StateFire
Sales & Service

Fire Prevention & Protection
What is **Fire Prevention**?

“Measures and practices directed toward the prevention and suppression of destructive fires”.
Examples of Fire Prevention

• Training your employees is the first step in fire prevention. It is IMPERITIVE that they know what systems the have on your sites and how to use them properly in the event of a fire.

• Employees also need to know how to properly inspect their systems daily to ensure the equipment is going to work when needed.

• Preventative maintenance is a key to good fire prevention. Make sure the areas that have potential for fires are clean and free of flammable material. A good example of this is grease and oil accumulation on vehicles. You must have certified technicians performing the inspections on your equipment per NFPA/MSHA.
Mobile Equipment

• Here is an example of the training we provide for the operation and inspections on vehicle systems.

• In this training we pick an operator to come up and give us an example of what they are looking for on a pre op inspection. Afterwards we give them thorough rundown on what is required.

• We find this very beneficial to the operator. After we complete the inspection, we put them in what we call the “hot seat” and actually have them run through the motions on what to do in the event of a fire on their vehicle.
Fire Extinguisher Training

• Here is an example of a fire extinguisher demonstration that we provide.

• During this training we cover the proper inspection of the extinguishers, the different classes of fires, where extinguishers should be mounted and maintenance intervals (required by NFPA).

• After we cover those topics, we have them put out a live fire using the techniques they learned in the classroom. We generally find that most people have never actually used an extinguisher. It puts it into perspective on how important it is to have the proper training and the right size extinguisher for the fire they are trying to put out.
Fire Alarm Training

- We ensure that after we install a fire alarm system that our end users are comfortable with the panels and devices.

- They need to know where their devices are located and how to properly read the panel.

- We also train them on emergency evacuation in the event of a fire in their buildings.
On September 7, 2019, an operator was fatally injured on a mobile equipment fire which struck an MSHA initiative to prevent an accident like this happening again.
Coal Mine Fatality - On Friday, September 7, 2018, a 60-year-old haul truck operator with 1 year of total mining experience received burn injuries while attempting to escape from the cab of the burning haul truck he was operating. Due to complications associated with his injuries, the victim died five days later.

Best Practices:
**Preventing a fire is the best fire protection.** Install and maintain early fire detection and alarm systems on all haulage equipment that provide an audible and visible fire warning for miners to safely evacuate the equipment.

- Thoroughly examine all haulage equipment and repair safety defects before placing equipment into service. Follow the original equipment manufacturers maintenance recommendations.
- Check for accumulations of combustible materials, cracked or blistered hoses, and uninsulated wires.
- Be alert to changes in the way the equipment sounds or to a visible plume of exhaust coming from the exhaust system.
- Conduct risk assessments on all equipment to determine safe exit locations for required escape and evacuation plans.
• It is a common misconception that the inspections on vehicles is required every twelve months. The slides below will show what each manufacture requires along with NFPA and MSHA.

• It has been our experience that the customers who follow these guidelines have less problems with their fire suppression systems and a lesser chance for system failure if the vehicle were to catch fire.
Firefighting Equipment Inspection
30 CFR 56.4201, 57.4201, 77.1110, and 75.1100-3

30 CFR §56/57.4201 Inspection.
(a) Firefighting equipment shall be inspected according to the following schedules:
   (1) Fire extinguishers shall be inspected visually at least once a month to determine that they are fully charged and operable.
   (2) At least once every twelve months, maintenance checks shall be made of mechanical parts, the amount and condition of extinguishing agent and expellant, and the condition of the hose, nozzle, and vessel to determine that the fire extinguishers will operate effectively.
   (3) Fire extinguishers shall be hydrostatically tested according to Table C-1 or a schedule based on the manufacturer's specifications to determine the integrity of extinguishing agent vessels.
   (4) Water pipes, valves, outlets, hydrants, and hoses that are part of the mine's firefighting system shall be visually inspected at least once every three months for damage or deterioration and use-tested at least once every twelve months to determine that they remain functional.
   (5) Fire suppression systems shall be inspected at least once every twelve months. An inspection schedule based on the manufacturer's specifications or the equivalent shall be established for individual components of a system and followed to determine that the system remains functional. Surface fire suppression systems are exempt from these inspection requirements if the systems are used solely for the protection of property and no persons would be affected by a fire.
   (b) At the completion of each inspection or test required by this standard, the person making the inspection or test shall certify that the inspection or test has been made and the date on which it was made. Certifications of hydrostatic testing shall be retained until the fire extinguisher is retested or permanently removed from service. Other certifications shall be retained for one year.
Vehicle Inspection Intervals Per Ansul

