Hazard Recognition in Scrap Recycling

Fire Safety and Prevention

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Hazard Recognition: Fire Safety & Prevention

In this class we will discuss and learn the following:

- Emergency Procedures
- Fire Extinguishers
- Ignition Sources
- Protection Systems
- General Housekeeping, Storage, & Miscellaneous
- Additional resources for employers

Learning Objectives

- Understanding the **types and stages of fire**
- Greater **awareness of fire hazards** in the workplace
- Fire **prevention techniques** specific to scrap recycling and MRF facilities
- Fire **management techniques** and emergency response
- Ways to improve your **emergency response** to fires
- To describe solutions to the various “real-world” hazard recognition scenarios presented to them in a group style project at the end of the class.

Hazard Recognition: Fire Safety & Prevention

Pre-Test

Choose the BEST Answer

Hazard Recognition: Fire Safety & Prevention

Pre-Test

All exit doors must open freely when the building is occupied.

True or False

Hazard Recognition: Fire Safety & Prevention

Pre-Test

What is the proper fire extinguisher type for a gasoline or diesel fuel fire?

A. Class A
B. Class B
C. Class C
D. Class D
E. All of the above

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Pre-Test

What is the proper fire extinguisher type for paper, wood or cardboard fires?

A. Class A
B. Class B
C. Class C
D. Class D
E. All of the above

Hazard Recognition: Fire Safety & Prevention

Pre-Test

Oxygen and propane cylinders can be stored together.

True or False

Hazard Recognition: Fire Safety & Prevention

Pre-Test

Fire doors can be propped or blocked open when the building is occupied.

True or False

Hazard Recognition: Fire Safety & Prevention

Pre-Test

Exit pathways only need to be clear and accessible during business hours.

True or False

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Pre-Test

Always approach fires…

A. From a distance
B. Upwind
C. With a means of escape behind you
D. All of the above

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Pre-Test

OSHA only requires fire prevention plan training for employees upon hiring or assignment to a new position.

True or False

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Pre-Test

What does the acronym RACE stand for?

A. Remove all victims, Alert responders, Confine the fire, Extinguish the fire
B. Remove all belongings, Ask for help, Catch the fire, Extinguish the fire
C. Run from the fire, Alert the neighbors, Call for backup, Extinguish the fire
D. Remove all victims, Alert responders, Catch the wind, Extinguish the fire

Hazard Recognition: Fire Safety & Prevention

Pre-Test

What does OSHA require as part of a fire prevention plan?

A. A list of all major hazards
B. Name or job title of employees responsible for controlling fuel source hazards
C. Type of fire protection equipment necessary to control each major hazard
D. All of the above

Hazard Recognition: Fire Safety & Prevention

Fire Issues in Scrap Recycling & MRF Facilities

Hazard Recognition: Fire Safety & Prevention

Issues include:

- Scrapped batteries (thermal runaway)
- Fluids in scrapped equipment (gasoline, diesel, hydraulic oil, etc.)
- Flammable/Combustible materials storage
- Fire detection systems
- General housekeeping
- Electric circuit overloading

Issues include:

- Fires starting on material transport vehicle
- Fires starting within a pile of stored material
- Fire starting while material is being processed
- Fires starting while doing maintenance projects including hot work

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Issues include:

- Policies and Plans
  - Fire Prevention Plan (FPP)
  - Emergency Action Plan (EAP)
  - Hot Work Permit (HWP)
- Fire Protection Systems
- Housekeeping & Storage

Issues include:

- Ignition Source Control
- Fuel Source Control
- Exits & Walkways
- Training and Drills
- Fire Department Response

Hazard Recognition: Fire Safety & Prevention

OSHA Regulations

OSHA and YOUR Rights

OSHA and your rights

OSHA's Whistleblower Protection Program enforces the whistleblower provisions of more than 20 whistleblower statutes protecting employees from retaliation for reporting violations of various workplace safety and health concerns.

Whistleblower Link

OSHA and your rights

In the event of:

- Firing or laying off
- Blacklisting
- Demoting
- Denying overtime or promotion
- Disciplining
- Denial of benefits
- Failure to hire or rehire
- Intimidation/harassment
- Making threats
- Reassignment affecting prospects for promotion
- Reducing pay/hours

You Have Protection

OSHA's Mission

With the Occupational Safety and Health Act of 1970, Congress created the Occupational Safety and Health Administration (OSHA) to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance.

Your Rights

The complaint should be filed as soon as possible after noticing the hazard or lack of compliance because OSHA citations may only be issued for violations that currently exist or existed in the past 6 months.

Complaints from workers or their representatives are taken seriously by OSHA. **OSHA will keep your information confidential.**

How to file a complaint:

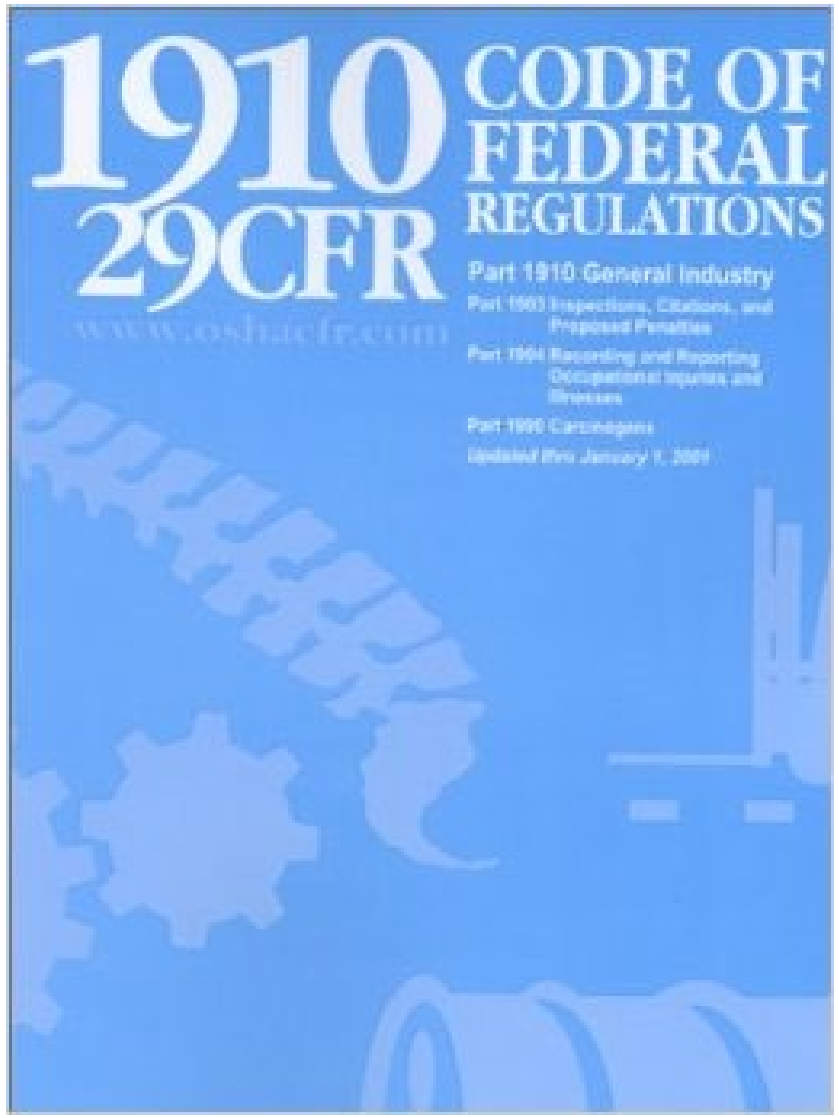
- By phone
- By fax
- Online
- In writing
- In person

<u>It is illegal for your employer to fire you for contacting OSHA</u>

OSHA Code of Federal Regulations

General Industry

[OSHA Website]



Hazard Recognition: Fire Safety & Prevention

Fire Safety & Prevention

Hazard Recognition: Fire Safety & Prevention

Issues related to fire safety and prevention

- Exit Routes and Emergency Planning (Subpart E)
  - Exit routes
  - Emergency action plans
  - Fire prevention plans
- Hazardous Materials (Subpart H)
  - Compressed gasses
  - Flammable liquids

Hazard Recognition: Fire Safety & Prevention

Issues related to fire safety and prevention

- Fire Protection (Subpart L)
  - Fire brigades
  - Portable fire extinguishers
  - Fire suppression systems
  - Alarm systems
- Welding, Cutting and Brazing (Subpart Q)
  - Hot Work Safety
  - Torching Safety

