Appalachian
STATE UNIVERSITY
BOONE, NORTH CAROLINA 28608

Hot Work Program & Operational Guidelines

Environmental Health, Safety and Emergency Management
(828) 262-4008

HOT WORK INTRODUCTION

Purpose: This program is designed to recognize potential fire and explosion hazards and to minimize or eliminate fire hazards associated with hot work operations.

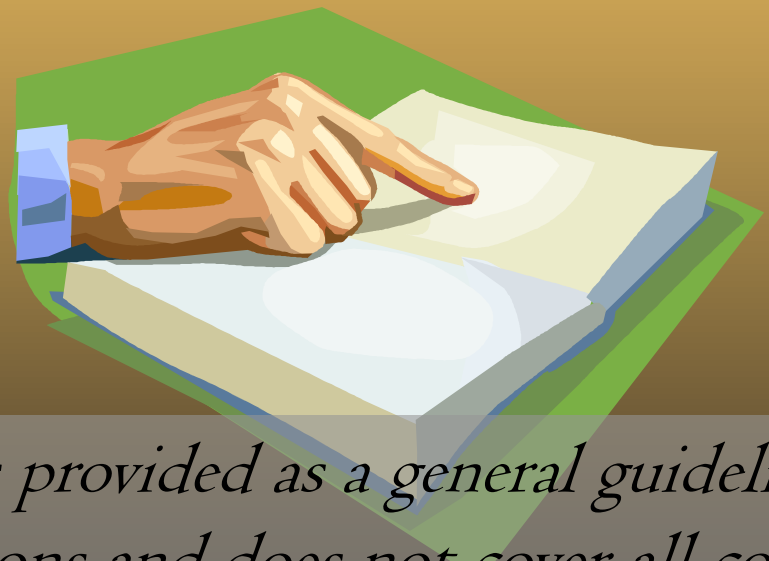
HOT WORK INTRODUCTION

This program applies to all ASU Employees conducting hot work, on University owned or leased property.

Note: This program is intended for areas that are not specifically designated as permanent hot work sites (i.e. mobile operations, construction & maintenance operations, etc.).

APPLICABLE REGULATIONS

- NC OSH Standard for General Industry1910.252
- NC Fire Prevention Code Chapter 26
- NFPA 51B



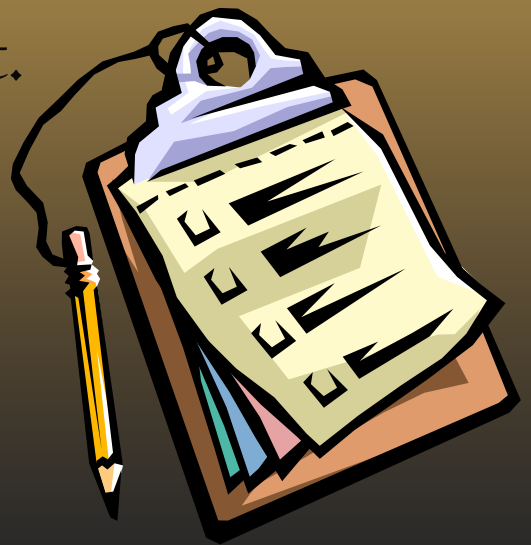
This program guide is provided as a general guideline for Hot Work operations and does not cover all code compliance issues.

HOT WORK IS DEFINED AS:

Operations including cutting, welding, thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar situation.

HOT WORK PROCEDURES

When it is necessary for an employee to perform any work such as welding, soldering, cutting, brazing, heating metal, etc., he/she is required to obtain a Hot Work Permit. The permit will only be valid until completion of the current job. Each new job will require a new permit.

