### Fire Tetrahedron

The Fire Triangle eventually evolved into the **Fire Tetrahedron**, which recognizes a fourth necessary element of fire, the **exothermic chemical chain reaction**.



## 6.7 How Fires Start

### How Fires Start

1. Fire begins by an external ignition source - usually in the form of a flame or spark.
2. The external ignition source heats the fuel under the presence of oxygen.
3. As both fuel and oxygen are heated, molecular activity increases.
4. If properly heated, a self-sustaining chemical reaction is developed.
5. The chemical reaction will then escalate at a point where the external ignition source is no longer necessary for the propagation of the fire.



## 6.8 Knowledge Check

(Pick One, 10 points, 1 attempt permitted)

### Knowledge Check

The elements of a fire tetrahedron are heat, fuel, oxygen, and \_\_\_\_.

- ☐ a. A chemical chain reaction
- ☐ b. A detonation
- ☐ c. An explosion

Correct	Choice
X	Reaction
	Detonation
	Explosion

#### Feedback when correct:

You're right. Heat + Fuel + Oxygen = Chemical chain reaction

#### Feedback when incorrect:

Oops! You need to review the purpose of a fire extinguisher.

## 6.9 How Fires Stop

### How Fires Stop

As we saw with the Fire Triangle, once a fire has started, it will continue until:

- All of the available fuel has been consumed or
- The fuel and/or oxygen is removed or
- The temperature is reduced by cooling.

With the development of the Fire Tetrahedron, scientists recognized the fire can also be stopped by reducing the number of excited molecules.

This breaks the exothermic chain reaction and stops the fire.

## 7. EO 3: Fire Class

### 7.1 Fire Class

#### Fire Class

Fires are classified based on fuel type.

These classifications impact the type of suppression or extinguishing materials that can be used.

Class letters used in this course follow United States classification standards. Be aware that other locations, such as Europe and Australia, follow their own standards for class letters.

## 7.2 Fire Class Pictograms

### Fire Class Pictograms

Pictograms show the type of fuel used in each Fire Class.



A: Combustibles



B: Flammable  
Liquids + Gases



C: Electrical



D: Flammable  
Metals



K: Kitchen

### 7.3 Class A

#### Class A

Class A fires are fueled by ordinary combustibles such as wood, cloth, paper, rubber, coal, hay and many plastics.

Water and dry chemical agents are effective.



# A



## 7.4 Class B

### Class B

Class B fires are fueled by flammable and combustible liquids. This includes petroleum greases, tars, oils, oil-based paints, solvents, lacquers, varnishes, and alcohols.

Class B fires are also fueled by flammable gases, such as natural gas, propane, hydrogen, and acetylene.

**High fire hazard:** water may not extinguish. Extinguish by creating a barrier between the fuel and the oxygen, such as layer of foam or dry chemical.



# B



## 7.5 Class C

### Class C

Class C fires are fueled by fuels that would be A or B except that they involve **energized electrical equipment**.

Special techniques and agents are required to extinguish -- most commonly carbon dioxide or dry chemical agents.

**Warning:** Use of water is very dangerous!



# C





## 7.6 Class D

### Class D

Class D fires are fueled by combustible metals, such as magnesium, titanium, zirconium, sodium, lithium and potassium.

Most cars contain numerous such metals.

Extinguish with special powders based on sodium chloride or other salts; also clean dry sand.



**D**





## 7.7 Class K

### Class K

Class K fires are fueled by combustible cooking media (vegetable or animal oils and fats).

Extinguish with wet chemicals designed for Class K.



# K



## 8. EO 4: Fire Extinguisher Types

### 8.1 Fire Extinguishers

#### Fire Extinguishers

The purpose of a fire extinguisher is to control or extinguish small or incipient stage fires.



## 8.2 Match the Work Environment

### Match the Work Environment

Fire extinguishers should be appropriately matched to the work environment and the types of potential fuels in the area.



### 8.3 Knowledge Check

(Pick One, 10 points, 1 attempt permitted)

### Knowledge Check

What is the purpose of a fire extinguisher?

- ☐ a. To extinguish large fires
- ☐ b. To put water on electrical fires
- ☐ c. To extinguish only Class A fires
- ☐ d. To control or extinguish small or incipient stage fires

Correct	Choice
	Large Fires
	Water on Fires
	Class A Fires
X	Incipient Fires

**Feedback when correct:**

That's right! The purpose of fire extinguishers is to fight small or incipient stage fires.

**Feedback when incorrect:**

Oops! You need to review the purpose of a fire extinguisher.

## 8.4 Pictograms on Extinguishers

### Pictograms on Extinguishers

Extinguishers are designed to put out fires based on Fire Class.

The use of Fire Class pictograms on extinguishers aids in quickly identifying the type of fire the extinguisher can be used on.



