

# **Fire Prevention and Protection**

**MSC-PRAC-30474**

**Revision 0**

**Effective Date: January 8, 2010**

**Topic: Safety and Health**

## Fire Prevention and Protection

**PURPOSE** This practice identifies a key aspect of the Mission Support Alliance (MSA) Safety and Health (S&H) program, and establishes requirements for the fire prevention and protection program, including life safety code standards.

**SCOPE** This practice includes the following major sections:

- General Requirements
- Responsibilities
- Fire Protection
- Life Safety (including cargo containers)
- Training

The requirements of this practice are consistent with the requirements published in the Hanford Mission Support Contract (MSC) Safety and Health virtual manual.

**APPLICATION** This practice applies to MSA construction personnel.

**GENERAL REQUIREMENTS** Records generated during the performance of this activity are to be included in the Construction Work Package and will be managed in accordance with [MSC-PRAC-30374](#), *Construction Work Package*.

**Construction Permits** A “construction permit” is obtained from the Hanford Fire Department (HFD) Fire Marshal by MSA project or construction management (at least) 5 days before starting work. (The MSA Construction Supervisor/Superintendent obtains this permit for subcontractors and sub-tier contractors.)

**Flammable/Combustible Liquids** Refer to practice [MSC-PRAC-30473](#), *Hazardous Materials and Flammable/Combustible Liquids* for requirements regarding storage and use of these liquids.

**Flammable Gases** Refer to practice [MSC-PRAC-30483](#), *Compressed Gas Operations* for requirements regarding storage and use of these gases.

**Controlling Hot Work** Requirements for welding, cutting, and heating permits are defined in practice [MSC-PRAC-30487](#), *Controlling Hot Work*.

**Control of Combustibles** Maintain at least 460 millimeters (18 inches) vertical clearance between the top of storage and sprinkler head deflectors.

## Fire Prevention and Protection

Limit accumulations of combustible materials to the quantity required for current needs.

Separate combustibles from ignition sources.

Use noncombustible or fire-retardant materials whenever possible.

### Housekeeping

Dispose of empty crates and containers as soon as possible.

Keep inside stockpiles of combustible construction materials to a minimum.

Provide Underwriters' Laboratory (UL)-listed or FM Global-approved containers for flammable or combustible liquids and for cloths, rags, or waste soaked with flammable or combustible materials. Empty trash and rag containers daily.

Refer to practice [MSC-PRAC-30458](#), *Office Safety* for specific requirements associated with office environments.

## RESPONSIBILITIES

### Fire Protection Program Overview

The purpose of the fire protection and prevention program is to ensure that a fire does not cause an unacceptable onsite or offsite release of hazardous material, or threaten employee health or safety, public health or safety, or the environment.

The responsibilities of those charged with administering the fire protection program are listed in this section.

### Construction Manager

#### Construction Manager:

- Implement the fire protection program for the project.
- Investigate and take corrective actions to prevent the recurrence of fires.

Report fire and property loss according to practice [MSC-PRAC-30467](#), *Event Investigation and Reporting*.

- Ensure that containment systems located in nuclear nonreactor facilities are protected from fires.

## Fire Prevention and Protection

**MSA Construction  
Building  
Administrators**

Building Administrators:

- Ensure that the requirements in this practice are met in buildings under their control, with the support of S&H.
- Prepare requests for exemptions or equivalencies to fire protection requirements with support from MSA Fire Protection Engineering (FPE) and obtain the project director's approval. They also coordinate with the local fire department to ensure implementation of fire equipment inspection and testing requirements.
- Designate and train an employee(s) for each building (as "floor monitor[s]") to be responsible for implementing necessary elements of this practice and to perform monthly fire protection checks.

**MSA Fire  
Protection  
Engineering**

FPE:

- Ensures that requirements for, and exemptions from or equivalencies to, fire protection requirements are in accordance with governing authorities.
- Resolves questions through the client's fire protection program representative.
- Performs fire protection assessments and inspections as requested.

**Safety and Health**

Safety and Health:

- Coordinates the fire protection program and participates in fire investigations.
- Submits fire-loss event reports to the appropriate governing authority.
- Acts as the technical fire protection contact. The building administrator interfaces with S&H and FPE on issues requiring each group's technical expertise.
- Retains a basic understanding of the fire protection systems, and provides fire prevention inspection briefings, as requested, to building managers or their designees.

## Fire Prevention and Protection

### Employees

Employees:

- Report potential fire hazards to their immediate supervisor or the building floor monitor.
- Immediately report fires by activating a fire alarm pull box and calling the fire department.
- Notify their immediate supervisor of any fires and use of a fire extinguisher.

### FIRE PROTECTION

#### Portable Fire Extinguishers

These are first response devices designed for use on small fires.

Locate portable fire extinguishers throughout facilities in accordance with National Fire Protection Association (NFPA) 10 Chapter 3 requirements. Do not obstruct a fire extinguisher or obscure it from view. Always maintain clear access to a fire extinguisher and conspicuously mark and identify fire extinguisher locations.

Obtain FPE or S&H's assistance before relocating fire extinguishers.