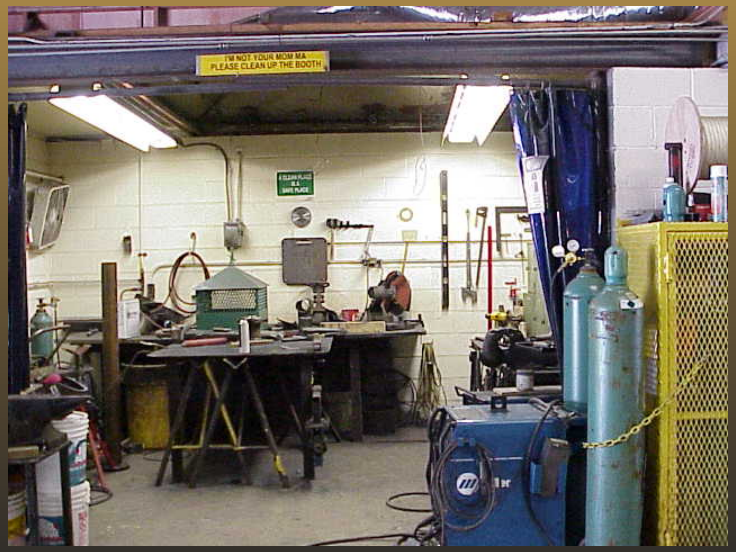


HOT WORK PROCEDURES

Hot Work Permits will be issued and signed by the supervisor or designee. After the permit precautions have been initiated and completed, the permit will be posted at the work site. At the completion of the work, the permit will be retained in the departmental files for a period of one year.

HOT WORK PROCEDURES

Hot work shall not be conducted in any area other than those specifically intended and designed for conducting hot work unless the area has been inspected and a Hot Work Permit has been issued to the person(s) who will be conducting the actual work.



HOT WORK - RESPONSIBILITIES

It is the responsibility of the employee(s) conducting Hot Work and their supervisor(s) to ensure fire protection and prevention procedures are applied to all Hot Work operations.

YOU YOU YOU YOU YOU SUPERVISOR YOU YOU YOU YOU YOU YOU YOU

HOT WORK PERMIT

APPALACHIAN STATE UNIVERSITY
CUTTING-WELDING-HOT WORK PERMIT

Date _____

Building _____

Floor & Department _____

Work to be done _____
_____
_____

Time Start _____ Completed _____

This permit expires _____

The precautions listed on the reverse side have been completed.
Permission therefore is granted for this work.

Signed _____/_____
Title

INSTRUCTIONS FOR SUPERVISOR/EMPLOYEE:
1. Confirm the precautions shown on next page.
2. Complete and retain form in departmental file for a period of one year.

SUPERVISOR/EMPLOYEE - MAINTAIN PERMIT IN CONSPICUOUS LOCATION DURING WORK

HOT WORK PERMIT

IS IT POSSIBLE TO DO THIS JOB IN THE MAINTENANCE SHOP?

DO NOT CUT, WELD, OR USE OTHER OPEN–FLAME OR SPARK-PRODUCING EQUIPMENT UNTIL THE FOLLOWING PRECAUTIONS HAVE BEEN CHECKED.

❑ Flame/spark-producing equipment has been inspected and found in good repair.
❑ Sprinklers are operational and will be in service during hot work.
❑ No sources of ignition are within a 35 foot radius of the work zone. Area is free of debris, including flammable liquids/vapors, lint, dust, or combustible materials. Non-removable items have been shielded/covered with metal guards or flame proofed curtains/covers (not ordinary tarpaulins).
❑ All floor and wall openings within 35 feet of hot work have been tightly covered.
❑ Surrounding floors have been swept clean and, if combustible, wet down.
❑ Combustibles on the opposite side of wall, partition, ceiling or roof have been relocated or a fire watch provided.
❑ Work is not being performed on walls, ceilings or roofs with combustible coverings or insulation.
❑ Work is not being performed on pipes or other metal in contact with combustible walls, partitions, ceilings, roofs, or other combustibles located close enough to cause ignition by conduction.
❑ Tanks/equipment previously containing materials that could develop explosive atmospheres have been purged. The absence of gases/vapors was verified by a combustible gas detection instrument. If there is a possibility of a leak developing in nearby piping, equipment, or tanks, the area will be continuously monitored.
❑ Ample extinguishing equipment (hand hose or extinguishers) have been provided for immediate use.
❑ Appropriate dept./bldg. personnel have been notified where/when hot work will be conducted.
❑ Appropriate personal protective equipment (goggles, shields, helmets, etc.) will be used by hot work employees and adequate ventilation has been provided.
❑ Responsible personnel assigned to watch for dangerous sparks in work area, and on floors above and below work zone. Personnel will patrol all areas, incl. floors above and below, during lunch and rest periods, and at least ½ hour after work has been completed.

