

# Application of Portable Fire Extinguishers Instructor Guide

**Lesson 1:** Application of Portable Fire Extinguishers

**Time:** 3 hours

**Reading/Other Assignments:**

\*Review IFSTA, *Essentials of Firefighting*, 4<sup>th</sup> ed., 1998, Chapter 5

\*MFRI *Firefighter I Student Manual*, Lesson 6-1

\*AHJ specific handouts that the instructor may provide

**Teaching/Learning Level:** 3

**Teaching/Learning Aids:** (to support a group of 25 students)

2 support instructors, MFRI PowerPoint visuals and PowerPoint projection system, optional chalkboard or easel pad, Action Training Systems, Inc. video, *Portable Extinguishers*, video equipment, display extinguishers, if available (PW, CO<sub>2</sub>, AFFF, stored pressure dry chemical, Ansul dry chemical, pump tank, Indian tank), 6 operational pressurized water, 10 CO<sub>2</sub> and 6 dry chemical extinguishers (4 stored pressure + 2 Ansul), magnesium, 2 recovery cans, 2 barrel flammable liquid burner, 5 gallons diesel fuel, 5 gallons water, bale of excelsior/straw and propane torch equipment. **Note:** The above number of operational extinguishers is based upon the following: PW - 4 students per extinguisher; CO<sub>2</sub> - 2-3 students per extinguisher; DC - 4 students per extinguisher

**Behaviors to Foster:** Active participation and discussion to:

- Describe the purpose of portable fire extinguishers
- Identify the classification and characteristics of fuels and how portable fire extinguishers extinguish them
- Identify four basic types of extinguishing agents, and describe how they extinguish fires
- Define how portable extinguishers are rated
- Identify the appropriate extinguisher and how to apply them for various classes of fire
- Describe the limitations of portable fire extinguishers
- Describe the care and maintenance of portable fire extinguishers
- Identify the general rules for portable fire extinguisher use
- Demonstrate the extinguishment of Class A, B, and C fires utilizing the appropriate portable fire extinguishers

**Task:** Demonstrate the proper techniques of inspecting, selecting, and using portable extinguishers on Class A, B, and C fires

**Given:** A selection of portable extinguishers, full personal protective equipment, and a controlled instructional environment

**Standard:** So that the correct extinguisher is selected and used for the class of fire, the fire is extinguished completely, and safe operations are practiced. *NFPA 1001 (1997), JPR 3-3.15*

**Requisite Knowledge:**

- Fire behavior
- Classes of fire
- Types of fire extinguishers and their rating system
- Operating characteristics of each type extinguisher
- Effective use of each type extinguisher
- Limitations of fire extinguishers

**Requisite Skills:**

- Operate fire extinguishers
- Wear PPE
- Safely carry standard size fire extinguishers
- Identify the class of extinguisher appropriate to a specific class officer

**Resources/References:**

International Fire Service Training Association. (1998). *Essentials of firefighting* (4<sup>th</sup> ed.). Stillwater, OK: Fire Protection Publications.

National Fire Protection Association. (1998). *NFPA Standard, 10 portable fire extinguishers*. Quincy, MA: Author.

National Fire Protection Association. (1997). *NFPA Standard, 101 life safety code*. Quincy, MA: Author.

**Attention: (Call to Order)**

**Motivation:** There are many fire scenarios that do not require large quantities of water to effectively extinguish. Firefighters must be properly trained in various alternative extinguishment options involving portable fire extinguishers, and the appropriate agent required on Class A, B, C, and D fires. Using the wrong agent on a fire could be disastrous.

**Student Performance Objective (SPO):**

S-1-1

Given a selection of portable extinguishers, full personal protective equipment, and a controlled instructional environment, the student will be able to demonstrate the proper techniques of inspecting, selecting, and using portable extinguishers on Class A, B, and C fires, so that the correct extinguisher is used for the class of fire, the fire is extinguished completely, and safe operations are practiced. The student will perform to a final written test accuracy of at least 70%, will receive a satisfactory score as determined by a practical skills checklist, and will meet job performance requirements for NFPA 1001 (1997), JPR 3-3.15.