Portable fire extinguishers for welding and cutting operations do not have to be secured at temporary locations.

Inspect fire extinguishers in accordance with NFPA 10.

**NOTE:** *Requirements and content are significantly different for monthly, annual, 6-year, and 12-year inspections.*

Maintain extinguishers fully charged and operable.

Take immediate corrective action for any portable fire extinguishers having a deficiency (such as being empty, missing, not mounted, or a broken seal).

## Fire Prevention and Protection

### Inspections

Building administrators ensure that fire inspections are conducted as follows:

- With support from S&H, develop specific fire protection checklists that incorporate applicable systems.
- Using the Monthly Fire Protection Checklist [A-6004-291](#) or equal, conduct, or assist floor monitors in conducting, monthly fire-prevention inspections (refer to [Appendix A](#)).
- Take necessary corrective actions.

### Fire Barriers

Do not disable fire barriers.

Hold fire doors open only with approved operating devices.

Do not chock or block fire doors open. Fire doors that are normally in the closed position may be held open if continuously attended by a fire watch.

Take immediate action to resolve any fire barrier deficiencies or impairments.

Ensure that FPE reviews and approves modifications or additions that affect new or existing fire barriers.

Control changes or modifications to installed fire barriers with administrative procedures.

### Maintenance/Testing

Inform the building administrator in advance of planned tests, inspections, and modification or maintenance that result in impairment of fire protection systems.

Immediately report unplanned or emergency fire protection system or equipment impairments to the building manager.

### Special Fire Protection

Do not block fire lanes.

Provide engineering or administrative controls in work areas where the potential exists for accumulation of flammable vapors to ensure that the concentration of such vapors does not exceed 10 percent of the lower explosion limit.

## Fire Prevention and Protection

**Temporary  
Enclosure  
Fire Protection**

Review proposed enclosures with the client, supervisor(s), and MSA S&H before fabrication. MSA Construction Supervisors/Superintendents provide review for subcontractors/sub-tier contractors.

Keep flammable and combustible liquids to a minimum and stored or dispensed from UL-listed or FM Global-approved safety containers.

Prohibit smoking in a temporary enclosure or within a 7.6-meter (25-foot) area. Post “No Smoking” signs at the 7.6-meter limits.

Do not store combustible materials within 3.1 meters (10 feet) of temporary enclosures.

Do not use fire protection systems for structural support of temporary enclosures.

Construct supporting structures of noncombustible or fire retardant materials

Enclose supporting structures with noncombustible or fire retardant materials. Make coverings for enclosure walls, ceilings, and floors of noncombustible or fire retardant materials. Plastic must be self-extinguishing and fire retardant. As a minimum, materials must pass the large-scale fire test as defined in NFPA 701.

Place combustible trash in metal containers equipped with metal covers, or remove such trash immediately after use.

Ensure that furniture in clean areas is noncombustible.

## Fire Prevention and Protection

### LIFE SAFETY

#### Cargo Containers

The construction manager is responsible for:

- Obtaining a permit from the HFD Fire Marshal (MO-292/200 Area) for all new containers and when existing containers are relocated or occupied for other than brief entries.
- Obtaining a fire protection, safety, and health review for containers that may be occupied for other than brief entries.
- Marking the container in accordance with NFPA 704 if hazardous materials are stored in cargo containers.

Access doors remain open whenever container does not have a standard door with an inside doorknob. A simple latch, hook, chock, or similar device may be used to keep the door in the open, unlocked position in order to prevent inadvertent closure while container is occupied. **The door is not shut and locked until an inspection has been completed for occupants.**

#### Building Emergency Exits

Provide life safety provisions for facilities in accordance with NFPA 101 and practice [MSC-PRAC-30458](#), *Office Safety*. Perform the following:

- Keep building exits and paths to exits clear and unobstructed.
- Do not lock exits so that anyone is prevented from using the exit to leave the building.
- Keep exterior building stairs clean and unobstructed.
- Ensure that exit doors do not require more than one action to open.
- Report any observed deficiencies in exit signs and exit direction signs.
- Do not use materials of unusual fire characteristics (such as urethane foams, which produce large quantities of smoke) for interior finishes.
- Do not store combustible materials in stairwells or corridors.

## Fire Prevention and Protection

- If facilities are used by people with impaired mobility, ensure that they have accessible exits designed to accommodate them in an emergency or that other equally safe methods are implemented for them to exit the facility safely.

### **Building Emergency Light**

Have emergency lights operationally tested monthly for a minimum of 30 seconds as part of the monthly fire prevention inspections. During this test, ensure that the lights are inspected to verify the following:

- Lamps are not cracked or damaged.
- Units are securely mounted.
- Lamps are positioned to illuminate the required areas.
- Lamps illuminate within 10 seconds of switch to backup power supply.

Have emergency lights operationally tested annually for a minimum of 1-1/2 hours and document the test.

Repair deficient emergency lights within 24 hours, or provide portable emergency lights until the permanent lights are restored to service.

When generators are used to satisfy emergency lighting requirements, test the generators and systems in accordance with NFPA 110.