**A**

Ordinary combustibles



**AB**

Ordinary combustibles + flammable liquids



**BC**

Flammable liquids + electrical



**ABC**

Multi-purpose: Ordinary combustibles + flammable liquids + electrical



**D**

Combustible metals



**K**

Kitchen

## 8.5 Air Pressurized Water & Water Mist Extinguishers

### Air Pressurized Water & Water Mist Extinguishers



**A**



Used for ordinary combustibles fires.

## 8.6 Dry Chemical Multipurpose Extinguishers

### Dry Chemical Multipurpose Extinguishers



**AB**



Used for ordinary combustibles  
and flammable liquids fires.

## 8.7 Carbon Dioxide Extinguishers

### Carbon Dioxide Extinguishers



**BC**



Used for flammable liquids and energized electrical equipment fires.



## 8.8 Dry Chemical Multipurpose Extinguishers

### Dry Chemical Multipurpose Extinguishers



**ABC**



Used for ordinary combustibles, flammable liquids, and energized electrical equipment fires.

## 8.9 Dry Powder Extinguishers

### Dry Powder Extinguishers



**D**



Used for flammable metals fires only.

## 8.10 Wet Chemical Extinguishers

### Wet Chemical Extinguishers



**K**



Used for kitchen fires.

### 8.11 Drag the description to link it with the proper Extinguisher Type.

(Matching Drag-and-Drop, 10 points, 1 attempt permitted)

Drag the description to link it with the proper Extinguisher Type.

Extinguisher Type	Description
A	Ordinary Combustibles
D	Flammable Metals
ABC	Multiple Purpose
K	Kitchen

Correct	Choice
A	Ordinary Combustibles
D	Flammable Metals
ABC	Multiple Purpose
K	Kitchen

**Feedback when correct:**

That's right! You matched the descriptions to the proper Extinguisher Types.

**Feedback when incorrect:**

You did not select the correct descriptions for the Extinguisher Types. Let's review the material.

## 9. Fighting an Incipient Fire

### 9.1 Incipient Fires

#### Incipient Fires

- **OSHA** defines an **incipient fire** as a fire which is in the initial or beginning stage and which can be controlled or extinguished by **portable fire extinguishers or small hose systems** without the need for protective clothing or breathing apparatus.
- **NFPA** defines an incipient fire as a fire which is in the initial or beginning stage and which can be controlled or extinguished by **portable fire extinguishers or small amounts of dry extinguishing agents** without the need for protective clothing or breathing apparatus.

### 9.2 Knowledge Check

*(Multiple Choice, 10 points, 1 attempt permitted)*

## Knowledge Check

How does NFPA define an incipient fire?

- ☐ A fire which is in the initial or beginning stage and which can be controlled or extinguished by fire extinguishers and requires the wearing of protective clothing or breathing apparatus.
- ☐ A fire which is in the initial or beginning stage and which can be controlled or extinguished by wet chemical extinguishing agents without the need for protective clothing.
- ☒ A fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers or small amounts of dry extinguishing agents without the need for protective clothing or breathing apparatus.

Correct	Choice
	A fire which is in the initial or beginning stage and which can be controlled or extinguished by fire extinguishers and requires the wearing of protective clothing or breathing apparatus.
	A fire which is in the initial or beginning stage and which can be controlled or extinguished by wet chemical extinguishing agents without the need for protective clothing.
X	A fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers or small amounts of dry extinguishing agents without the need for protective clothing or breathing apparatus.

**Feedback when correct:**

That's right! You selected the correct response.

**Feedback when incorrect:** You did not select the correct response.

## 10. Untitled Scene

### 10.1 Hazards

#### Hazards

An incipient stage fire can quickly become a large fire.

Be aware of where the fire is located. If it is partially hidden in a wall or ceiling, or cannot be reached from a standing position, you should evacuate.

Be aware of the materials burning. If there are toxic substances or lots of smoke, the fire cannot be fought without respiratory protection.

Be aware of your escape path. Don't fight a fire that might block your ability to evacuate.

## **10.2 Do not fight a fire if ...**



## **10.3 Check all that apply.**



**You should not fight a fire if:**

(Multiple Response, 10 points, 1 attempt permitted)

Check all that apply.

You should not fight a fire if:

- ☒ It is partially hidden in a wall or ceiling.
- ☐ It is a large fire, but the air is not toxic.
- ☐ You must wear a respirator to breathe.
- ☒ Your escape path is blocked.
- ☐ You must use a ladder to reach the fire.

Correct	Choice
X	It is partially hidden in a wall or ceiling.
	It is a large fire, but the air is not toxic.
	You must wear a respirator to breathe.
X	Your escape path is blocked.
	You must use a ladder to reach the fire.