**Enabling Objectives (EO):**

- EO 1-1 Describe the purpose of portable fire extinguishers. *(JPR 3-3.15)*
- EO 1-2 Identify the classification and characteristics of fuels and how portable fire extinguishers extinguish them. *(JPR 3-3.15)*
- EO 1-3 Identify four basic types of extinguishing agents, and describe how they extinguish fires. *(JPR 3-3.15)*
- EO 1-4 Define how portable extinguishers are rated. *(JPR 3-3.15)*
- EO 1-5 Identify the appropriate extinguisher and how to apply them for various classes of fire. *(JPR 3-3.15)*
- EO 1-6 Describe the limitations of portable fire extinguishers. *(JPR 3-3.15)*
- EO 1-7 Describe the care and maintenance of portable fire extinguishers. *(JPR 3-3.15)*
- EO 1-8 Identify the general rules for portable fire extinguisher use. *(JPR 3-3.15)*
- EO 1-9 Demonstrate the extinguishment of Class A, B, and C fires utilizing the appropriate portable fire extinguishers. *(JPR 3-3.15)*

**Overview/Main Points:**

S-1-2

- Purpose of Portable Fire Extinguishers
- NFPA Classification and Characteristics of Fuels
- Types of Agents
- Ratings of Extinguishers
- Types of Extinguishers
- Limitations of Extinguishers
- Care and Maintenance
- General Rules
- Practical Use of Fire Extinguishers

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reproduced in any form or by any means without written permission of the Maryland Fire and Rescue Institute.

**Opener: Call to order; start with a motivator (need to know) related to objectives and the lesson; state objectives and main points.**

Teaching Points	Notes
I. Purpose of Portable Fire Extinguishers (1-1)	S-1-3
<ol style="list-style-type: none"><li>1. Provide rapid, initial extinguishing agent for a sudden, unexpected fire involving various types of fires</li><li>2. Under certain conditions or circumstances, hand-held portable fire extinguishers can be a primary tool for initial attack on a given fire scenario</li><li>3. May be more effective and better suited for the job at the time than a fixed water source and hoselines</li><li>4. More convenient to use in some locations: industry, schools, businesses, specific occupancies</li></ol>	<ul style="list-style-type: none"><li>- mobile conveyance (fires)</li><li>- trash can (fires)</li><li>- electrical (fires)</li><li>- small flammable liquid (fires)</li><li>- industrial shop (fires)</li></ul>
II. NFPA Classification and Characteristics of Fuels (1-2)	S-1-4 Full PPE - SCBA as required to protect respiratory track. IFSTA Unit 5 S #8
<ol style="list-style-type: none"><li>1. Class A: ordinary<ol style="list-style-type: none"><li>1. Fires which occur in ordinary combustible materials such as wood, paper, cloth, rubber, and many plastics<ol style="list-style-type: none"><li>1. Leaves glowing coal</li><li>2. Leaves an ash</li></ol></li><li>2. Extinguishment: all purpose water, Class A foam, dry</li></ol></li></ol>	

## Teaching Points

## Notes

chemical

1. Cooling removes heat side of triangle
2. Smothering removes oxygen side of triangle
3. Remove fuel side of triangle

### 2. Class B: flammable/combustible liquids

1. Fires which occur in flammable or combustible liquids, paints, gasoline, natural gas, greases, oil lacquer, mineral spirits and alcohol

Full PPE and SCBA.

1. Fuel floats on water (specific gravity)
2. Can't cool below flash point

Combustible liquids can be cooled.

### 2. Extinguishment

1. Smothering removes oxygen side of triangle: blanketing effect - reduce the production of oxygen vapors
2. Cooling removes heat side of triangle: temperature reduction
3. Remove fuel side of triangle and interruption in the chain reaction, and oxygen exclusion

### 3. Class C: energized electrical equipment

## Teaching Points

## Notes

1. Fires which involve or are near energized electrical equipment, where the electrical non-conductivity of the extinguishing media is important
  - household appliances
  - computers
  - transformers
  - overhead transmission lines

Use full PPE and SCBA because of dangerous by-products
  
2. Shock hazard when water or water-based extinguishers are used
  - Use non-conducting agents such as:
    - aluminum
    - magnesium
    - titanium
    - zirconium
    - sodium
    - potassium
    - lithium
    - calcium
    - zinc
3. Extinguishment
  1. De-energize: treat as Class A or B
  2. Temperature reduction and full removal
4. Class D: combustible metals
  1. Fires which occur in combustible metals
    1. Extremely high temperature, burns at 2,000+EF: water and other agents are rendered ineffective
    2. Water reverts to essential elements
      - 1) Hydrogen: burns again
      - 2) Oxygen: self support for combustion
  2. Very hazardous or explosive in powdered form