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Issues related to fire safety and prevention

- National Codes
  - OSHA
  - NFPA
  - 2021 International Fire Code (2021 IFC)
- State & Local Codes
  - Almost always based on national standards
  - Establish a working relationship with your local fire department

Hazard Recognition: Fire Safety & Prevention

Fire Prevention Planning

Fire Prevention Plan – Minimum Elements

The Fire Prevention Plan must include:

- A list of all major fire hazards
- Proper handling and storage procedures for hazardous materials
- Potential ignition sources and their control and type of fire protection equipment necessary to control each major hazard
- Procedures to control accumulations of flammable and combustible waste materials
- Procedures for regular maintenance of safeguards installed on heat-producing equipment

Fire Prevention Plan – Minimum Elements

The Fire Prevention Plan must include:

- The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires
- The name or job title of employees responsible for the control of fuel source hazards

The employer must inform employees upon initial assignment to a job of the fire hazards to which they are exposed. An employer must also review with each employee those parts of the fire prevention plan necessary for self-protection

Hazard Recognition: Fire Safety & Prevention

Emergency Action Planning

Workplace Emergencies

- Fires
- Toxic gas releases
- Chemical spills
- Radioactive issues
- Explosions
- Civil disturbances
- Workplace violence
- Floods
- Hurricanes
- Tornadoes
- Earthquakes
- Wildfires

Emergency Action Plan – Minimum Elements

The Emergency Action Plan should address those emergencies that the employer "**may reasonably expect**" in the workplace.

Emergency Procedures

Development of an Emergency Action Plan

- Evaluate your facility for hazards and plan for ways that you will address the hazards
- Emergency Action Plan must be SITE SPECIFIC with:
  - Emergency conditions evaluated,
  - Evacuation policies and procedures,
  - Emergency reporting mechanisms,
  - Alarm systems
- Include employees in the Planning and Development process of EAP
  - They can offer suggestions on:
    - Potential hazards
    - Worst-case scenarios
    - Proper emergency responses
  - Review plan with employees during and after the development phase

Emergency Procedures

Authority

- Choose a responsible individual to lead and coordinate your emergency plan and evacuation
- Work with local emergency officials
- Understand incident command and follow the authority structure during emergency

Emergency Procedures

Employee training and plan review

- Review plan with each employee
  - When initial plan is developed
  - When employee is initially assigned to the job
  - When employee's actions or responsibilities under the plan change
  - Re-train and practice evacuation drills

Emergency Procedures

Employee training and plan review

- Educate employees on:
  - Types of emergencies that may occur at the site
  - Processes and materials used onsite
  - Reporting procedures in event of emergency
  - Alarm systems, shutdown, and evacuation plans
  - Any special hazards onsite (flammable materials, toxic chemicals, radioactive sources, water-reactive substances)

Emergency Procedures

Employee training and plan review

Clearly communicate to your employees who will be in charge during an emergency to minimize confusion.

General training for your employees should also address the following:

- Individual roles and responsibilities.
- Threats, hazards, and protective actions.
- Notification, warning, and communications procedures.
- Means for locating family members in an emergency.

Emergency Procedures

Employee training and plan review

Clearly communicate to your employees who will be in charge during an emergency to minimize confusion.

General training for your employees should also address the following:

- Emergency response procedures.
- Evacuation, shelter, and accountability procedures.
- Location and use of common emergency equipment.
- Emergency shutdown procedures.

Emergency Procedures

Plan review, coordination, and update

- Once you have completed your emergency action plan, review it carefully with your employees and post it in an area where all employees will have access to it.
- The employer must review with each employee upon initial assignment those parts of the EAP and fire prevention plan (FPP) that the employee must know to protect him or herself in the event of an emergency.
- The written plans must be available to the employees and kept at the workplace. For employers with 10 or fewer employees, the plans may be communicated orally. [29 CFR 1910.38(b) and 29 CFR 1910.39(b)]

Emergency Procedures

Plan review, coordination, and update

- The plans should also be reviewed with other companies or employee groups in your building to ensure that your efforts will be coordinated with theirs, enhancing the effectiveness of your plan.
- In addition, if you rely on assistance from local emergency responders such as the fire department, local HAZMAT teams, or other outside responders, you may find it useful to review and coordinate your emergency plans with these organizations. This ensures that you are aware of the capabilities of these outside responders and that they know what you expect of them.

Emergency Procedures

Plan review, coordination, and update

- Operations and personnel change frequently, and an outdated plan will be of little use in an emergency.
- You should review the contents of your plan regularly and update it whenever an employee's emergency actions or responsibilities change, or when there is a change in the layout or design of the facility, new equipment, hazardous materials, or processes are introduced that affect evacuation routes, or new types of hazards are introduced that require special actions.
- The most common outdated item in plans is the facility and agency contact information. Consider placing this important information on a separate page in the front of the plan so that it can be readily updated.

Emergency Evacuation Plans – means of egress

Emergency Action Plan (EAP)

When an evacuation is necessary, you will need responsible, trained individuals who can supervise and coordinate activities to ensure a safe and successful evacuation. An EAP will be useful only if its content is up to date and employees are sufficiently educated and trained before an actual evacuation.

- Have a plan for all possible scenarios
- Train to the plan
- Review and update as needed

FIRE!!! Emergency Action Plan – Fight or Flee

- A fire is the most common type of emergency for which small businesses must plan.
- A critical decision when planning is whether or not employees should fight a small fire with a portable fire extinguisher or simply evacuate.
- Small fires can often be put out quickly by a well-trained employee with a portable fire extinguisher.
- However, to do this safely, the employee must understand the use and limitation of a portable fire extinguisher and the hazards associated with fighting fires.
- Evacuation plans that designate or require some or all of the employees to fight fires with portable fire extinguishers increase the level of complexity of the plan and the level of training that must be provided employees.

FIRE!!! Emergency Action Plan – Fight or Flee

- Choosing to evacuate the workplace rather than providing fire extinguishers for employee use in fighting fires will most effectively minimize the potential for fire-related injuries to employees.
- In addition, training employees to use fire extinguishers and maintaining them requires considerable resources.
- You can choose to evacuate during a fire rather than providing extinguishers. If you choose to provide extinguisher you must locate and identify them correctly, inspect and maintain them and train employees to use them effectively and SAFELY. Then include the last bullet point.
- However, other factors, such as the availability of a public fire department or the vulnerability of egress routes, will enter into this decision.

Emergency Action Plan – Fight or Flee

Option 1

Total evacuation of employees from the workplace immediately when alarm sound. No one is authorized to use available portable fire extinguisher.

Requirement

Establish an emergency action plan, fire prevention plan and train employees accordingly. Extinguishers are not existing and not required.

Option 2

Designated employees are authorized to use portable fire extinguishers to fight fires. All other employees must evacuate workplace immediately when alarm sounds.

Requirement

Establish an emergency action plan and train employees accordingly. Meet all general fire extinguisher requirements plus annually train designated employees to use fire extinguishers. Fire extinguishers in the workplace must be inspected, tested, and maintained.

Emergency Action Plan – Fight or Flee

Option 3

All employees are authorized to use portable fire extinguishers to fight fires.

Requirement

If *any* employees will be evacuating, establish an emergency action plan and train employees accordingly. Meet all general fire extinguisher requirements plus annually train all employees to use fire extinguishers. Fire extinguishers in the workplace must be inspected, tested, and maintained.

Option 4

Extinguishers are provided but not intended for employee use.

Requirement

Establish an emergency action plan, fire prevention plan and train employees accordingly. If fire extinguishers are left in the workplace, they must be inspected, tested, and maintained. Extinguishers are provided but not intended for employee use.

Emergency Procedures – questions to consider

- Does Fire Prevention Plan and Emergency Action Plan meet regulatory Guidelines?
- Are all employees trained on Fire Prevention Plan and Emergency Action Plan at least annually?
- Are Emergency Drills conducted at least annually on all shifts with Emergency and Evacuation maps posted?
- Are all employees trained on extinguisher use (including hands-on training annually?
- Does the facility have an effective Pile Management Plan?
- Is fire department access maximized to all areas of the facility at all times?