### **Portable Heaters**

Users of portable heaters perform the following activities:

- Consult with S&H about size and spacing of portable heaters.
- Avoid using liquefied petroleum gas (LPG)-fired heaters indoors as a temporary measure except as permitted by S&H. Use LPG-fired heaters only as follows:
  - In buildings under construction or undergoing repairs or modifications.
  - As temporary heat in noncombustible industrial occupancies.
  - In other buildings for temporary, emergency heating purposes, if necessary, to prevent damage to the building or contents; these heaters are continuously attended.

## Fire Prevention and Protection

- HFD Fire Marshal's approval as a requirement for indoor use. (In accordance with NFPA 241; 5.2)
- Locate fuel-fired heaters outside and duct the heat indoors, unless other arrangements are approved by the MSA S&H Group Lead and the HFD Fire Marshal. (In accordance with NFPA 241; 5.2).
- Use heaters in accordance with the manufacturer's recommendations.
- Maintain adequate clearance to combustible furnishings, surfaces, or materials.
- Provide adequate ventilation for fuel-fired heaters to prevent buildup of products of combustion and to maintain stable flame quality.
- Use portable heaters that are UL listed or American Gas Association certified for their intended use and have not been modified for other applications.
- Use UL-listed portable electric heaters that are designed so that the heater cannot serve as an ignition source if tipped over.

### Nonemergency Use of Fire Hydrants and Fire Protection Systems

Nonemergency tie-ins to fire hydrants and other fire protection systems are prohibited, except as permit-approved by the fire department with jurisdiction in the area.

## TRAINING

### General Employee Fire Protection Training

Annual fire extinguisher training includes the following:

- Types of fire hazards
- Correct type of fire extinguisher to use
- Proper use of fire extinguishers
- The location of fire extinguishing equipment
- Good housekeeping practices
- Proper response/notification in the event of a fire
- Recognition of potential fire hazards

**NOTE:** *For the Hanford Site, this training is provided by Hanford General Employee Training (HGET).*

## Fire Prevention and Protection

**Designated Fire Watch Personnel**

Employees performing fire watch duties receive hands-on fire prevention/fire extinguisher training every 3 years in addition to general employee fire protection training.

**FORMS**

*Monthly Fire Protection Checklist, [A-6004-291](#)*

**RECORDS IDENTIFICATION**

**Records Capture Table**

Name of Document	Submittal Responsibility	Retention Responsibility
<i>Monthly Fire Protection Checklist, <a href="#">A-6004-291</a></i>	Construction Supervisor/Superintendent	Project Document Control
All records produced by the use of this practice (including but not limited to, evaluations, assessments, corrective actions, etc.) go into the Construction Work Package	Construction Supervisor/Superintendent	Project Document Control

**REFERENCES**

- [MSC-PRAC-30374](#), *Construction Work Package*
- [MSC-PRAC-30458](#), *Office Safety*
- [MSC-PRAC-30467](#), *Event Investigation and Reporting*
- [MSC-PRAC-30473](#), *Hazardous Materials and Flammable/Combustible Liquids*
- [MSC-PRAC-30483](#), *Compressed Gas Operations*
- [MSC-PRAC-30487](#), *Controlling Hot Work*

**National Fire Protection Association (NFPA)**

- NFPA 10: Portable Fire Extinguishers
- NFPA 101: Life Safety Code
- NFPA 110: Standards for Emergency Standby Power Systems
- NFPA 241: *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, Section 5.2
- NFPA 701: Methods of Fire Test for Flame-Resistant Textiles and Films

**ATTACHMENTS**

[Appendix A](#), Portable Fire Extinguisher Inspection Requirements

## Fire Prevention and Protection

### APPENDIX A PORTABLE FIRE EXTINGUISHER INSPECTION REQUIREMENTS

<b>INSPECTION</b>	Inspect fire extinguishers when initially placed in service and monthly thereafter. Inspect more frequently when circumstances warrant it.
<b>PROCESS</b>	<p>Include the following in the inspection:</p> <ul style="list-style-type: none"><li>• Located in a designated place.</li><li>• No obstructions to access or visibility.</li><li>• Operating instructions on nameplate legible and facing outward.</li><li>• Safety seals and tamper indicators are not broken or missing.</li><li>• Fullness determined by weighing or “hefting.”</li><li>• Examine for obvious physical damage, corrosion, leakage, or clogged or missing nozzle.</li><li>• Pressure gauge reading or indicator in the operable range or position.</li><li>• For units with wheels, the condition of the tires, wheels, carriage, hose, and nozzle checked.</li><li>• Comprehensive maintenance has been performed in the last 6 years (check date of the last hydro/comprehensive maintenance or the date unit was placed in service. Date is usually found on a label on the case).</li><li>• Hydrotest has been performed in the last 12 years (check date of the last hydro or the date unit was place in service. Date is usually found stamped into the case or on a label on the case).</li></ul>
<b>INSPECTION RECORDKEEPING</b>	<p>Maintain inspection records on a tag or label attached to the fire extinguisher.</p> <p>As a minimum, the monthly record contains the date of the inspection and the initials of the inspector.</p>