## Teaching Points

## Notes

3. Extinguishment: no single agent will always control these fires. They require special extinguishing agents designed for metal fires
  1. Cover and smother the burning materials
  2. Isolate materials and test in accordance with MSDS/NAERG recommendations
  3. Use only enough personnel to accomplish the assigned task
- Full PPE and SCBA.

### III. Types of Agents (1-3)

1. Water and water-based foams
  1. Water cools fuel (heat side of triangle)
    1. Absorbs heat and reduces temperatures of the fuel(s) to a point where it does not produce vapors to burn
    2. Class A fires: ordinary combustible materials
  2. Foam covers fuel (oxygen side of triangle) (AFFF extinguisher)
    1. Keeps oxygen away
    2. Keeps fuel vapors from forming
- IFSTA Unit 5 S #1  
IFSTA Unit 5 S #2  
IFSTA Unit 5 S #3

## Teaching Points

## Notes

3. A:B rated: ordinary combustible materials, and liquids, greases, and gases
2. Carbon dioxide, B:C rated (oxygen side of triangle)
  1. Displaces oxygen and can inhibit chain reaction
  2. Has a slight cooling effect
  3. A Snow buildup can ruin computer micro-chips (little dry ice crystals)
  4. Is non-toxic, but will build up a static electrical charge. Keep grounded while operating

IFSTA Unit 5 S #5

3. Dry chemical
  1. All dry chemical extinguishing agents: A:B:C or strictly B:C rated
    1. Leave messy residues
    2. React with fuel molecules to prevent oxidation by inhibiting the chain reaction
  2. Sodium bicarbonate, B:C rated (baking soda)
    1. Is not compatible with foam
    2. Breaks down gas bubbles (relieves indigestion)

IFSTA Unit 5 S #6

Agent:  
- sodium bicarbonate  
- potassium bicarbonate  
- ammonium phosphate  
- potassium chloride  
- UREA - potassium bicarbonate

## Teaching Points

## Notes

3. Potassium bicarbonate, B:C rated (Purple K): powder extinguishing agent
  - 1. Foam compatible
  - 2. Developed for crash fire rescue (CFR)
4. Monammonium phosphate, A:B:C: multipurpose dry chemical rated
  - 1. Forms crust on Class A fuel
  - 2. Forms emulsion in Class B fuel
  - 3. Is not compatible with B:C dry chemical (neutralizing effect)
  - 4. Corrodes electrical equipment almost immediately
  - 5. Is corrosive to aircraft parts
4. Dry powder
  - 1. For Class D fires only
  - 2. Smothers fire by forming crust
5. Halon: (halogenated hydrocarbons) chemically reacts with flame to interrupt chain reaction. B:C rated because it is a chemical compound that contains carbon plus one or more elements from the halogen series (fluorine, chlorine, bromine,

Dry powder used on Class D fires.

S-1-5

IFSTA Unit 5 S #7

S-1-6

## Teaching Points

## Notes

iodine and astatine)

1. Halon 1211 (parts) 1301 called BROMOCHLORODIFLUOROMETHANE 1301

1 Carbon 1  
2 Fluorine 3  
1 Chlorine 0  
1 Bromine 1

1. Numbers = amount of each agent
2. Halon 1211 used in portable extinguishers is stored as a liquified compressed gas; nitrogen is added to increase discharge pressure and reach of stream
3. Halon 1301 used in total flooding systems: B:C rated - called BROMOTRIFLUOROMETHANE found in information processing rooms, computers, and shipboard compartments
4. Both should be considered toxic and heavier than air
5. Halon will be phased out by the year 2000 due to its ecological effects on the ozone layer
6. It has a low Class A rating in extinguishers greater than 9 lbs.

IFSTA Unit 5 S #4

Interrupts the chain reaction of the combustion process.

Except for onboard, aircraft fire support systems.