TO REPORT A FIRE DIAL 911 OR 9-911 (FROM CAMPUS PHONES) OR USE THE FIRE ALARM PULL STATION LOCATED AT _____.

EQUIPMENT INSPECTION

The hot work operator shall handle equipment safely so as not to endanger lives and property:

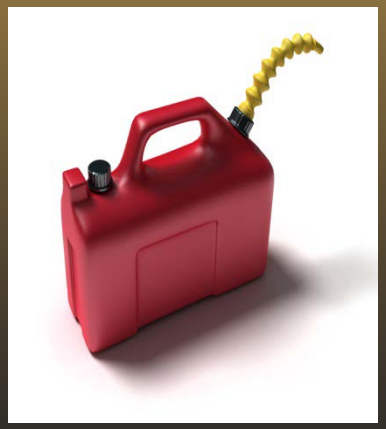
Only approved apparatus such as torches, regulators, pressure reducing valves, acetylene generators, machines, manifolds, cables and hoses in good repair will be used. Equipment must be inspected by the operator prior to use.

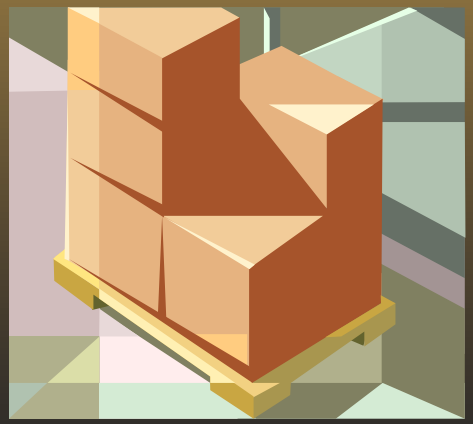
SPRINKLER PROTECTION

In buildings where sprinkler protection exists it will be fully operational while hot work is being performed. If hot work is to be done within 3 feet of automatic sprinkler heads, noncombustible sheet material or damp cloth guards will be used to temporarily shield the individual heads.

SOURCES OF IGNITION

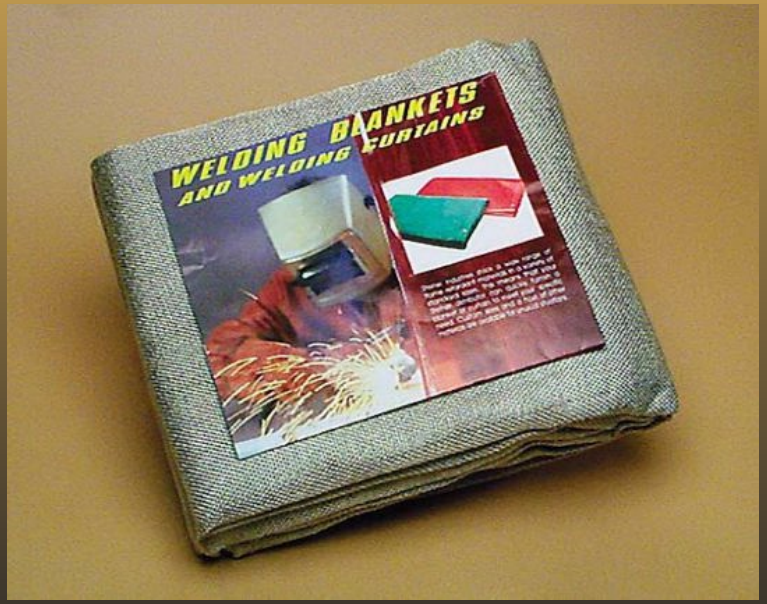
Remove all sources of ignition (combustible and flammable materials) within a 35 foot radius of the work area/hazard zone. Ensure that the area is free of debris and that flammable liquids or vapors, lint, dust, or combustible materials/storage are not at risk of ignition from sparks or hot metal.