Hazard Recognition: Fire Safety & Prevention

Fire Suppression Methods

Protection Systems

- Early detection and rapid response is key to controlling the fire
  - Thermal cameras to detect heat spikes
  - Water cannons at key points of facility
  - Water deluge systems at areas most likely to have fires
- Is there an appropriate remotely monitored Smoke / Fire Detection System provided, working, and serviced annually?
- Are Fire Protection Systems inspected, tested, and maintained as required?

Types of Fires

- cloth
- wood
- rubber
- paper
- plastics

- gasoline
- grease
- oil

electrical fires

combustible metals

kitchen fires

Class A Fire

- "Class A fire" means a fire involving ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials

Class B Fire

- "Class B fire" means a fire involving flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials

Class C Fire

- “Class C fire" means a fire involving energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media

Class D Fires
Combustible Metals

- Some metals are combustible and will burn if exposed to heat
- These include:
  - Titanium
  - Magnesium
- These types of fires require special fire extinguishers

Class D Fire Extinguishers

- Class D fire extinguishers are designed to extinguish metal fires
  - Magnesium
  - Titanium

- Do not ever use water on a Class D fire
  - Can cause explosion and spread of the fire

Class D Fire

Do not put water on a Class D fire!

- SHOW Class D “real-world” fire fighting example along with training example - https://www.youtube.com/watch?v=gT9C-d-BfPk (relevant from 1’40” – 5’03”)

Fire Extinguishers

P – Pull the pin

A – Aim the nozzle toward the base of the fire

S – Squeeze the handle

S – Sweep the nozzle back and forth at the base of the fire

For Your Safety

A Weekly E-Mail Promoting the Health & Safety of Workers in the Scrap Recycling Industry

For Your Safety: P.A.S.S. When Using A Fire Extinguisher

Fire extinguishers are not an effective tool when it comes to battling large fires. They're not supposed to be. With their limited capacity they are designed to put out fires that are just starting or in the incipient stage. Any blaze larger than a small trash fire is too big to be fought with the average fire extinguisher. However, when used properly, a fire extinguisher can be used to knock down flames to reach an exit and get out of a burning building or vehicle. The easiest way to remember how to use a fire extinguisher is P.A.S.S. which stands for **P**ull the pin, **A**im, **S**queeze and **S**weep. Here's a quick review of how to operate a fire extinguisher.

Pull the pin that protects the handle at the top of the extinguisher.

Aim the nozzle toward the **base** of the fire.

Squeeze the handle to discharge the extinguisher. If you release the handle, the discharge will stop.

Sweep the nozzle back and forth at the base of the fire. After the fire appears to be out, watch it carefully because it may re-ignite!

As always, if you have any questions about using a fire extinguisher ask your supervisor. If you have the slightest doubt about your ability to fight a fire....EVACUATE IMMEDIATELY!

Fire Safety

- Know the location of your fire extinguishers
- Check the work area for fire hazards
  - Excess dust, trash overflowing, excess cardboard storage, leaking hydraulic oil…
- Understand basic fire extinguisher use

Fire Prevention

- Keep combustible and flammable material clear of **ALL** welding and torching operations

- Keep a fire extinguisher available when torching or welding

Fire Extinguishers

- Are they shown on maps, visually checked monthly, and are records kept?
- Are they serviced annually with records kept?
- Are they clearly identified and accessible?

Fire and Extinguisher Operation

Fire Triangle:

To understand how fire extinguishers work, you need to understand a little about fire. Fire is a very rapid chemical reaction between oxygen and a combustible material, which results in the release of heat, light, flames, and smoke.

For fire to exist, the following four elements must be present at the same time:

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

Risk Assessment – Portable Fire Extinguishers

- Portable fire extinguishers have two functions: to control or extinguish small or incipient stage fires and to protect evacuation routes that a fire may block directly or indirectly with smoke or burning/smoldering materials.
- To extinguish a fire with a portable extinguisher, a person must have immediate access to the extinguisher, know how to actuate the unit, and know how to apply the agent effectively. Attempting to extinguish even a small fire carries some risk.

Risk Assessment – Portable Fire Extinguishers

- Fires can increase in size and intensity in seconds, blocking the exit path of the fire fighter and creating a hazardous atmosphere. In addition, portable fire extinguishers contain a limited amount of extinguishing agent and can be discharged in a matter of seconds. Therefore, individuals should attempt to fight only very small or incipient stage fires.
- Prior to fighting any fire with a portable fire extinguisher you must perform a risk assessment that evaluates the fire size, the fire fighters evacuation path, and the atmosphere in the vicinity of the fire.

Risk Assessment – Portable Fire Extinguishers

Risk Assessment Question	**Characteristics of incipient stage fires or fires that can be extinguished with portable fire extinguishers**	**Characteristics of fires that SHOULD NOT be fought with a portable fire extinguisher (beyond incipient stage) - evacuate immediately**
Is the fire too big?	The fire is limited to the original material ignited, it is contained (such as in a waste basket) and has not spread to other materials. The flames are no higher than the firefighter's head.	The fire involves flammable solvents, has spread over more than 60 square feet, is partially hidden behind a wall or ceiling, or can not be reached from a standing position.
Is the air safe to breathe?	The fire has not depleted the oxygen in the room and is producing only small quantities of toxic gases. No respiratory protection equipment is required.	Due to smoke and products of combustion, the fire can not be fought without respiratory protection.

Risk Assessment – Portable Fire Extinguishers

Risk Assessment Question	**Characteristics of incipient stage fires or fires that can be extinguished with portable fire extinguishers**	**Characteristics of fires that SHOULD NOT be fought with a portable fire extinguisher (beyond incipient stage) - evacuate immediately**
Is the environment too hot or smoky?	Heat is being generated, but the room temperature is only slightly increased. Smoke may be accumulating on the ceiling, but visibility is good. No special personal protective equipment is required.	The radiated heat is easily felt on exposed skin making it difficult to approach within 10-15 feet of the fire (or the effective range of the extinguisher). One must crawl on the floor due to heat or smoke. Smoke is quickly filling the room, decreasing visibility.
Is there a safe evacuation path?	There is a clear evacuation path that is behind you as you fight the fire.	The fire is not contained, and fire, heat, or smoke may block the evacuation path.

Portable Fire Extinguishers

How a Fire Extinguisher Works:

- Portable fire extinguishers apply an extinguishing agent that will either cool burning fuel, displace or remove oxygen, or stop the chemical reaction so a fire cannot continue to burn. When the handle of an extinguisher is compressed, agent is expelled out the nozzle.

Portable Fire Extinguishers

Let's take a look at the label pictured. The classification is:

- 1-A:10-BC
- The letters (A, B, and C) represent the type(s) of fire for which the extinguisher has been approved.
- The number in front of the A rating indicates how much water the extinguisher is equal to and represents 1.25 gallons of water for every unit of one. For example, a 4-A rated extinguisher would be equal to five (4 x 1.25) gallons of water.
- The number in front of the B rating represents the area in square feet of a class B fire that a non-expert user should be able to extinguish. Using the above example, a non-expert user should be able to put out a flammable liquid fire that is as large as 10 square feet.

Types of Fire Extinguishers

Extinguisher Type	Type of Fire
 **Water** 	**Ordinary Combustibles** Fires in paper, cloth, wood, rubber, and many plastics require a water type extinguisher labeled A.
 **CO_2** **OR** 	**Flammable Liquids** Fires in oils, gasoline, some paints, lacquers, grease, solvents, and other flammable liquids require an extinguisher labeled B. **Electrical Equipment** Fires in wiring, fuse boxes, energized electrical equipment, computers, and other electrical sources require an extinguisher labeled C.
 	

Types of Fire Extinguishers

Extinguisher Type	Type of Fire
 Multi-Purpose 	**Ordinary Combustibles, Flammable Liquids, or Electrical Equipment** Multi-purpose dry chemical is suitable for use on class A, B, and C.
Class D	**Metals** Fires involving powders, flakes or shavings of combustible metals such as magnesium, titanium, potassium, and sodium require special extinguishers labeled D.
Class K 	**Kitchen Fires** Fires involving combustible cooking fluids such as oils and fats. *NOTE*: Your present fire extinguishing equipment may not put out a fire involving vegetable oil in your deep fat fryer.

Types of Fire Extinguishers

Water - Air-pressurized Water Extinguishers (APW)

Water is one of the most commonly used extinguishing agents for type A fires. You can recognize an APW by its large silver container. They are filled about two-thirds of the way with ordinary water, then pressurized with air. In some cases, detergents are added to the water to produce a foam. They stand about two to three feet tall and weigh approximately 25 pounds when full.