## Teaching Points

## Notes

2. First halon was Halon 104 (carbon tetrachloride)
  1. Chlorine and Freon will form phosgene gas when heated by fire
  2. Banned from use because of health hazard

### IV. Ratings of Extinguishers (1-4)

IFSTA Unit 5 S #9

1. Class designations or markings
  1. Letter indicates class of fire for which extinguisher is suited
  2. By color and shape
    1. Class A: green triangle - ordinary combustibles
    2. Class B: red square - flammable liquids
    3. Class C: blue circle - electrical equipment
    4. Class D: yellow star - combustible metals

3. NAFED picture symbols (National Association of Fire Equipment Distributors, Inc.)

IFSTA Unit 5 S #10

1. Replaced colors and shapes as the standard as of July 1, 1978

IFSTA Unit 5 S #11

- 1) Geometric shapes of specific colors with class

## Teaching Points

## Notes

letters shown within the shape

- 2) Pictographs show the types of fires you can't use it on

### 2. NFPA 10 - *Standard for Portable Fire Extinguishers*

2. Number(s) rating indicates relative effectiveness of the extinguisher and performance capability

S-1-7

1. Rated to non-expert use
2. Recognized classification rating and approval agencies
  1. Underwriters Laboratories, Inc. (UL)
  2. Underwriters Laboratories, Inc. of Canada (ULC)
  3. Factory Mutual (FM)
  4. United States Coast Guard

### 3. Ratings

1. Class A
  - 1) Based on 13 gallons of water

- 2) 1A - 40A (range)

2A = 2 1/2 gal. of water

### 2. Class B

- 1) Based on square foot area of flammable liquid

## Teaching Points

## Notes

surface

2) 1B - 640B (range)

3. Class C: no numerical rating - only letter rated

20B = 20 sq. ft. of surface area

4. Class D: no numerical rating - cannot be given a multipurpose rating for use on other classes of fire

### V. Types of Extinguishers (1-5)

#### 1. Pump tank extinguisher (Class A)

Prearrange with AHJ, company, or a station to have one of each of the following extinguishers on hand to go over this material with the students. Demonstrate types and simulate operation.

##### 1. Backpack type

##### 1. Operation

Have students don PPE and a pump tank to experience the weight factor. Ask if students can bring a specialized extinguisher to class for demonstration purposes.

1) Carried on back with shoulder straps

2) Pump is held in hands. One hand on nozzle end; the other on the handle. Handle moves back and forth with short, quick strokes

3) Extinguishes by cooling and penetrating

##### 2. Advantages

1) Can be immediately refilled with water by user

2) Water saturates material and prevents rekindling

3) The effective range is

## Teaching Points

## Notes

thirty to forty feet

4) Non-corrosive wetting agents may be added to the water

5) Intermittent use is possible

### 3. Disadvantages

1) Must be protected from freezing

2) For Class A fires only

### 4. Hazards

1) Water will conduct electricity

2) Water will spread fires from Class B origin

## 2. Stirrup pump type (Class A)

### 1. Operation

1) Place tank on ground with one foot on the stirrup

2) Direct nozzle with one hand and operate the pump handle up and down with the other using short, quick strokes

3) Direct stream at the base of the fire and move it around to cool combustibles

## Teaching Points

## Notes

- 4) Extinguishes by cooling
  
2. Advantages: same as for backpack type
  
3. Disadvantages: same as for backpack type
  
4. Hazards: same as for backpack type
  
  
2. Stored pressurized water extinguisher/air-pressurized water (APW) extinguisher (Class A)
  1. Operation
    1. Check gauge
    2. Break the wire seal
      - 1) Indicates full charge
      - 2) Indicates correct agent
    3. Remove safety pin or release the latch which locks the control valve
    4. Hold the extinguisher by the carrying handle, with the thumb or palm resting on the valve lever
    5. Direct the nozzle with the other hand
    6. Squeeze the valve lever to operate

## Teaching Points

## Notes

7. Direct the stream at the base of the fire and move it around to cool the combustibles
  8. Extinguishes by cooling and penetrating
2. Advantages
    1. Refills with water and air by user
    2. Water saturates material and prevents rekindle
    3. Has a good effective range
    4. Non-corrosive wetting agents or antifreeze may be added to the water only in extinguishers designed for them
    5. Intermittent use is possible
  3. Disadvantages
    1. Must be protected from freezing
    2. For Class A fires only
    3. Needs a compressed air source to charge
  4. Hazards
    1. Water will conduct electricity and spread fires of Class B origin

## Teaching Points

## Notes

2. Built-up air pressure must be released before removing fill cap
  3. Do not overfill as there will not be room for a sufficient volume of compressed air to operate extinguisher
  4. Shell can rupture from enclosed pressure
3. Aqueous film forming foam or AFFF Extinguisher (Class A:B)

Point out difference of hose and nozzle from pressurized water extinguisher.