NON-REMOVABLE ITEMS

If all fire hazards cannot be removed or relocation is impractical, then appropriate shielding or covers shall be provided to prevent sparks, slag, or heat from igniting fire hazards.



WALL AND FLOOR PROTECTION

Openings or cracks in walls, floors, ducts and shafts within 35 feet from the operation must be tightly covered to prevent the passage of sparks or slag.

Surrounding floors must be swept clean and, if combustible, wet down.

WALL & FLOOR PROTECTION

If hot work is conducted on one side of a wall, partition, ceiling, or roof, one of the following criteria shall be met:

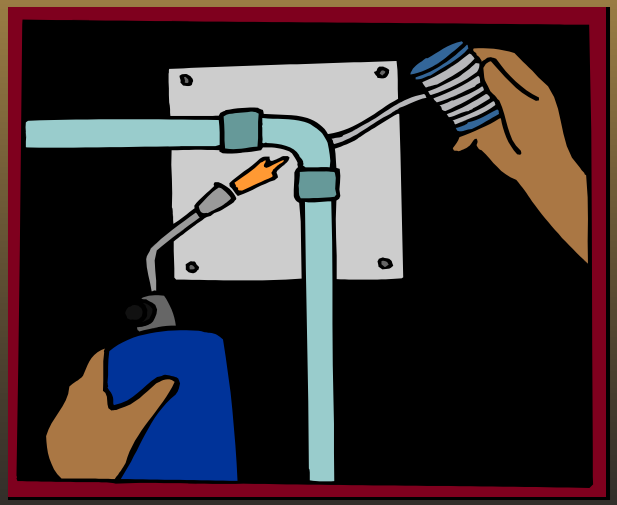
- Precautions shall be taken to prevent ignition of combustibles on the opposite side by relocating combustibles.
- If it is impractical to relocate combustibles, a fire watch shall be provided on the opposite side from where the Hot Work is being performed.

HOT WORK PRECAUTIONS

Hot work shall not be attempted on a partition, wall, ceiling, or roof that has a combustible covering or insulation, or on walls or partitions of Combustible sandwich-type panel construction.

HOT WORK PRECAUTIONS

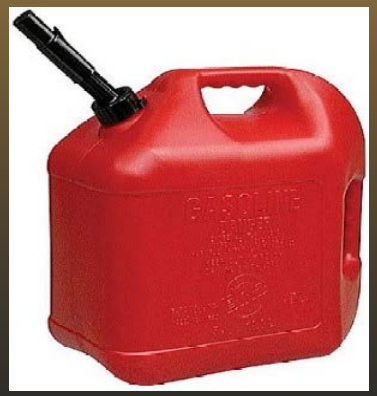
Hot work that is performed on pipes or other metal that is in contact with combustible walls, partitions, ceilings, roofs, or other combustibles, shall not be undertaken if the work is close enough to cause ignition by conduction unless shields or guards are provided to prevent ignition.



HOT WORK PRECAUTIONS

Hot work shall NOT be permitted in the following situations:

- In areas not authorized by management
- In sprinklered buildings where sprinklers are impaired.
- Where mixtures of flammable gases, vapors, liquids, or areas with an accumulation of combustible dusts which could develop explosive atmospheres.