Maintenance is a "thorough check" of the system. It is intended to give maximum assurance that the system will operate effectively and safely. It includes a thorough examination and any necessary repair or replacement. It will normally reveal if there is a need for hydrostatic testing of the tank.

Maintenance shall be performed semi-annually or sooner, depending on operating and/or environmental conditions. The fire suppression system including alarms, shutdown and associated equipment shall be thoroughly examined and checked for proper operation by the fire protection manufacturer, authorized distributor or their designee in accordance with this manual.
7.3 Maintenance.

7.3.1* A service technician who performs maintenance on an extinguishing system shall be trained and shall have passed a written or online test that is acceptable to the authority having jurisdiction.

7.3.1.1 The service technician shall possess a certification document confirming the requirements in 7.3.1 and issued by the manufacturer or testing organization that is acceptable to the authority having jurisdiction.

7.3.2* A service technician who has the applicable manufacturer’s listed installation and maintenance manual and service bulletins shall service the wet chemical fire-extinguishing system at intervals no more than 6 months apart as outlined in 7.3.3.

7.3.3* At least semiannually, maintenance shall be conducted in accordance with the manufacturer’s listed installation and maintenance manual.
Vehicle Inspection Intervals per AFEX

MAINTENANCE

INSPECTION INTERVALS
The AFEX Fire Suppression System is to be installed, inspected, maintained and tested in accordance with NFPA 17 and NFPA 17A, the National Fire Protection Association’s Standard for Dry Chemical and Liquid Agent Fire Extinguishing Systems. This Standard requires the following:
Vehicle System Inspections and Operation

DAILY FIRE SUPPRESSION INSPECTION AND ACTUATION

1. DAILY INSPECTIONS
Check the tubing, nozzles, nitrogen cartridges, and other system components for loose mountings or obstructions. Tighten as required.
Check the sensors and wiring for damage, broken wires or broken connections. Repair as required.
Ensure that all manual actuation rods are secured with a safety pin and seal.
Ensure that portable fire extinguishers are available and fully charged.
Check that any oil leaks or electrical problems on the vehicle are corrected.
Remove all debris accumulation from the vehicle’s protected areas.
The manual actuators are unobstructed.
The maintenance tag or certificate is in place.
No obvious physical damage or condition exists that might prevent operation.
Nozzle covers are intact and undamaged.
The manual actuators are unobstructed.
Ensure all hoses that are visible are in good shape and hooked up.
Check for chemical on or around the machine to ensure system has not been discharged.

In the Event of a Fire
In the event of a fire, remain calm, and do not panic. The actions taken by the operator can directly affect the effectiveness of the fire suppression system as well as the overall outcome of the fire.
1. Safely bring the vehicle to a complete stop in a safe location.
2. Turn off the machine’s motor and set the brake.
3. If safe to do so turn off the machine master switch after the fire is extinguished.

IMPORTANT: Failure to turn off the vehicle may:
- Allow the pumps to feed fuel or hydraulic oil onto the fire.
- Allow energized electrical circuits to re-ignite the fire.
- Allow the cooling system fan to exhaust some of the ABC dry chemical powder, thereby reducing effectiveness.
3. Manually actuate the fire suppression system.
a. Remove safety pin from actuator.
b. Strike push knob with force. Use a closed fist or the base of your palm to generate the most force.