### 1. Operation

1. Check gauge
2. Break wire seal
3. Remove safety pin
4. Hold extinguisher by carrying handle in one hand and operate lever at top of extinguisher
5. Do not allow hand to block air passage on nozzle
6. Use side-to-side sweeping motions across entire width of the fire
7. Flow on top of liquids to form blanket
8. Cover as much area as possible

## Teaching Points

## Notes

### 2. Advantages

1. Good for use on Class A:B fires
2. Acts as a foam blanket on burning liquids and is most effective on static pools of flammable liquids
3. Excellent wetting and penetration properties
4. Concentrations of 3% or 6% by volume with either fresh or salt water
5. Fast spreading and leveling characteristics

Not suitable for class C:D fires.

### 3. Disadvantages

1. Effective range of only 20 feet
2. Must be protected from freezing temperatures

### 4. Hazards: stored pressure unit

### 4. Halon portable extinguisher (Class B:C fires)

#### 1. Operation

1. Similar to either stored pressure extinguisher or pressurized water type
2. Discharge at base of flame
3. Operate the liquid gas

## Teaching Points

## Notes

extinguisher the same as CO

2

### 2. Advantages

1. Halons are either gases or liquids which rapidly vaporize in fire. They leave little corrosive or abrasive residue after use
2. Nonconductors of electricity
3. Have compact storage container
4. Visibility after use very good
5. Halon is 22 times more effective than CO<sub>2</sub>
6. For use on Class B or C fires; has a low Class A rating (IA-4A) in extinguishers greater than 9 lbs.
7. Extinguishes by an inhibition of the combustion reaction

### 3. Disadvantages and hazards

1. Avoid breathing in confined area
2. Will corrode aluminum or aluminum alloys
3. Certain types of halon extinguishers may cause frostbite

## Teaching Points

## Notes

### 5. Carbon dioxide (CO<sub>2</sub>) portable extinguishers (Class B:C)

Carbon dioxide and cartridge-type extinguishers do not have gauges, but are checked by weight through routine inspection.

#### 1. Operation

1. Break the wire seal
2. Remove the safety pin
3. Hold the extinguishers by carrying handle using one hand
4. Place the thumb and the palm of the same hand on shutoff lever
5. With the other hand, direct the horn
6. Hold the horn by rubber or the wooden handle since it builds up a static electricity charge
7. Squeeze the shutoff lever
8. Direct at the base of the flame

#### 2. Advantages

1. Extinguishes by smothering
2. Use on Class A, B, and C fires (minimal effect on Class A)

#### 3. Disadvantages

## Teaching Points

## Notes

1. Poor range
  2. Not to be stored in high temperatures
- Use gloves.
4. Hazards
    1. May cause frostbite
    2. May build up static electricity
    3. Shell and frosted horn conduct electricity
    4. Wind could disrupt the efficiency of extinguisher
- Place unit on ground while discharging to prevent static electricity.
6. Dry chemical portable extinguisher (Class B:C)
    1. Types
      1. Cartridge-operated
      2. Stored-pressure
    2. Operation
      1. Cartridge-operated
        - 1) Remove hose from its storage position
        - 2) Hold extinguisher by carrying handle in one hand
        - 3) Depress plunger, keeping your body clear of the filling cap

## Teaching Points

## Notes

- 4) Direct nozzle and squeeze control handle with the other hand

### 2. Stored-pressure

- 1) Break wire seal
- 2) Remove pin
- 3) Hold extinguisher handle with thumb and palm on valve
- 4) Direct nozzle with other hand

### 3. Advantages

1. Interrupt chemical chain reaction
2. Distance of 5 to 20 feet - relative distance. The object is to reach but not disturb the fuel source
3. For Class B:C

### 4. Disadvantages

1. Size and weight
2. Must be refilled with manufacturer=s recommended chemical

Dangerous increases of pressure could occur because of a reaction involving different chemicals.