APWs extinguish fire by cooling the surface of the fuel to remove the "heat" element of the fire triangle. APWs are designed for Class A (wood, paper, cloth, rubber, and certain plastics) fires only.

Important:

- *Never use water to extinguish flammable liquid fires.* Water is extremely ineffective at extinguishing this type of fire and may make matters worse by the spreading the fire.
- *Never use water to extinguish an electrical fire.* Water is a good conductor and may lead to electrocution if used to extinguish an electrical fire. Electrical equipment must be unplugged and/or de-energized before using a water extinguisher on an electrical fire.

Types of Fire Extinguishers

CO_2 or Dry Chemical - Carbon Dioxide Extinguishers

This type of extinguisher is filled with Carbon Dioxide (CO_2), a non-flammable gas under extreme pressure. These extinguishers put out fires by displacing oxygen, or taking away the oxygen element of the fire triangle. Because of its high pressure, when you use this extinguisher pieces of dry ice shoot from the horn, which also has a cooling effect on the fire.

You can recognize this type of extinguisher by its hard horn and absent pressure gauge.

CO_2 cylinders are red and range in size from five to 100 pounds or larger.

CO_2 extinguishers are designed for Class B and C (flammable liquid and electrical) fires only.

Important:

- CO_2 is not recommended for Class A fires because they may continue to smolder and re-ignite after the CO_2 dissipates.
- Never use CO_2 extinguishers in a confined space while people are present without proper respiratory protection.

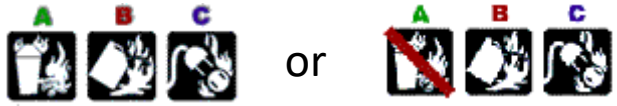
Locations:

Carbon dioxide extinguishers will frequently be found in industrial vehicles, mechanical rooms, offices, computer labs, and flammable liquid storage areas.

Types of Fire Extinguishers

Multi-purpose - Dry Chemical Extinguishers

- Dry chemical extinguishers put out fires by coating the fuel with a thin layer of fire retardant powder, separating the fuel from the oxygen. The powder also works to interrupt the chemical reaction, which makes these extinguishers extremely effective.
- Dry chemical extinguishers are usually rated for class B and C fires and may be marked multiple purpose for use in A, B, and C fires. They contain an extinguishing agent and use a compressed, non-flammable gas as a propellant.
- ABC fire extinguishers are red in color, and range in size from five pounds to 20 pounds.
- Dry Chemical extinguishers will have a label indicating they may be used on class A, B, and/or C fires.



or

Locations:

These extinguishers will be found in a variety of locations including: public hallways, laboratories, mechanical rooms, break rooms, chemical storage areas, offices, commercial vehicles, and other areas with flammable liquids.

Hazard Recognition: Fire Safety & Prevention

Hazard Recognition

Hazard Recognition: Fire Safety & Prevention

A fire prevention and management plan (Plan) should focus on the fire triangle:

- Fire requires the presence of a fuel source,
- an ignition source, and
- a substance that supports combustion—usually oxygen.

Hazard Recognition: Fire Safety & Prevention

To prevent fires, the plan should control or eliminate one or more of the three elements of the fire triangle.

Because a Plan is site-specific, each Plan must address the specific fire hazards and firefighting equipment associated with that site.

Hazard Recognition: Fire Safety & Prevention

- Know the potential ignition sources
- Know the potential fuel sources
- Create a control plan to minimize risk

- USE video HERE –
- https://www.youtube.com/watch?v=75_f6CjIcz8

Inbound Source Control

TYPICAL INBOUND CONTROL PLAN: AS RELATED TO FIRE PREVENTION

- **Sales force must be trained in the capabilities of the site and what the acceptance criteria is. They should visit the customer to review and audit their process.**
- **Ask customer to provide an SDS if possible.**
- **If using in-house truck drivers to pick up loads train them in acceptance criteria. They should know what to look for as unacceptable material during loading or should inspect the load if already loaded into a drop off trailer.**
- **On arrival, the truck is under the control of the Inbound Load Inspector.**

Inbound Source Control

- **The Inbound Load Inspector should be an experienced employee and know the types of hazards that they may encounter with particular attention for items that could start a fire.**
- **If load is dumped, it should be placed in an area away from the shredder or baler area first unless inspected by driver during loading.**
- **Other loads - Inbound Load Inspector examines as material handler sprinkles out load on the ground.**
- **Automobiles – either prep yourself or only take from a trusted supplier you have visited. Check trunk for hidden items (propane tanks, heavies, other non-conforming items).**
- **Retail customer unloads only with the Inbound Load Inspector present. (Look for ignition sources)**

Inbound Source Control

- Have good education and training programs to cover the types of materials that may be coming in to the facility.
- This may look like a standard automobile but it has an alternative fuel source.

Inbound Source Control

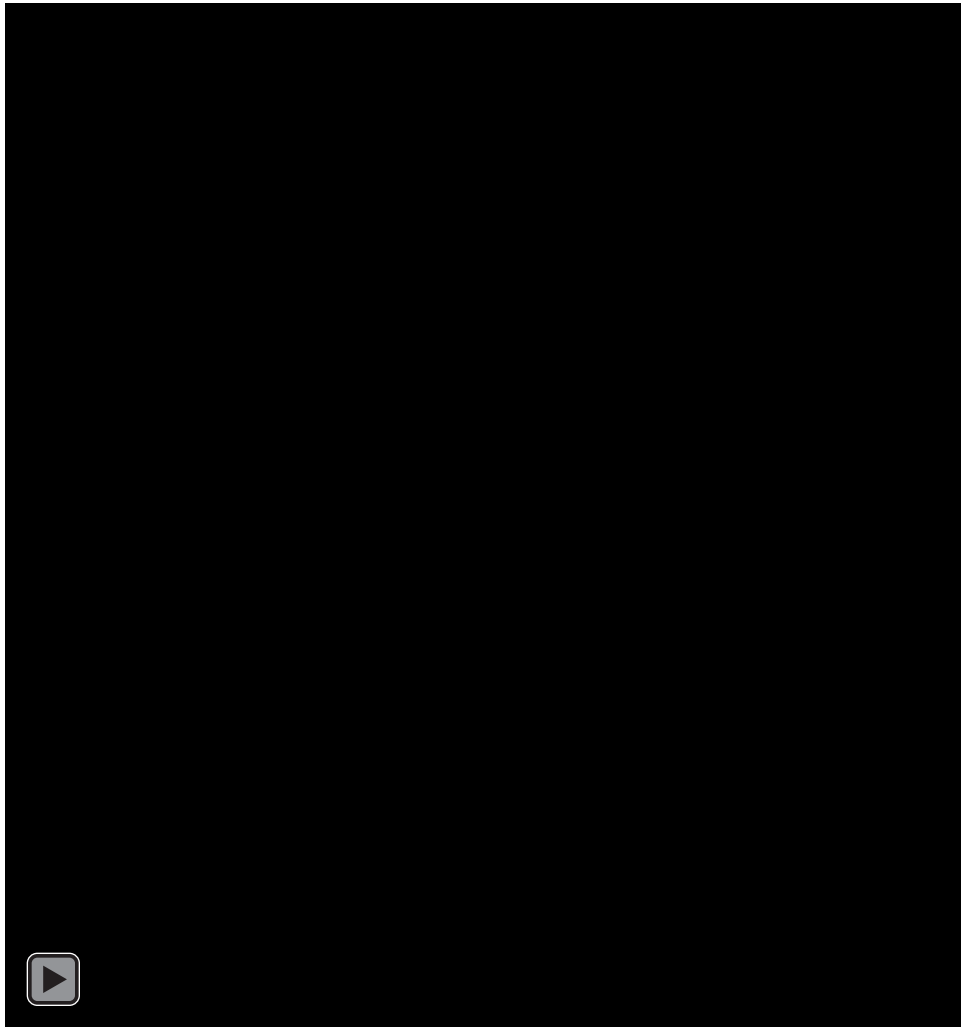
Alternative Fuel Vehicle

Fuel Source

Inbound Source Control

Inbound Source Control

- Example of thermal runaway on electric scooter battery



Ignition Source Control

- POLICIES: Smoking & torching in designated areas only?
- POLICIES: Hot Works Policy enforced & documented?
- Do you have an effective Inbound source control program?
- Is the fuel-fired equipment serviced annually?
- Is extension cord use controlled with no electrical outlet overloading?

Ignition Source Control

TYPICAL IGNITION SOURCES – CHECKLIST

- **Hot Work – Cutting, Burning, Welding, Grinding**
- **Sparks or Embers from above**
- **Smoking-areas**

Ignition Source Control

TYPICAL IGNITION SOURCES – CHECKLIST

- **Electrical – wiring systems, overheated circuits, heaters, cooling systems, microwave, convection ovens, coffee pots, any equipment powered by electricity**
- **Frayed or overloaded extension cords**
- **Lightning**

Ignition Source Control

- **Loose connections in high voltage systems**
- **Gas/propane fired building heaters or space heaters**
- **Portable open flame heaters where permanent systems could be used**
- **Spontaneous combustion – oily rags, etc.**
- **Batteries not properly removed from automobiles**
- **“Hot Pieces” from a shredder**

Ignition Source Control

- **Hot exhaust systems from trucks and mobile equipment**
- **Undischarged lithium batteries in cars, cordless power tools, children's toys, automatic sinks, Electric scooters, some grocery carts, E-scrap, cell phones, laptops, e-cigarettes, monitors. Any device powered by AAA or AA lithium batteries**
- **Stoves, ovens, barbeque grills with pushbutton igniters**
- **Friction from overheated bearings on conveyors, equipment due to lack of lubrication or large trucks when brakes do not release properly**
- **Wind driven embers from neighborhood fire**

- **LIST MUST BE SITE SPECIFIC TO YOUR OPERATIONS**

Listing and controlling ignition sources is required in the Fire Prevention Plan.

Ignition Source Control

Electrical panels for potential hot spots

Oil and grease build-up

Ignition Source Control

Frayed, pinched or loose wiring

Portable heaters (gas, electric, battery, etc.)

Ignition Source Control

Fuel Source Control

POSSIBLE FUEL SOURCES CHECKLIST: FIRE PLAN

- **Large Propane Storage tanks**
- **Propane cylinders – fork trucks**
- **Hydraulic fluid in equipment**
- **Paper - stored or in process**
- **Plastic – stored or in process**
- **Tire piles**

Fuel Source Control

- **Acetylene tanks for burning & welding**
- **Propane and/or Acetylene tanks for torching**
- **Oily rags**
- **Cardboard boxes – stored or in process**
- **Recyclables with gasoline, oil, grease, etc. not removed**
- **Stored material removed from cars prepped for shredding.**
- **Office supplies stored.**

Fuel Source Control

- **Fine particles of metals like aluminum, steel turnings, titanium, sodium, other**
- **Combustible dusts**
- **Fluff**
- **ASR**
- **Unemptied trash cans**

Fuel Source Control

- **Circuit board shredder fluff.**
- **Containers in workshop of oil, grease, hydraulic fluid, spray cans of lubricant, paint, degreaser.**
- **Parts washing stations.**
- **Dry Vegetation, leaves, grass**
- **Pallet storage**

- **LIST MUST BE SITE SPECIFIC TO YOUR OPERATIONS**

Create a checklist of Typical **Fuel Sources** that are specific to your location

Fuel Source Control

Safe storage of fuel gas

Practice safe storage of all flammable and combustible materials

Poor storage and housekeeping

Fuel Source Control

Poor storage and housekeeping

Hazard Recognition: Fire Safety & Prevention

Hot Work

(Awareness, permitting, and responsibilities)

Hot Work

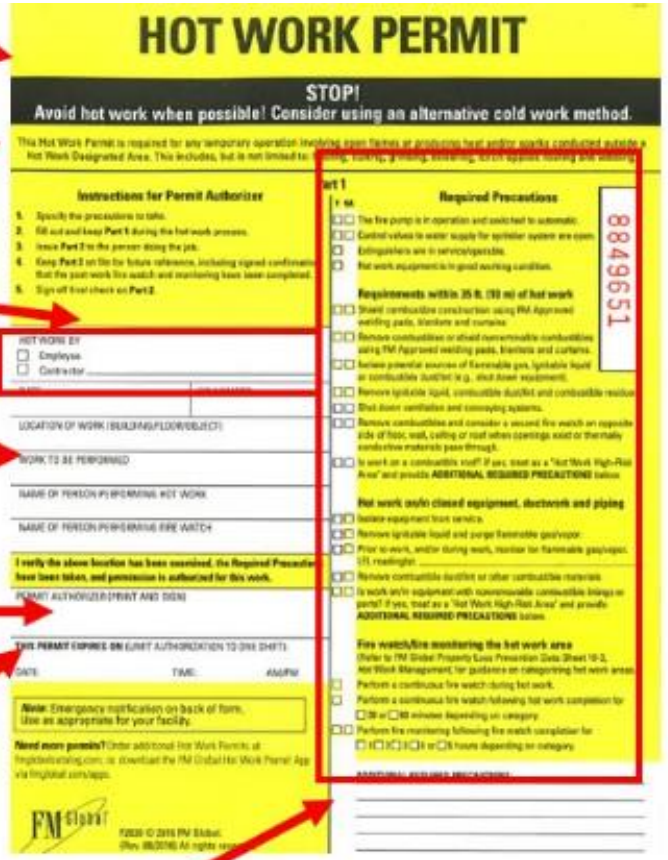
- What is hot work and hot work permitting?
  - Welding, cutting, grinding, or torching – these processes create sparks that have the potential to start a fire.
  - Hot work permitting helps the tradesperson to see the potential risk and mitigate it before beginning the hot work process.

Hot Work

Hot work is a process that involves welding, soldering, brazing, cutting, grinding, drilling and burning or melting metals or other substances such as glass. Use of open flame in the furnace or sparks or such ignition tools are considered hot work procedures. These types of work are fire hazards when flammable material is present or not. Hot work procedures may require the use of a hot work permit before the workers begin. Facility management will determine the need.

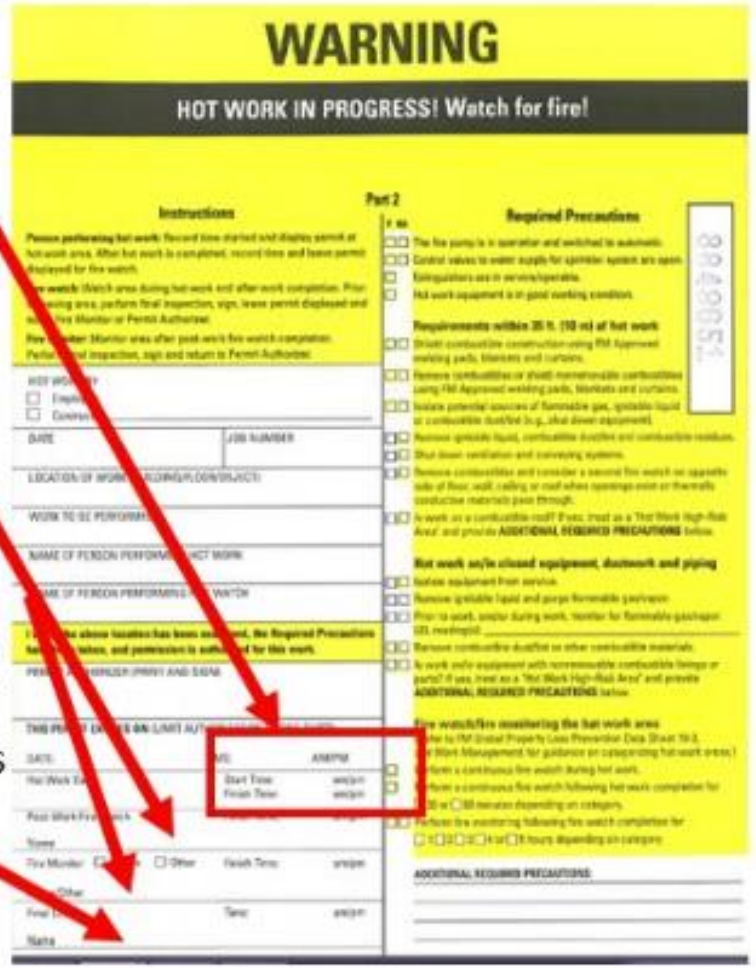
Hot Work Permit example

- Alternatives?
- Hot Work Definition
- Who's doing the work?
- What & where is the job?
- Who approved the start of work?
- When does the permit expire?
- Required Precautions Checklist



Hot Work Permit example

- After work is complete the completion time should be logged.
- After active fire watch and monitoring is complete the fire watch signs here.
- After the monitoring period is complete the supervisor collects permit and signs here.



Hot Work Permit

- Everyone should know their responsibilities with hot work operations
- Consider placing them where they are easily accessible
- Have a Fire Watch and a job Supervisor

Hot Work: Individuals

Responsibilities

- Ensuring that conditions are **safe and hazard free before commencing the hot work.**
- Verifying automatic fire protection systems (e.g., sprinklers) are in service if provided.
- Verifying onsite water supplies serving fire protection systems are in service (e.g., pumps in automatic mode and suction tanks full), if provided.

Hot Work: Individuals

Responsibilities

- Verifying there are no active or planned fire protection system impairments near the hot work area scheduled to occur during work, or during the post-work fire watch and monitoring periods. If protection is impaired or not provided and hot work that requires a permit is unavoidable, do the following:
  - Delay the work until protection is restored.
  - Treat the unprotected area as a hot work high-risk area and provide additional required precautions, which may include extra measures to ensure combustibles have been identified and removed or isolated; laying charged firefighting hoses and stationing trained firefighting personnel in the hot work area; increasing post-work watch and monitoring periods from; and/or requiring permit authorization by senior management.

Hot Work: Individuals

- Responsibilities
    - Being prepared to contact their supervisors should conditions change or warrant reassessment during the hot work project.
    - Using appropriate personal protective equipment (PPE) while performing hot work (welding helmet, gloves, jackets, chaps, etc.)
    - Completing the appropriate section(s) of the hot work permit.
    - Returning the completed hot work permit to their supervisor.

Hot Work: Firewatchers

Responsibilities

- Being aware of the inherent hazards involved in the hot work.
- Ensuring that safe conditions are maintained during the hot work.
- Ensuring that appropriate fire extinguishers are readily available.
- Knowing how to report a fire or other emergency situation.

Hot Work: Firewatchers

Responsibilities

- Maintaining the watch and monitoring period, after the work is completed.
- Using the appropriate PPE.
- Completion of the appropriate section of the hot work permit.
- Fire Watch shall be maintained for at least a half-hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires. See OSHA 1910.252(a)(2)(iii) - https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.252

Hot Work: Supervisors

- Responsibilities
    - Maintaining cutting or welding equipment in a safe operating condition.
    - Ensuring the precautions listed on the Hot Work Permit is understood by the person(s) performing the permitted cutting, welding or brazing operations.

Compressed Gas Cylinder Safety and Storage

https://youtu.be/ejEJGNLTo84

Video on Compressed Gas Cylinder Safety

Compressed Gas Cylinder Safety and Storage

- Always wear personal protective equipment (gloves, safety glasses, and safety shoes).
- Always use carts or hand trucks to move cylinders.
- Never lift cylinders by the cap.
- Keep cylinders stored out of high traffic areas or in areas where there are activities that could damage or contaminate the cylinders.

Hazard Recognition: Fire Safety & Prevention

General Housekeeping, storage, & misc

General Housekeeping, Storage, & Misc

Is storage at least 18” from sprinkler systems?

General Housekeeping, Storage, & Misc

Are flammable and/or combustible liquids and aerosols kept in approved cabinets or stored outside?

Poor Housekeeping Examples

General Housekeeping, Storage, & Misc

Do you have an approved cabinet to store flammable and/or combustible liquids and aerosols or are they stored outside?

General Housekeeping, Storage, & Misc

Are mechanical rooms, electrical, electronic, server, telephone and MCC rooms free of combustible storage?

General Housekeeping, Storage, & Misc

- Are mechanical rooms, electrical, electronic, server, telephone and MCC rooms free of combustible storage?
- Watch for oil spillage, fluff, or dust. These can create a fire risk.

General Housekeeping, Storage, & Misc

Are fire doors free of prop open devices?

General Housekeeping, Storage, & Misc

Are fire doors free of prop open devices?

General Housekeeping, Storage, & Misc

Are exits
clearly marked
and
accessible?

General Housekeeping, Storage, & Misc

Are hydraulic rooms clean and floors oil free?

General Housekeeping, Storage, & Misc

Are storage areas at least 3 ft. from lights, heaters, and electrical equipment?

General Housekeeping, Storage, & Misc

Housekeeping Procedures

Facilities must control the accumulations of flammable and combustible materials and any residues so that they do not contribute to a fire.

Control measures include:

a) Regular review of chemical usage and storage.
b) Flammable liquid storage & waste disposal procedures.
c) Combustible liquid storage & waste disposal procedures.
d) Paper, cardboard, plastic, & other combustible material storage & waste disposal procedures.

General Housekeeping, Storage, & Misc

Housekeeping Procedures

Facilities must control the accumulations of flammable and combustible materials and any residues so that they do not contribute to a fire.

Control measures include:

e) Maintaining container-labeling requirements.

f) Maintaining clear access to means of egress such as aisle way, exit doors, & exit discharge marking, definition, & maintenance procedures.

g) Electrical room and hydraulic room housekeeping & maintenance procedures.

h) Regular housekeeping audits of facility.

Hazard Recognition: Fire Safety & Prevention

Mobile Equipment - Housekeeping

- Look for weak spots on lines/hoses
- Be aware of sparking potential of bucket, forks, grapple, etc.
- Housekeeping must be maintained at high level
- Power wash the equipment regularly. Excess oil/grease buildup can turn an incipient stage fire in the equipment into a total loss.

Hazard Recognition: Fire Safety & Prevention

Trucking Equipment - Housekeeping

- Always complete DVIR looking for potential fire issues
- Maintain good brake condition
- Housekeeping must be maintained at high level in-cab and around the rest of the vehicle

General Housekeeping, Storage, & Misc

Is the facility free of housekeeping deficiencies?

Eliminate fire hazards

Employees are responsible for keeping unnecessary combustible materials from accumulating in the work area. Combustible waste should be “stored in covered metal receptacles and disposed of daily,” according to OSHA’s Hazardous Materials Standard (1910.106).

- The National Safety Council “Supervisors’ Safety Manual” includes these precautionary measures for fire safety:
- Keep combustible materials in the work area only in amounts needed for the job. When they are unneeded, move them to an assigned safe storage area.
- Store quick-burning, flammable materials in designated locations away from ignition sources.

General Housekeeping, Storage, & Misc

Is the facility free of housekeeping deficiencies?

Eliminate fire hazards

Avoid contaminating clothes with flammable liquids. Change clothes if contamination occurs.

Keep passageways and fire doors free of obstructions. Stairwell doors should be kept closed. Do not store items in stairwells.

Keep materials at least 18 inches away from automatic sprinklers, fire extinguishers and sprinkler controls. The 18-inch distance is required, but 24 to 36 inches is recommended. Clearance of 3 feet is required between piled material and the ceiling. If stock is piled more than 15 feet high, clearance should be doubled.

Hazards in electrical areas should be reported, and work orders should be issued to fix them.

Hazard Recognition: Fire Safety & Prevention

Collaboration with Local Fire Departments

(Knox box, facility layout, 911 working, training with them, providing training ops with them, cookouts, facility walkthroughs, etc.)

Hazard Recognition: Fire Safety & Prevention

Working with your local Fire Dept.

- Have a strong working relationship with your fire department.
- Ask them for input on signage, facility access, education & training.

Hazard Recognition: Fire Safety & Prevention

Working with your local Fire Department

- Help them to understand what you do at your facility.
- Consider conducting a fire pre-planning tour with fire responders. They can help identify potential issues.

Hazard Recognition: Fire Safety & Prevention

Employee Training

(Summary, re-cap, reg requirements, etc.)

Hazard Recognition: Employee Training

Fire Prevention Plan

Training, conducted on initial assignment, includes:

- How to recognize fuel sources and ignition sources,
- How fires start and spread,
- How to identify major hazards in their workplace,
- Know the controls that the company utilizes to reduce fire risk,
- Knowing YOUR role in the fire prevention process

If the facility manager has reason to believe an employee does not have the understanding required, the employee must be retrained.

Hazard Recognition: Employee Training

Fire Response and Suppression Equipment

Training, before an individual is assigned responsibility to fight an incipient stage fire, includes:

- Types of fires. – Covered in new hire safety orientation.
- Types of fire response equipment. – Covered in new hire safety orientation.
- Location of fire response equipment. - Responsibility of facility management.

Hazard Recognition: Employee Training

Fire Response and Suppression Equipment

Training, before an individual is assigned responsibility to fight an incipient stage fire, includes:

- How to use fire response equipment. - Responsibility of facility management.
- Limitations of fire response equipment.
- Proper care and maintenance of assigned fire response equipment.

Employees must demonstrate an understanding of the training and the ability to use the equipment properly before they are allowed to perform work requiring the use of the equipment.

Hazard Recognition: Employee Training

Hot Work, Firewatchers, and Authorization

Individuals Performing Hot Work and Firewatchers

- Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires. **1910.252(a)(2)(iii)(B)**

Hazard Recognition: Employee Training

Hot Work, Firewatchers, and Authorization

Hot Work Authorization

- Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations. He/she shall designate precautions to be followed in granting authorization to proceed preferably in the form of a written permit. **1910.252(a)(2)(iv)**

Hazard Recognition: Employee Training

Reporting of a Fire

The only way to prevent future fires is to understand the contributing factors of each fire. It is a good practice that every fire is reported, investigated, documented and action to prevent future fires is taken.

- Small fires could be a sign of a much larger fire just around the corner and it is critical that we look at any fire as a near miss and promptly report and investigate the fire. It is the responsibility of the facility manager to ensure every fire, no matter how small is promptly investigated, reported, reviewed and corrective action taken to ensure future fires can be prevented.
- Your facility should have a form for reporting fires. This document should be completed within one business day of a fire and sent to your EHS coordinator, Director of Safety, or other investigating committee.
- A copy of each completed report must be kept with the sites site specific FPP for annual review.

Hazard Recognition: Employee Training

- Have an accountability system in place
- Clear communication is important in any emergency situation
- The employee education and training program is the foundation to success in the job

Hazard Recognition: Fire Safety & Prevention

Scenarios Group Work

(recognizing potential ignition & fuel sources, discussion on Inbound Source Ctrls, USE monthly/annual checklist HERE)

Hazard Recognition: Fire Safety & Prevention

Post-Test

Choose the BEST Answer

Hazard Recognition: Fire Safety & Prevention

Post-Test

All exit doors must open freely when the building is occupied.

True or False

Hazard Recognition: Fire Safety & Prevention

Post-Test

What is the proper fire extinguisher type for a gasoline or diesel fuel fire?

A. Class A
B. Class B
C. Class C
D. Class D
E. All of the above

Hazard Recognition: Fire Safety & Prevention

Post-Test

What is the proper fire extinguisher type for paper, wood or cardboard fires?

A. Class A
B. Class B
C. Class C
D. Class D
E. All of the above

Hazard Recognition: Fire Safety & Prevention

Post-Test

Oxygen and propane cylinders can be stored together.

True or False

Hazard Recognition: Fire Safety & Prevention

Post-Test

Fire doors can be propped or blocked open when the building is occupied.

True or False

Hazard Recognition: Fire Safety & Prevention

Post-Test

Exit pathways only need to be clear and accessible during business hours.

True or False

Hazard Recognition: Fire Safety & Prevention

Post-Test

Always approach fires…

A. From a distance
B. Upwind
C. With a means of escape behind you
D. All of the above

Hazard Recognition: Fire Safety & Prevention

Post-Test

OSHA only requires fire prevention plan training for employees upon hiring or assignment to a new position.

True or False

Hazard Recognition: Fire Safety & Prevention

Post-Test

What does the acronym RACE stand for?

A. Remove all victims, Alert responders, Confine the fire, Extinguish the fire
B. Remove all belongings, Ask for help, Catch the fire, Extinguish the fire
C. Run from the fire, Alert the neighbors, Call for backup, Extinguish the fire
D. Remove all victims, Alert responders, Catch the wind, Extinguish the fire

Hazard Recognition: Fire Safety & Prevention

Post-Test

What does OSHA require as part of a fire prevention plan?

A. A list of all major hazards
B. Name or job title of employees responsible for controlling fuel source hazards
C. Type of fire protection equipment necessary to control each major hazard
D. All of the above

Hazard Recognition: Fire Safety & Prevention

Resource Section

Checklists, Web Links, and Videos

Hazard Recognition: Fire Safety & Prevention

Monthly Fire & Housekeeping Inspection Checklist

Monthly Fire and Housekeeping Inspection Checklist

Exterior Review

Date: Monthly ☐ Quarterly ☐ Annually ☐	Yes	No	N/A	Update
Do buildings with locked doors or fire doors have emergency exits?				
Review signs for fire and emergency equipment and emergency exits?				
• Is required signage in place, clean and maintained?				
Wind Sock, if applicable, is it in good working condition?				
Facility Signage Identifying:				
• All gates/entrances easily accessible?				
• All entry doors				
• All buildings (by address or number/letter)				
Smoking Areas:				
• Designated smoking area an adequate distance from all combustibles and structures in accordance with State and Local laws and regulations?				
• Consider providing a self-extinguishing device and employee use				
The above is directly from the 'Plan'. Below are additional items for consideration.				
Address clearly marked (5-inch letters, contrasting background, visible from road)?				
Emergency contact names and numbers posted at the property key entry points?				
All combustible materials (dumpsters, trash, pallets, tires, etc.) stored at least 5 feet from building openings and overhangs?				
Gas meters and piping (within 8 feet of public drive) protected from vehicular traffic?				
Fire hydrants(s) protected from damage and accessible and water supply is adequate?				
Adequate access to all buildings and areas for fire apparatus?				
Fire lanes posted and no less than 34 feet wide?				
Onsite fuel tanks adequately protected and labeled properly?				
Adequate fire extinguisher(s) placed by fuel tanks and charged (annual inspection)?				
Knox Box System present?				
Knox Box System keys and information up to date?				
Vegetation is managed around buildings to minimize fire fuel sources?				
Pallets and other combustible items not stored up against or higher than the building.				
Buildings clearly identified with signage at least 2' x 2' and contracting numbers/letters?				
Roof access identified with signage?				

Material Management Review

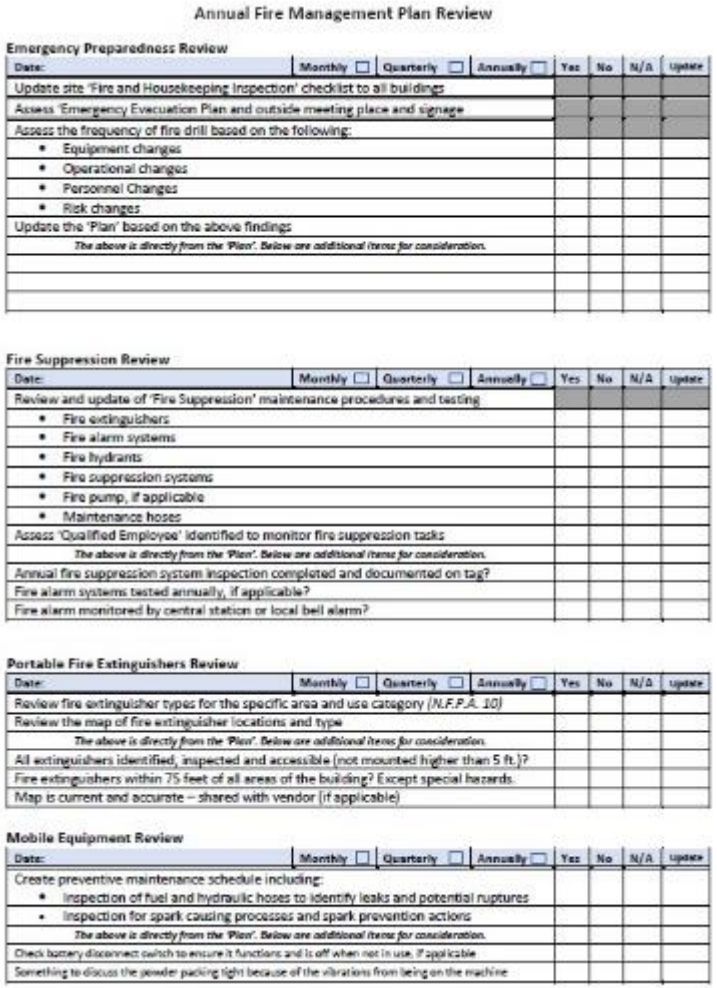
Date: Monthly ☐ Quarterly ☐ Annually ☐	Yes	No	N/A	Update
Assess Pile Management (per plan) including the following:				
• Do material piles have adequate distance apart and drive aisles for emergencies?				
• Do material piles have an acceptable height for firefighting access?				
• Are possible ignition sources and flammable materials kept separate from piles?				
• Are proper fire extinguisher and other fire suppression supplies close by pile?				
• Assess and eliminate surplus of hazardous and flammable materials (i.e. compressed gas cylinders, tires, batteries, pallets, etc.)				
• Assess inbound source-control plan				
The above is directly from the 'Plan'. Below are additional items for consideration.				

Interior Review

Date: Monthly ☐ Quarterly ☐ Annually ☐	Yes	No	N/A	Update
Assess 'Combustible Dust Hazard' plan				
• Dust and combustible debris not building up on surfaces and vent systems?				
Exit signs and emergency lights operational?				
Exit signs and emergency lights batteries in acceptable condition, if applicable?				
Exit signs and emergency lights on generator back-up and load tested, if applicable?				
All exit doors properly identified, operable, free of obstructions and unlocked during hours of operation?				
Aisles and exits free from obstructions?				
At least two clearly marked exits for areas, if applicable?				
Stairwells free of combustible storage?				
Fire doors self-closing and self-latching?				
Fire doors not propped opened or blocked?				
Inside storage of flammable or combustible liquids limited so that not more than 120 gallons of such liquids are stored in any one cabinet and not more than three cabinets located in the same storage area?				
Trash cans and other refuse containers dumped regularly?				
Compressed gas cylinders stored and secured properly?				
All extinguishers (per map) identified, inspected and accessible?				
No permanent use of extension cords or overloaded electrical outlets?				
Oxygen and acetylene stored separately or divided wall separating them?				
Fire Suppression Review				
Fire department connection (FDC) easily accessible and three-foot clearance?				
Fire department connection (FDC) clearly marked with sign?				
Fire suppression room identified with signage?				
Fire sprinkler control valves accessible (3 feet)?				
All valves open and locked?				
Fire suppression system inspections completed and documented on tag?				
Sprinkler heads have at least 18 inches clearance from storage				
Fire resistive construction free of penetrations and in good condition?				

Hazard Recognition: Fire Safety & Prevention

Annual Fire Management Plan Review



Annual Fire Management Plan Review

Emergency Preparedness Review

Date:	Monthly ☐	Quarterly ☐	Annually ☐	Yes	No	N/A	Update
Update site 'Fire and Housekeeping Inspection' checklist to all buildings							
Assess 'Emergency Evacuation Plan and outside meeting place and signage							
Assess the frequency of fire drill based on the following:							
• Equipment changes							
• Operational changes							
• Personnel Changes							
• Risk changes							
Update the 'Plan' based on the above findings							
The above is directly from the 'Plan'. Below are additional items for consideration.							

Fire Suppression Review

Date:	Monthly ☐	Quarterly ☐	Annually ☐	Yes	No	N/A	Update
Review and update of 'Fire Suppression' maintenance procedures and testing							
• Fire extinguishers							
• Fire alarm systems							
• Fire hydrants							
• Fire suppression systems							
• Fire pump, if applicable							
• Maintenance hoses							
Assess 'Qualified Employee' identified to monitor fire suppression tasks							
The above is directly from the 'Plan'. Below are additional items for consideration.							
Annual fire suppression system inspection completed and documented on tag?							
Fire alarm systems tested annually, if applicable?							
Fire alarm monitored by central station or local bell alarm?							

Portable Fire Extinguishers Review

Date:	Monthly ☐	Quarterly ☐	Annually ☐	Yes	No	N/A	Update
Review fire extinguisher types for the specific area and use category *(N.F.P.A. 10)*							
Review the map of fire extinguisher locations and type							
The above is directly from the 'Plan'. Below are additional items for consideration.							
All extinguishers identified, inspected and accessible (not mounted higher than 5 ft.)?							
Fire extinguishers within 75 feet of all areas of the building? Except special hazards.							
Map is current and accurate – shared with vendor (if applicable)							

Mobile Equipment Review

Date:	Monthly ☐	Quarterly ☐	Annually ☐	Yes	No	N/A	Update
Create preventive maintenance schedule including:							
• Inspection of fuel and hydraulic hoses to identify leaks and potential ruptures							
• Inspection for spark causing processes and spark prevention actions							
The above is directly from the 'Plan'. Below are additional items for consideration.							
Check battery disconnect switch to ensure it functions and is *off* when not in use, if applicable							
Something to discuss the powder packing tight because of the vibrations from being on the machine							

Electrical Systems

Date:	Monthly ☐	Quarterly ☐	Annually ☐	Yes	No	N/A	Update
Try to test electrical systems with thermography equipment to identify hot spots, loose connections and overloaded circuits.							
Identify the use of portable heaters and determine if permanent heating is needed							
The above is directly from the 'Plan'. Below are additional items for consideration.							

Material Management Review

Date:	Monthly ☐	Quarterly ☐	Annually ☐	Yes	No	N/A	Update
Develop or review Pile Management Plan including the following:							
• Do material piles have adequate distance apart and drive aisles for emergencies?							
• Do material piles have an acceptable height for firefighting access?							
• Are possible ignition sources and flammable materials kept separate from piles?							
• Are proper fire extinguisher and other fire suppression supplies close by pile?							
• Check local zoning codes for material height and access requirements?							
• Review site plan for pile size management during shutdown or market fluctuations and update as needed							
• Assess and eliminate surplus of hazardous and flammable materials (i.e. compressed gas cylinders, tires, batteries, pallets, etc.)							
Develop / Review site inbound source-control plan							
The above is directly from the 'Plan'. Below are additional items for consideration.							

Safe Work Practices

Date:	Monthly ☐	Quarterly ☐	Annually ☐	Yes	No	N/A	Update
Review 'Hot Work' program and adherence when hot work is performed							
Review 'Contractor Control' procedures for site hazards							
Assess site fire extinguisher use tag system and usage logs							
The above is directly from the 'Plan'. Below are additional items for consideration.							

Employee Training Review

Date:	Monthly ☐	Quarterly ☐	Annually ☐	Yes	No	N/A	Update
Annual fire department fire prevention planning tour completed?							
Annual fire and evacuation drill for all employee's conducted?							
Annual fire and evacuation drill for all employee's and fire department conducted?							
Incident Command used during fire drills and 'Transfer' of Command practiced?							
Review employee's with Incident Command (ICS-100) training and asses the need for additional employee training							
Review annual employee incipient fire training (OSHA 29 CFR 1910.157)							
Review annual 'Live' extinguisher training for emergency response team, with FD is possible							
Review employee 'Hazard Recognition' and 'Fire Inspection' training regularly							
The above is directly from the 'Plan'. Below are additional items for consideration.							

OSHA Resources

- **Training Requirements in OSHA Standards** - https://docs.google.com/viewer?url=https%3A%2F%2Fwww.osha.gov%2Fsites%2Fdefault%2Ffiles%2Fpublications%2Fosha2254.pdf
- **Recommended Practices for Safety and Health Programs** - https://docs.google.com/viewer?url=https%3A%2F%2Fwww.osha.gov%2Fsites%2Fdefault%2Ffiles%2Fpublications%2FOSHA3885.pdf
- **Resource for Development and Delivery of Training to Workers** - https://docs.google.com/viewer?url=https%3A%2F%2Fwww.osha.gov%2Fsites%2Fdefault%2Ffiles%2Fpublications%2Fosha3824.pdf
- **OSHA At-a-Glance** - https://docs.google.com/viewer?url=https%3A%2F%2Fwww.osha.gov%2Fsites%2Fdefault%2Ffiles%2Fpublications%2F3439at-a-glance.pdf

OSHA Resources

- **Emergency Exit Routes** - https://docs.google.com/viewer?url=https%3A%2F%2Fwww.osha.gov%2Fsites%2Fdefault%2Ffiles%2Fpublications%2Femergency-exit-routes-factsheet.pdf
- **Planning and Responding to Workplace Emergencies** - https://docs.google.com/viewer?url=https%3A%2F%2Fwww.osha.gov%2Fsites%2Fdefault%2Ffiles%2Fpublications%2Ffactsheet-workplaceevergencies.pdf
- **OSHA Fact Sheet on Fire Safety** - https://www.osha.gov/sites/default/files/publications/OSHA3527.pdf
- **Fire Service Features of Buildings and Fire Protection Systems** - https://docs.google.com/viewer?url=https%3A%2F%2Fwww.osha.gov%2Fsites%2Fdefault%2Ffiles%2Fpublications%2FOSHA3256.pdf