**Feedback when correct:** That's right! You selected the correct response.

**Feedback when incorrect:** You did not select the correct response. Let's review the material again.

## 11. Operating a Fire Extinguisher

### 11.1 Before Fighting a Fire

#### Before Fighting a Fire

Make a notification to the CMR at 8111 and give them information

- Name
- Location of the fire, our location if different
- Size of the fire
- If anyone is injured or trapped



## 11.2 Who should you contact prior to fighting an incipient stage fire?

(Multiple Choice, 10 points, 1 attempt permitted)

Who should you contact prior to fighting an incipient stage fire?

- ☐ Your manager
- ☒ CMR
- ☐ Security
- ☐ The UFE

Correct	Choice
	Your manager
X	CMR
	Security
	The UFE

**Feedback when correct:**

That's right! You should contact the CMR at 8-1-1-1 prior to fighting a fire.

**Feedback when incorrect:**

You did not select the correct response.

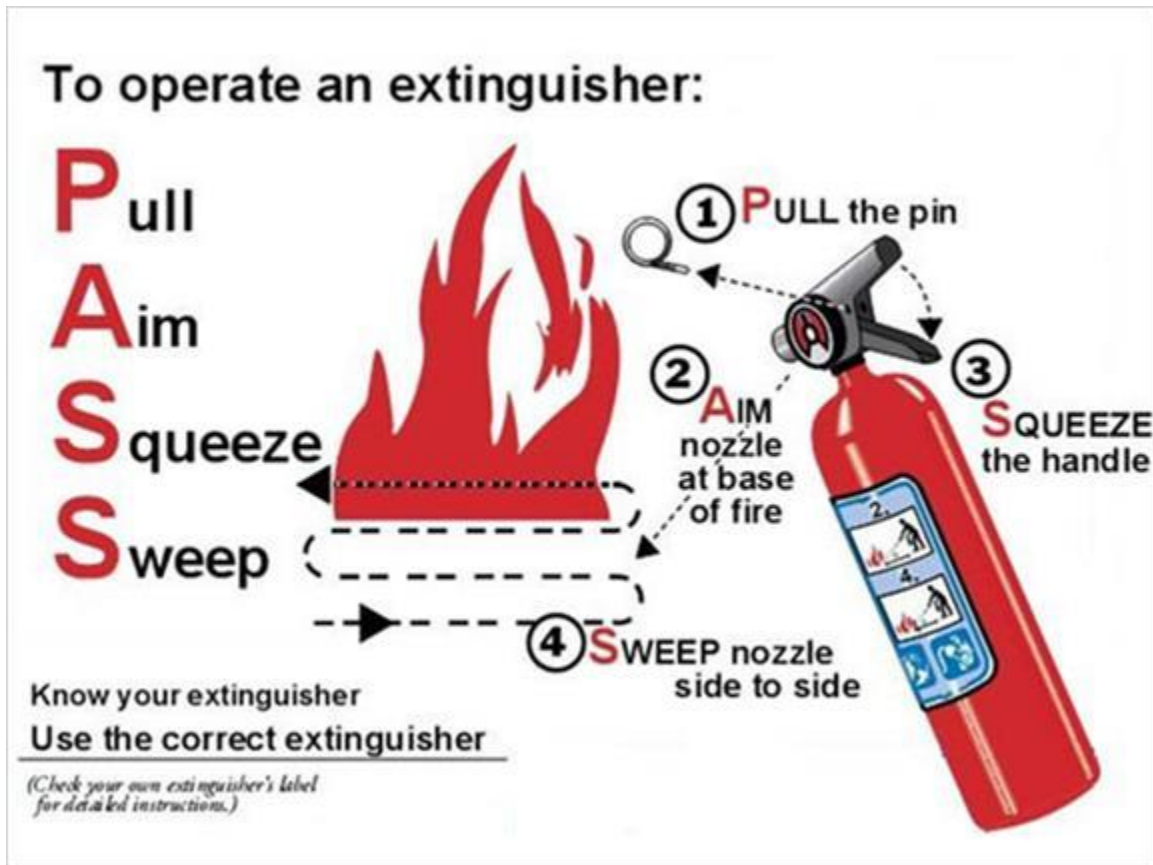
### 11.3 Pressure Gauge

#### Pressure Gauge

If the extinguisher has a pressure gauge, check to make sure the pressure indicating needle is in the green before proceeding.



## 11.4 PASS Technique



## **11.5 ANSUL Redline Cartridge Type Extinguisher**

### ANSUL Redline Cartridge Type Extinguisher

Here's a video for operating an ANSUL Redline extinguisher. It operates differently from the PASS technique. The video will open in a separate browser window.