5. Hazards: never refill with multi-

## Teaching Points

## Notes

purpose dry chemical

### 7. Multi-purpose dry chemical portable extinguishers (Class A:B:C)

#### 1. Types

1. Cartridge-operated
2. Stored-pressure

#### 2. Operation

1. Cartridge-operated: same as dry chemical type B:C
2. Stored-pressure: same as dry chemical type B:C

#### 3. Advantages

1. Interrupts chemical chain reaction
2. Prevents combination of air and fuel
3. Cools some
4. Discharges 5 to 20 feet
5. Isolates Class A fires

#### 4. Disadvantages

1. Size and weight
2. Must be refilled with manufacturer=s

## Teaching Points

## Notes

recommended chemical

5. Hazards: never refill with regular dry chemical

Dangerous increases of pressure could occur because of a reaction involving different chemicals.

8. Dry powder portable extinguisher (Class D)

1. Operate same as cartridge-operated dry chemical and multi-purpose dry chemicals

2. Advantages

1. Forms crust to exclude air and smother fire
2. Conducts heat away from fire
3. For Class D fires

May be discharged from an extinguisher with longer reach, shoveled or scooped on to the fuel source.

3. Disadvantage: low effective range 3 to 5 feet - relative distance

4. Hazards: often confused with dry chemical or multi-purpose dry chemical extinguishers

## VI. Limitations of Extinguishers (1-6)

S-1-8

1. Have limited discharge distances
2. Carry a limited amount of extinguishing agent and requires refill source to recharge
3. May be only partially effective or totally ineffective
4. Limited discharge time

## Teaching Points

## Notes

5. Must be maintained and protected from damage
6. Expensive to use
7. The objective is to reach the fire and extinguish it but not disturb the fuel source

### VII. Care and Maintenance (1-7)

S-1-9

1. Authority: Article 38A *MD Fire Prevention Code* and NFPA 10, *Standard for Portable Fire Extinguishers*
2. Frequency
  1. Maintenance should occur at regular intervals
    1. Check annually at least
    2. Follow manufacturers= recommendations for specific type of extinguisher
    3. Perform a hydrostatic test of pressurized water and CO<sub>2</sub> extinguishers every 10 years. Dry chemical every 12 years in accordance with NFPA 10
  2. Conditions requiring maintenance
    1. When found necessary as a result of an inspection
    2. When the extinguisher has been used

## Teaching Points

## Notes

3. When there is evidence of tampering
  4. When there has been physical or mechanical damage
  5. When it has been exposed to any abnormal temperature, corrosive atmosphere or material
  6. When it is otherwise impaired as evidenced by leaking, etc.
- 
3. Procedure shall include thorough examination to determine the condition of the three basic elements of an extinguisher
    1. Mechanical parts
      1. Container or pressure vessel
      2. Other components
    2. Extinguishing agent
      1. Proper amount
      2. Condition
    3. Expelling means
      1. Amount of leakage of gas
      2. Condition of pump
  4. Record date of inspection or testing

## Teaching Points

## Notes

### VIII. General Rules (1-8)

S-1-10

1. It is important to practice operating a variety of extinguishers
2. Wear PPE/SCBA when necessary
3. Select proper extinguisher
4. Use compatible agents
5. Know application techniques
6. Work in pairs
7. Work systematically
8. Apply at the proper range so the agent reaches but does not disturb the fuel source
9. Apply from upwind position
10. Back away when extinguishment is accomplished

### IX. Practical Use of Fire Extinguishers (1-9)

S-1-11

Show the video, *Portable Fire Extinguishers* at this point, prior to the practical portion as a recap of lesson content.

1. Assign consecutive numbers to trainees
2. Set up fireground area
  1. Group extinguishers according to type
    1. Class A water extinguishers near the Class A fire area

Use the steps and procedures outline in IFSTA, pp. 140-144 as a guide for this section.