IMPORTANT:
Even if your system is equipped with an automatic actuation package, DO NOT wait for the system to automatically actuate! Actuate the system manually as soon as you are safely parked with the engine off.
Common Deficiencies Found Upon Inspections on Vehicle Systems

Nozzles and caps

- If system is discharged, supply lines must be cleaned of all dry chemical to prevent plugging of lines
- All nozzles must be protected from the entrance of mud, coal dust, or rock dust
- Blow off caps must be in place
- LVS (liquid) nozzles will have blue caps
Common Deficiencies Found Upon Inspections on Vehicle Systems
Common Deficiencies Found Upon Inspections on Vehicle Systems

Chemical Distribution Hose

Rubbing on frame
Other Common Deficiencies Found upon Inspections on Vehicle Equipment

• Pull pins missing from actuators.
• Actuator knobs either broken or missing.
• No power to modules or modules are in fault.
• Systems have been tampered with by end users.
• Nozzles being relocated and not hitting target areas.
• Inspection tags missing from equipment.
• Nitrogen bottles missing from equipment.
Fire Extinguisher Inspections

Importance of inspection
- Daily and monthly inspections
  - Gauge, making sure yellow arrow is in the green. Make sure gauge doesn’t have water in it, or that there is no fading/damage.
  - Pull pin is in place, not bent, and that the tamper seal is not broken.
  - Labeling. Make sure that all labeling is read-able.
  - Annual sticker. Must have been serviced within one year of the last date serviced (to the day).
  - Condition of cylinder. Make sure that there is no rust or dents in the cylinder of the extinguisher. This is one of the most common reasons for an extinguisher failing inspection. Also be sure to check the rubber grommets on your fire extinguisher bracket. If any of these are missing their will be metal on metal rubbing.
  - Condition of hose. Make sure the end of the hose is not damaged or clogged with any insects/spider/debris. Make sure the hose is not damaged or cracked. Make sure that the hose is screwed on tight.
- Annual service
  - Do not let your extinguishers go past the one-year date (to the day). The common misunderstanding is that you have until the end of the month to get it done.
  - Make sure that your service company is certified and trained. Make sure that they are not re-certifying damaged extinguishers (most common mistake made).
The Importance of Knowing When to Use a Fire Extinguisher

- The Law states in NFPA 10 that every employer must train its employees in the proper use of a fire extinguisher.
The **WHEN**
When it Comes to Using a Fire Extinguisher

- The primary purpose of a fire extinguisher is to provide means of escape in the event of a fire.
- If your safety is in no way compromised by attempting to put out a fire, an extinguisher may be used to extinguisher a small fire.
- **PLEASE LEAVE THE FIRE FIGHTING TO THE FIRE FIGHTERS!!!!!**
The **HOW**

When it Comes to Using a Fire Extinguisher

- We have found the PASSS method to be the most effective teaching method.
- **P** pull the pin
- **A** aim the hose at the base of the fire.
- **S** squeeze the handle
- **S** sweep back and forth at the base of the fire
- **S** slowly. You might notice that this is something new that we have added. We have done this because the most common mistake that we have found is that in the situation of using a fire extinguisher adrenaline kicks in and that is when mistakes start to happen. In this event the individual needs to slow down from getting the fire extinguisher out of the bracket to sweeping back and forth. The most important thing is to stay calm and slow down what you are doing in order to stay safe.
- When walking away from the fire never turn your back on the fire. Slowly walk away backwards ready to continue extinguishing the fire if it reignites.
The Most Common Deficiencies Found with Fire Extinguishers

- Most common preventable extinguisher deficiency is damage to the extinguisher. We have found that missing gromets as earlier mentioned is causing unnecessary damage to fire extinguishers.
- Pull pins falling out and the extinguisher being accidentally actuated.
- Not enough extinguishers in a specific area.
- Improper placing of fire extinguisher based on the amount of combustible material in a area.
- Extinguishers improperly mounted. (height, location, signage)

The most hazardous deficiency is from not having the right kind of extinguisher for class B (flammable liquids) hazards.

In the NFPA 10 2018 edition on hand portable fire extinguishers. It discusses having an extinguisher with a minimum discharge rate of 1LB per second or greater to cover compressed flammable gasses and 3 dimensional fires I.E. fuel islands, fork lifts, oil storage areas. The standard common extinguishers do not meet this rating.
Common Deficiencies Found During Fire Extinguisher Inspections
Common Deficiencies Found During Fire Extinguisher Inspections
Common Deficiencies Found During Fire Extinguisher Inspections
NFPA 72 Inspecting and Testing for Fire Alarm

- **Purpose**
  - Initial & reacceptance – 14.2.1.1 – The purpose for initial and reacceptance inspections is to ensure compliance with approved design documents and to ensure installation in accordance with this code (NFPA 72) and other required installation standards.
  - Periodic Testing – 14.2.1.3 – The purpose for periodic inspections is to assure that obvious damages or changes that might affect the system operability are visually identified & 14.2.1.4, the purpose for periodic testing is to statistically assure operational reliability.