HOT WORK PRECAUTIONS

Hot work shall not be permitted in the following situations:

- In the presence of uncleaned or improperly prepared drums, tanks, or other containers and equipment that have previously contained materials that could develop explosive atmospheres

HOT WORK PRECAUTIONS

- Smoke detectors in the immediate area may be bagged in order to prevent contamination of the head and reduce nuisance alarms.

- When a sprinkler or detector head is covered or bagged the personnel performing the work necessitating the covering/bagging will remove the cover/bag **immediately** after finishing the work.

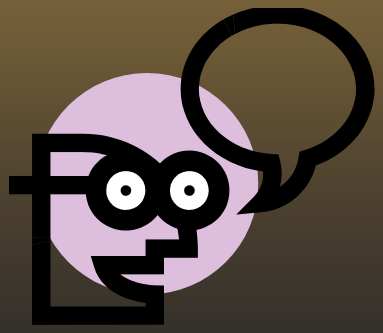
HOT WORK PRECAUTIONS

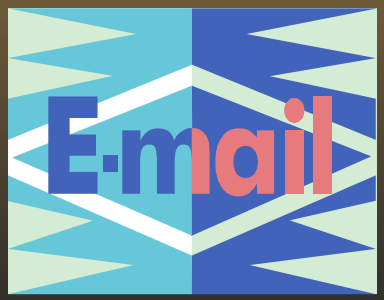
If work will extend throughout an entire day or for multiple days, the covers/bags will be removed any time the personnel conducting the work will be away from the work site for more than 30 minutes.

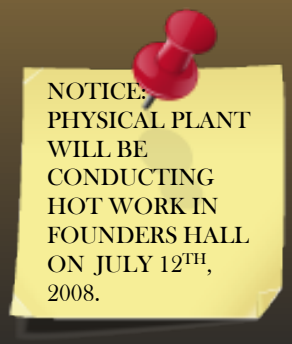
HOT WORK PRECAUTIONS

- Fully charged and operable fire extinguishers that are appropriate for the type of possible fire shall be immediately available at the work area.

- The employees and/or supervisor shall be responsible for notifying appropriate department/building personnel of the location(s) where hot work will be conducted in their building.







HOT WORK PRECAUTIONS

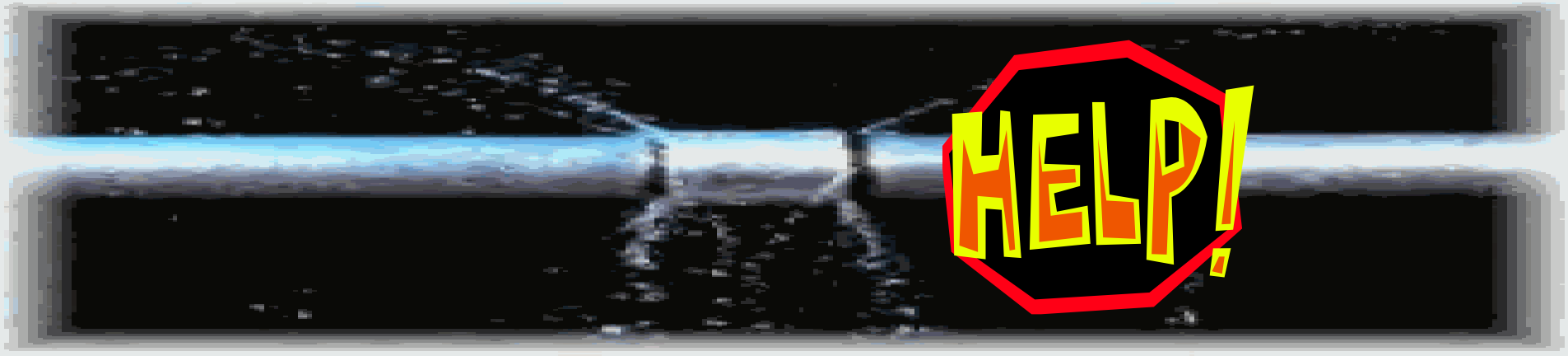
Appropriate personal protective equipment such as goggles, shields, helmets, etc. shall be utilized by the operator(s).