## Teaching Points

## Notes

2. Carbon dioxide extinguishers near the Class B fire area
  3. Dry chemical extinguishers near the Class B fire area, but not with the carbon dioxide extinguishers
  4. If an electrical motor prop is available with a propane or flammable liquid fuel source, simulate a Class C fire scenario with dry chemical
- 
2. Arrange Class A material into piles for burning
  3. Fill pan or drum halves with Class B liquid and water
- 
3. Practical use of extinguishers
    1. Pressurized water or pump tank types for Class A material
    2. Carbon dioxide type for Class B material
    3. Dry chemical type for Class B material
    4. AFFF type
  5. Combustible metals for igniting

### Instructor tasks:

- Ignite materials or liquid.
- Demonstrate activation, use, and attack procedures.

### Trainee tasks:

- #1 and #2 will demonstrate the activation, use, and attack procedures. (Although extinguisher may have already been activated, trainees will demonstrate how this is done.)
- #1 and #2 will move to a nearby area established by the field instructor where they can observe subsequent attacks by class members.
- #3 and #4 will follow the same procedure as above, and so on by twos until all have had a chance to use this extinguisher type.

### **Teaching Points**

### **Notes**

magnesium shavings

4. Critique
5. Clean up
6. Dismiss class

The instructor in charge will demonstrate that neither water nor dry chemical will extinguish the fire.

## Summary:

### Lesson 1: Application of Portable Fire Extinguishers

#### Student Performance Objective (SPO):

S-1-12

Given a selection of portable extinguishers, full personal protective equipment, and a controlled instructional environment, the student will be able to demonstrate the proper techniques of inspecting, selecting, and using portable extinguishers on Class A, B, and C fires, so that the correct extinguisher is used for the class of fire, the fire is extinguished completely, and safe operations are practiced. The student will perform to a final written test accuracy of at least 70%, will receive a satisfactory score as determined by a practical skills checklist, and will meet job performance requirements for NFPA 1001 (1997), JPR 3-3.15.

#### Review/Main Points:

S-1-13

- Purpose of Portable Fire Extinguishers
- NFPA Classification and Characteristics of Fuels
- Types of Agents
- Ratings of Extinguishers
- Types of Extinguishers
- Limitations of Extinguishers
- Care and Maintenance
- General Rules
- Practical Use of Fire Extinguishers

#### Evaluation:

**Oral Review:** Under each review point, recall and list three features from the discussion or list steps or safety features of each skill.

**Other Evaluation:** The student will be evaluated through the homework assignments, mid-term, and final written exams, which the student must successfully complete; will complete all the skill card checkoffs with sign-off by the instructor; and will complete the in-station skill sheets with company officer sign-off.

#### Assignment:

## Lesson 1 Homework Assignment

(JPR 3-3.15)

Complete the assignments listed below. Have a company officer print and sign one's name stating that the assignment was correctly completed.

**Part I**

Conduct an apparatus (all) inventory of the number(s) and types(s) of portable fire extinguishers carried on the apparatus in your company or station. This includes medical units, brush, tankers, aerials and towers, squads (light or heavy), and pumpers.

- 1. APW                    # \_\_\_\_\_      Type \_\_\_\_\_      Currently tested \_\_\_ yes \_\_\_ no
- 2. Pump tanks           # \_\_\_\_\_      Type \_\_\_\_\_      Currently tested \_\_\_ yes \_\_\_ no
- 3. Dry chemical        # \_\_\_\_\_      Type \_\_\_\_\_      Currently tested \_\_\_ yes \_\_\_ no
- 4. Dry powder          # \_\_\_\_\_      Type \_\_\_\_\_      Currently tested \_\_\_ yes \_\_\_ no
- 5. Halon                # \_\_\_\_\_      Type \_\_\_\_\_      Currently tested \_\_\_ yes \_\_\_ no
- 6. Foam                 # \_\_\_\_\_      Type \_\_\_\_\_      Currently tested \_\_\_ yes \_\_\_ no

**Part II**

What types of fire would you be equipped to extinguish based upon the aforementioned inventory that you conducted on your apparatus?

**Part III**

In the presence of a senior firefighter, company officer, or training officer, demonstrate the simulated extinguishment of a Class A, B, C, and D fire. Also, don the pump tank and demonstrate how to extinguish a Class A fire using water. Refill after use.

\_\_\_\_\_  
Student (please print name)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Company Officer (please print name)

\_\_\_\_\_  
Signature

Date \_\_\_\_\_