Web Object

Address:  
<https://youtu.be/jENbC6j87Hs>

## 11.6 After Discharging an Extinguisher

### After Discharging an Extinguisher

Evacuate immediately if you empty an extinguisher and the fire is not out, or if the fire has grown beyond the incipient stage.

Call the CMR from a safe location and update them.



**11.7 Put the steps in the correct sequence from top to bottom for using the PASS technique for extinguishing a fire.**

(Sequence Drop-down, 10 points, 1 attempt permitted)

Put the steps in the correct sequence from top to bottom for using the PASS technique for extinguishing a fire.

Pull the pin.

Aim at the base.

Squeeze the trigger.

Sweep side to side

Correct Order
Pull the pin.
Aim at the base.
Squeeze the trigger.
Sweep side to side

**Feedback when correct:** That's right! You selected the correct sequence for the using the PASS technique.

**Feedback when incorrect:** You did not select the correct sequence for PASS.



## 12. Completion Signature

### 12.1 Completion Certificate

Completion Certificate  
SAF-502FR  
"Fire Extinguisher Live Fire Refresher"  
Revision 0  
Approval Date: 8/31/2017

- I have read the material and understand the content of this training.
- I will print, sign, and submit this Completion Certificate to Technical Training or I will electronically sign by clicking the green button.
- I must schedule and pass a Job Performance Measure.

Print Name (Last, First): \_\_\_\_\_

Training ID # \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

[Click here to sign electronically.](#)

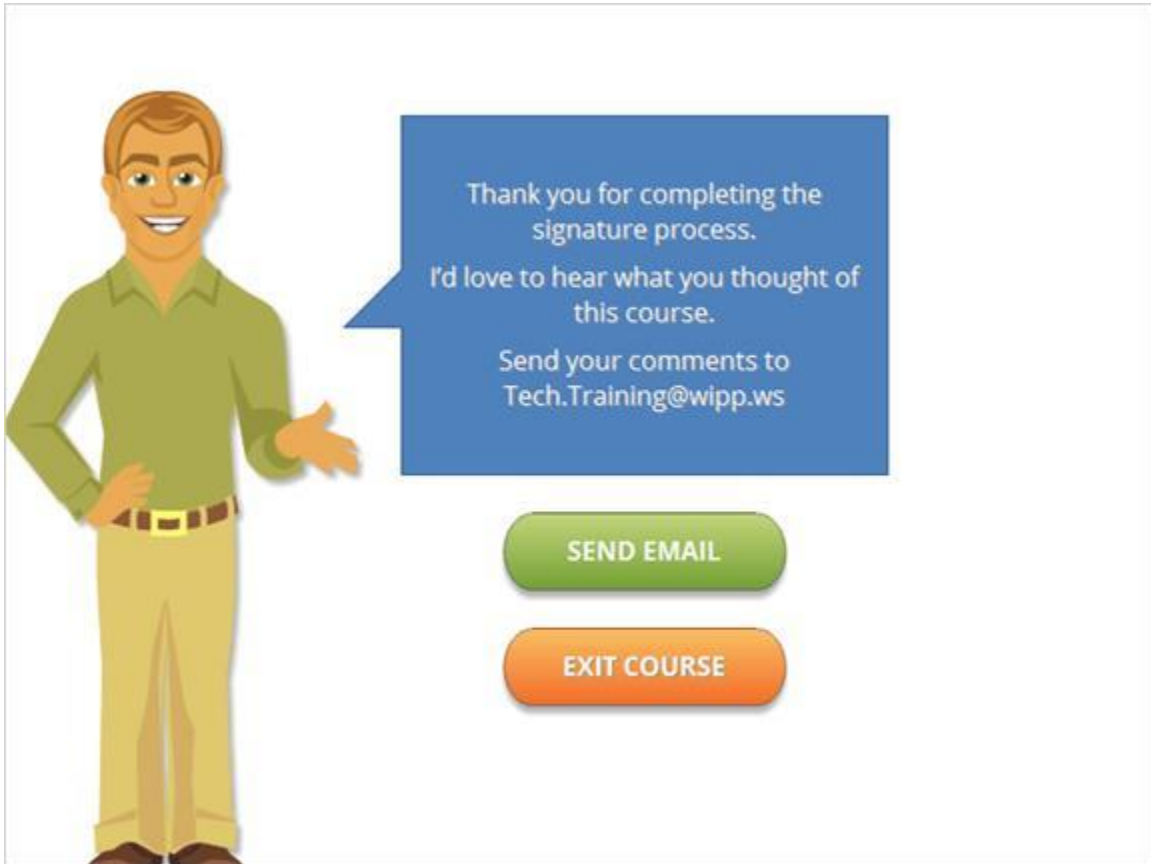


Print

Notes:

<http://bellview/readandsign/Read.aspx?id=80>

## 12.2 Thank You. End of Course



Notes: