Basic Fire Safety and Emergency Procedures for Roofing Contractors
Reasons for Having Fire Safety and Emergency Procedures

- It protects the most valuable assets - the employees
- It protects company property from potential damage
- It protects the loss of good clients
- It may reduce insurance premiums
- Your insurance company may require having such procedures in place
A Company’s Responsibility:

- Determine what the potential problems are
- Determine the Risks
- Create and Implement Risk Controls
- Train the staff
- Evaluate the system
What do you need to do?

For Office/Shop Staff:

- Have a fire/emergency evacuation procedure.
  
  “PRACTICE IT!”

- Have a method of accountability

- Notify the fire department (police dept.).

- Train in the identification and use of fire extinguishers.
What do you need to do?

For installers on the job site:

- Implement communication from the ground to the roof and vice versa.
- Implement communication from the inside of the building to the work crew.
- Have a general roof emergency evacuation procedure (minimum two ways off).
What do you need to do?

For installers on the job site:

- Adapt the evacuation plan for the specific roof/job.
- Train in the identification and use of fire extinguishers.
- Notify the fire department (police dept.).
Having specific problems?

Contacts that may help:

- The local Fire Department may be able to assist you.
- Check the CRCA web site for helpful hints.
- Your Insurance Provider may have specific program material available not to mention industry data on workplace incidents.
Having specific problems?

Web sites that may help:

http://www.crca.org/Resources/safety_info.htm

http://www.nonprofitrisk.org/ws/wsp.htm

http://www.buildsafe.org/
Risk Management Plan Factors

Risk Identification (Potential Problems)

- For every aspect of the operation, list potential problems.

- The following are examples of sources of information that could be useful in the process:
Risk Management Plan Factors

Risk Identification (Potential Problems)

(1) A list of the risks to which employees are or can be exposed

(2) Records of previous accidents, illnesses, and injuries, both locally and industry wide

(3) Facility and equipment surveys, inspections, and so forth
Risk Management Plan Factors

Risk Evaluation

Evaluate each identified risk item listed in the process using the following two questions:

(1) What is the potential frequency of occurrence?
(2) What is the potential severity and expense of its occurrence?
Sources of information that could be useful are the following:
Risk Management Plan Factors

(1) Safety audits and inspection reports
(2) Prior accident, illness, and injury statistics
(3) Application of industry data to the local circumstances
(4) Professional judgment in evaluating risks unique to the jurisdiction
Once risks are identified and evaluated, a control for each should be implemented and documented. The two primary methods of controlling risk, in order of preference, are as follows:
(1) Wherever possible, totally eliminate or avoid the risk or the activity that presents the risk.
For example, if the risk is falling on the ice, then do not allow employees to go outside when icy conditions are present.
(2) Where it is not possible or practical to avoid or eliminate the risk, steps should be taken to control it.
Risk Management Plan Factors

Using the previous scenario, some methods of control would be to salt the areas of ice, to wear of proper footwear, and so forth.
Risk Management Plan Factors

Are There Other Methods of Control to Consider?

(1) Safety programs - development, adoption, and enforcement

(2) Standard operating procedures - development, dissemination, and enforcement

(3) Training

(4) Site inspections
Risk Management Plan Factors

Monitoring and Follow-Up

As with any program, it is important to evaluate whether the plan is working. Periodic evaluations should be made, and, if the program elements are not working satisfactorily, then modifications should be made.
Fire Safety

We will look at fire safety from the following viewpoints: (Based on NFPA Standards 241 and 51B)

1. General Fire Safety
2. Asphalt and Tar Kettles
4. Fuel Gas Cylinders
5. Fire Extinguishers
General Fire Safety

NFPA 241

“Standard for Safeguarding Construction, Alteration, and Demolition Operations”

This standard provides measures for preventing or minimizing fire damage during construction, alteration, and demolition operations.

AND

NFPA 51B

“Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.”
General Fire Safety

Roofing Operations

All roofing operations involving heat sources and hot processes shall be conducted by a qualified agency.

A reminder!

In Illinois a roofing contractor must be licensed by Illinois Department of Financial and Professional Regulation.
The public fire department and other fire protection authorities also shall be consulted for guidance.

The unique and dangerous situations confronting fire fighters during such operations demand that a complete exchange of pertinent information be established and continued during the life of the project.
A fire safety program shall be included in all construction, alteration, or demolition contracts, and the right of the owner to administer and enforce this program shall be established, even if the building is entirely under the jurisdiction of the contractor.
Responsibility for hot work operations and fire prevention precautions, including permits and fire watches, shall be in accordance with NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*.

For a sample permit and procedure, see NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*. 

Fire Watch.

Fire watches shall be assigned NO other duties.
A fire watch shall be conducted for at least 1 hour after torches have been extinguished. (Make periodic interior checks during the installation)
General Fire Safety

✓ All roof areas under repair should be checked for hot spots and signs of smoldering.

✓ The inside of the building also should be inspected for signs of fire or smoke. Particular attention should be paid to cants, flashings, and areas around penetrations such as vent pipes, air vents, and skylights.

✓ All fires should be reported to the fire department, even when extinguished.
General Fire Safety

Personal Protection.

✓ Protective clothing and personal protective equipment (PPE) shall be worn by installers.
(Fire resistive material should be considered)

Protective clothing should include acceptable fabrics, a long-sleeve shirt, long pants, gloves, and eye protection. The safe handling of hand torches and hot trowels necessitates the use of proper protective clothing and personal protective equipment.
Equipment Inspection.

✓ Equipment shall be inspected thoroughly and repaired or replaced as needed prior to use.

(Includes all incorporated safety devices on the equipment)
Asphalt and Tar Kettles.

- Asphalt and tar kettles and associated LP-Gas cylinders shall be located in a safe place outside of the building at a point that avoids the danger of ignition of combustible material. (Not in the path of exits from the building)
  
  Roofing kettles and all integral working parts should be in good working condition and should be maintained free of excessive residue.
Asphalt and Tar Kettles

✓ Asphalt and tar kettles shall not be located on roofs.

✓ A lid that can be closed by means of gravity shall be provided on all roofing kettles. (Lids should be checked regularly for PROPER operation.)

✓ The tops and covers of all kettles shall be close-fitting (Tops and covers should be checked regularly for PROPER fit.) and constructed of steel having a thickness of not less than No. 14 manufacturer’s standard gauge [0.075 in. (2 mm)].
Asphalt and Tar Kettles

✓ Used roofing mops and rags shall be cleaned of excessive asphalt and stored away from the building and combustible materials. *(Should be done at the end of each work day)*

✓ Discarded roofing mops and rags shall not be in contact with combustibles.
Asphalt and Tar Kettles

✓ Kettles shall be constantly attended when in operation by a minimum of one employee knowledgeable of the operations and hazards. The employee shall be within 25 ft (7.6 m) of the kettle and have the kettle within sight.

✓ Roofing kettles shall not block exits, means of egress, gates, roadways, or entrances. In no case shall kettles be closer than 10 ft (3 m) from exits or means of egress. (Should try to keep clear of all windows)
Single-Ply and Torch-Applied Roofing Systems

Installation.

The installation of torch-applied roofing and, in some cases, single-ply roofing systems is hot work and shall comply with NFPA 241 and NFPA 51B.
Single-Ply and Torch- Applied Roofing Systems

Flame Contact Protection.

✓ Open flames shall not be left unattended.
✓ The torch flame shall not be applied to a combustible substrate for the membrane.
✓ Base ply shall be permitted to consist of either glass fiber felts or minimum 40-lb (18-kg) organic felts.
Torch flames shall not come in contact with exposed plastic roofing cement.
Caution shall be used where working near roof openings, penetrations, or flashings.
The torch shall not be used in areas where the flame impingement cannot be fully viewed.
Single-Ply and Torch-Applied Roofing Systems

Single-ply and torch-applied roofing systems shall be installed using extreme caution.

For additional information, see the ARMA publication:

Torch-Applied Roofing, Dos and Don’ts

and the

Factory Mutual Data Sheet 1-33, Safeguarding Torch-Applied Roof Installations.
Fuel Gas Cylinders

Fuel for Roofing Operations.

Fuel containers, burners, and related appurtenances of roofing equipment in which liquefied petroleum gas (LPG) is used for heating shall comply with all the applicable requirements of NFPA 58, Liquefied Petroleum Gas Code.
Fuel Gas Cylinders

✓ Fuel gas cylinders should be inspected for dents.
✓ Regulator adjustments and pressure gauges should be checked to ensure that they are operable.
✓ Torch and cylinder connectors should be inspected visually and checked for leaks with a soap and water solution. **An open flame should not be used to test for leaks.**
Fuel Gas Cylinders

- Leaky equipment should not be used.
- The vent on the regulator should be checked to ensure that it is not blocked.
- If an unstable flame occurs (e.g., roars loudly and tends to blow itself out), the equipment should be repaired or replaced immediately.
- Fuel gas cylinders shall not be hoisted by their valves.
Straps placed around the cylinders shall be utilized.

All kettle operators and torch applied roof installers shall be trained in the use of fire extinguishers.

Fire extinguishers shall be located in an accessible, visible, or identified location.
Fire Extinguishers

There shall be at least one portable fire extinguisher having a rating of not less than 20-B no closer than 5 ft (1.5 m) and no more than 25 ft (7.6 m) of horizontal travel distance from every kettle at all times while such kettle is in operation.

Additional information regarding the safe use and operation of roofing kettles can be found in NFPA 1, Fire Prevention Code, Section 3.12.
Fire Extinguishers

There shall be at least one multipurpose 2-A:20-B:C portable fire extinguisher on the roof being covered or repaired, or other fire protection shall be provided as determined by the authority having jurisdiction.

For large roof areas, additional protection, such as charged hose lines or additional extinguishers, is recommended.

There shall be at least one multipurpose 2-A:20-B:C portable fire extinguisher within 20 ft (6 m) of horizontal travel distance from torch-applied roofing equipment.
To purchase a copy of NFPA 241 or NFPA 51B

Contact: National Fire Protection Association
1 Batterymarch Park Quincy, MA 02269
Phone: 617-770-3000 Fax: 617-770-0700
http://www.nfpa.org/

These documents can be accessed free of charge on line.
ANY QUESTIONS?
Dave Baird
Fire Protection Specialist
Office of the Illinois State Fire Marshal
(312) 814-8960
E-mail:
technicalservices@sfm.state.il.us