Adequate ventilation shall be provided during hot work operations.

HOT WORK PRECAUTIONS

Appropriate shielding shall be provided to protect non-workers from exposure to arcs (flash burn), slag, etc.

HOT WORK PRECAUTIONS



The operator shall cease hot work operations if unsafe conditions develop and shall notify management, or the area supervisor for a re-assessment of the situation.

HOT WORK –FIRE WATCH

A fire watch shall be provided during Hot Work activities, during lunch or rest periods and shall continue for a minimum of 30 minutes after the conclusion of the operation.

HOT WORK - FIRE WATCH

Fire Watch is defined as:

- Trained personnel who continuously patrol the effected area.
- Personnel should have immediate access to fire extinguishers and the ability to promptly notify Emergency Responders.
  (Dial 911 or 9-911 (from campus telephones).

HOT WORK – FIRE WATCH

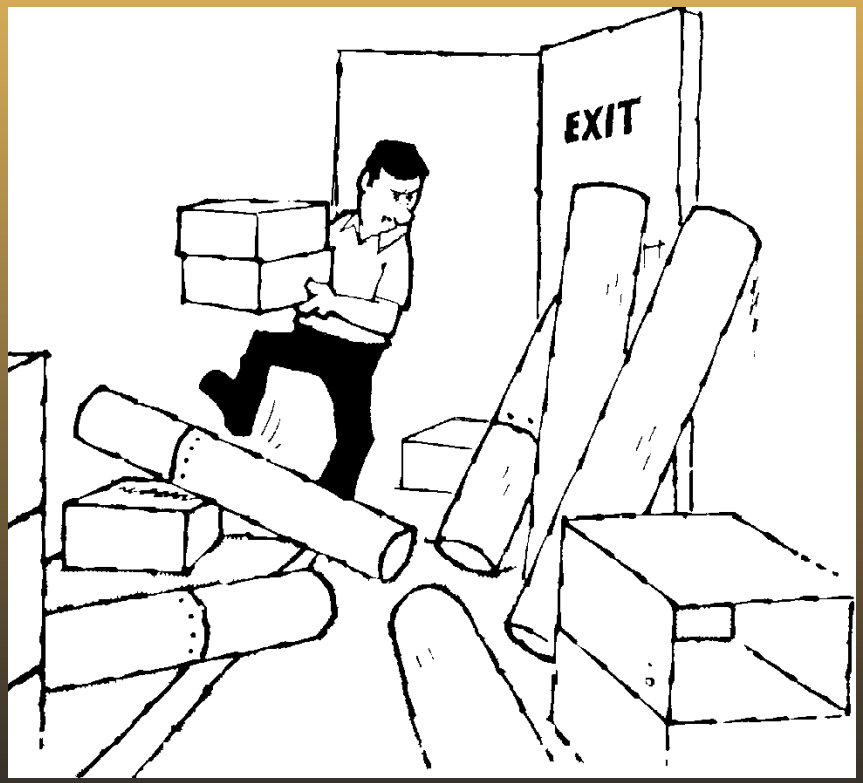
Responsibilities of Fire Watch Personnel:

- Ensure safe conditions are maintained during hot work operations.
- Have fire-extinguishing equipment readily available. Personnel should be trained in the use and capabilities of extinguishing equipment as well as the potential fire hazards associated with the hot work activities.

HOT WORK – FIRE WATCH

Responsibilities of Fire Watch Personnel:

- Ensure that egress routes and alarm systems are ready and available.