- **Impairments/Deficiencies.**
  - 14.2.2.2.3 If a deficiency is not corrected at the conclusion of system inspection, testing, or maintenance, the system owner or the owners designated representative shall be informed of the impairment in writing within 24 hours.

- **Responsibilities**
  - 14.2.3.1 The property or building or system owner or the owners designated representative shall be responsible for the inspection, testing, and maintenance of the system and for alterations or additions to this system.
  - 14.2.3.2 Where the property owner is not the occupant, the property owner shall be permitted to delegate the authority and responsibility for inspecting, testing and maintaining the fire protection systems to the occupant, management firm or managing individuals through specific provisions in the lease, written use agreement, or management contract.
  - Service Personnel Qualifications and Experience – Service personnel shall be qualified and experienced in accordance with the requirements of 10.5.3
    - 10.5.3 – Personnel, wither individually or through their affiliation with an organization that is registered, license, or certified buy the state or local authority, shall be recognized as qualified and experienced in the inspection, testing, and maintenance of the systems addressed within the scope of this code (NFPA 72)
Fire Alarm Visual Inspections

• Visual inspections of the fire alarm system are to be done weekly, monthly, semiannually, and/or annually in accordance with the testing frequency schedules listed in NFPA 72 14.3.1. The testing schedule can fluctuate depending on a local authority having jurisdiction (AHJ). Below are some common visual inspections:

• Control equipment – must be inspected to verify normal conditions which includes fuses, LEDs, power supply, and any trouble signals that may be present. Note – If you verify trouble or supervisory conditions, please contact a licensed professional(s) to repair the issue.

• Duct detectors, smoke detectors, and heat detectors must be checked on a semiannual basis. Note – When you are checking these devices you want to check them for any visual damage, if they are visibly dirty and if LED lights are blinking for operation. If applicable.

• Batteries – These must be checked on a monthly or semiannual basis depending on the type of battery for visible corrosion or leakage.
Common Deficiencies Found Upon Fire Alarm Inspections

- Painted devices
- Tampers not working
- Flow switch not working
- Pull Stations blocked
- Devices not tested
- Damaged devices
Fire Sprinkler Inspection Requirements

• MSHA Part 56-

• **56.4201 Inspection** - Water pipes, valves, outlets hydrants and hoses that are part of the fire mine’s fire fighting equipment shall be visually inspected at least once every three months for damage or deterioration and use tested at least once every twelve months to determine that they remain functional.

• Visual inspection at least once every three months and used tested at least once every twelve months.
What Does NFPA Require to be Inspected on a Fire Sprinkler System?

<table>
<thead>
<tr>
<th>Inspection</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauges</td>
<td>Weekly/Monthly</td>
</tr>
<tr>
<td>Control valves</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Waterflow alarm devices</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Valve supervisory alarm devices</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Supervisory signal devices</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Hydraulic nameplates</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Buildings</td>
<td>Annual (prior to freezing weather)</td>
</tr>
<tr>
<td>Hangers and seismic bracing</td>
<td>Annually</td>
</tr>
<tr>
<td>Pipe and fittings</td>
<td>Annually</td>
</tr>
<tr>
<td>Sprinklers</td>
<td>Annually</td>
</tr>
<tr>
<td>Spare Sprinklers</td>
<td>Annually</td>
</tr>
<tr>
<td>Information Signs</td>
<td>Annually</td>
</tr>
<tr>
<td>Fire Department Connections</td>
<td>Annually</td>
</tr>
<tr>
<td>Valves (all types)</td>
<td>Annually</td>
</tr>
<tr>
<td>Obstruction, Internal Inspection of piping</td>
<td>5 years</td>
</tr>
</tbody>
</table>
## Testing and Maintenance of the Sprinkler System

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterflow devices</td>
<td>Semi-Annually</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Semi-Annually</td>
</tr>
<tr>
<td>Vane and pressure switch type devices</td>
<td>Semi-Annually</td>
</tr>
<tr>
<td>Valve supervisory alarm devices</td>
<td>Semi-Annually</td>
</tr>
<tr>
<td>Supervisory signal devices</td>
<td>Semi-Annually</td>
</tr>
<tr>
<td>Main Drain</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Antifreeze solution</td>
<td>Annual</td>
</tr>
<tr>
<td>Gauges - calibrated or replaced</td>
<td>5 years</td>
</tr>
<tr>
<td>Sprinklers – Extra High Temperature</td>
<td>Sample Test 5 years</td>
</tr>
<tr>
<td>Sprinklers- Fast Response</td>
<td>Sample Test 20 years- Every 10 years thereafter</td>
</tr>
<tr>
<td>Sprinklers</td>
<td>At 50 years – Sample test- every 10 years thereafter</td>
</tr>
<tr>
<td>Sprinklers- Dry</td>
<td>At 75 years – Sample test- every 5 years thereafter</td>
</tr>
<tr>
<td>Sprinklers- Dry</td>
<td>At 10 years – Sample test- every 10 years thereafter</td>
</tr>
</tbody>
</table>

### Maintenance

<table>
<thead>
<tr>
<th>Component</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valves (all types)</td>
<td>Annually</td>
</tr>
<tr>
<td>Low point drains (dry piped systems)</td>
<td>Seasonal</td>
</tr>
</tbody>
</table>
Who Can Perform Quarterly or Fire Sprinkler Inspections?

- In the State of Nevada
- **NAC 477.460 Inspections and testing. (NRS 477.030)**

1. Each automatic fire sprinkler system must be inspected quarterly. One of the quarterly inspections must be termed an annual inspection and be conducted in accordance with the provisions of subsection 2. The other quarterly visual inspections may be conducted by any responsible person, including an employee of a licensed firm, who, in the opinion of the authority having jurisdiction, has sufficient knowledge of the system to conduct such inspections. The quarterly inspections must conform to the requirements of N.F.P.A. Standard 13, 2013 edition, and Standard 25, 2011 edition. Records of inspection must be kept on-site for review by the State Fire Marshal and the authority having jurisdiction.

2. The annual inspection must be made by a qualified registrant who is an employee of a licensed firm for automatic fire sprinkler systems. The annual inspection must comply with the standards and publications described in subsection 1.
Common Deficiencies Found Upon Fire Sprinkler Inspections
Common Deficiencies Found Upon Fire Sprinkler Inspections
What is Fire Protection?

• “Measures taken to prevent fire from becoming destructive, reduce the impact of an uncontrolled fire, and save lives and property”.

• https://www.youtube.com/watch?v=ZoyQvAaqB5E
The Different Kinds of Fire Protection Systems We Provide

• Fire Extinguishers
• Restaurant Systems
• Paint Booth Systems
• Vehicle Systems
• Fire Sprinklers
• Fire Alarms
• Fire Door & Smoke Detection
• Emergency Lighting
• Hood Cleaning
What to Look for When Selecting a Fire Suppression System for a Vehicle

• It is very important to complete a fire risk assessment first.
• After the fire risk assessment and the hazards have been identified the manufacturer of the FSS should be contacted to give recommendations.
• Make sure the system you chose is UL listed and FM approved.
• Ensure the technicians performing the installation/service are licensed and authorized distributors.
• Follow the manufactures recommendations.
Example of a Manufacture Specification Sheet
What is Needed to Install a Fire Alarm/Sprinkler System

• What is the buildings occupancy type.
• Does the building have full sprinkler coverage.
• How big is the building.
• Have plans designed and load calculations done.
• Obtain permit from the Fire Marshall before installation.
• Have at least one licensed tech on site during installation.
• Make sure the installer is certified on the equipment they are installing.
What to Look for When Selecting a Fire Extinguishers for Your Vehicle or Building

• Identifying the level of hazard is more important than size of area
  • Light hazard
  • Ordinary hazard
  • Extra hazard
    • Most areas will fall under this. E.I.: Any area containing more than five gallons of flammable liquids.
      • Even most houses fall under this.
Questions???