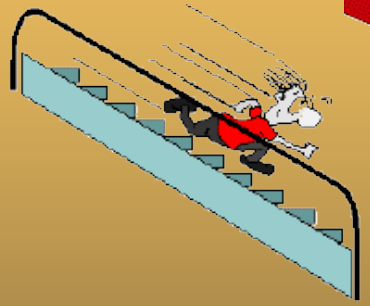
HOT WORK – FIRE WATCH

Individuals designated for the fire watch shall:

- Have the authority to stop the hot work operations if unsafe conditions develop.
- Be familiar with the facilities, procedures for sounding an alarm and contacting emergency personnel in the event of a fire.

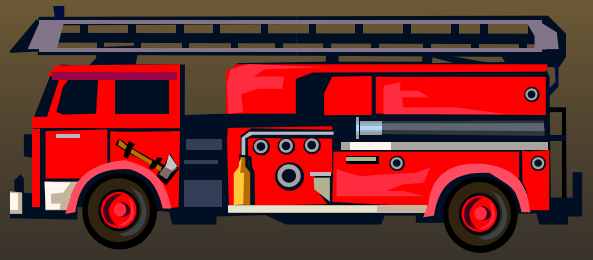
IF YOU DISCOVER A FIRE:

- Activate the fire alarm system



- Have others evacuate

- Report the fire by calling 911 or 9-911 (from campus telephones)



USE AN EXTINGUISHER ONLY IF:

- It won't place you in immediate danger
- The fire is in the incipient stage (trash can size or smaller)
- You know how to use it and you feel comfortable doing so

CLASSES OF FIRE

Class A: Wood, Cloth, Paper

Class B: Flammable Liquids (gasoline, diesel, oil, tar, oil based paints and lacquers)

Class C: Energized electrical equipment

Class D: Combustible Metals: Magnesium

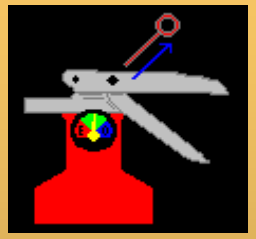
Class K: Deep Fat Fryer Oils

MOST PORTABLE EXTINGUISHERS ON CAMPUS ARE ABC EXTINGUISHERS

Type of extinguisher

How to use the extinguisher

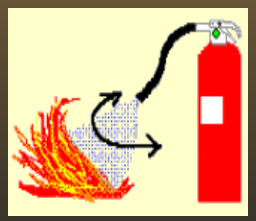
HOW TO USE A PORTABLE EXTINGUISHER:



P ull the pin

A im at the base of the fire

S queeze the handle



S weep the nozzle from side to side

WHEN USING AN EXTINGUISHER:

- Always keep an exit to your back and never attempt to use an extinguisher on a fire that could block your exit.

- If the extinguisher malfunctions or fails to extinguish the fire, evacuate the building immediately. Never go in search of a second extinguisher.

ALL fires no matter how small must be immediately reported to University Police and checked by the fire department.

HOT WORK IN CONFINED SPACES

The written Hot Work Permit shall be attached to the Confined Space Entry Permit. The Hot Work Permit becomes part of the written Entry Permit record that is reviewed annually. ASU's Confined Space Program can be obtained by contacting Ronnie Riddle with EHS&EM at 262-7649.

HOT WORK IN CONFINED SPACES

- Must have constant powered ventilation
- No compressed gas cylinders, other than SCBA's (utilized by rescue personnel) are allowed in confined spaces. Check hoses & leads for leaks & damage
- Must have approved Confined Space & Hot Work Permits before starting hot work

ASU - HOT WORK

Any

Questions?

ASU's Hot Work Program can be found at

www.ehsem.appstate.edu

This has been a presentation of the

Environmental Health, Safety and Emergency Management

APPALACHIAN STATE UNIVERSITY

For more information, please contact us at:

(828) 262-4008