

Fires in Buildings under Construction

Fire is No Accident; It can be Prevented.

Proper Steps to Assure that Fire Safety Practices are Followed

Every year many fires occur in buildings that are under construction. They happen too often! Many finishes and construction materials are combustible. Buildings under construction sometimes have large quantities of combustible material, plastics, paneling, paints, gases, and refuse on sites. When there is a large amount of flammable materials present on a building site fire protection must be taken very seriously.

With so much at risk, it is essential that fire safety policies and procedures are in place. Not only should fire safety prevent the outbreak of a fire, but it also should provide for successful evacuation if a fire does occur. Therefore, you should be familiar with all of the risks and the hazards of a project.

Step One: Identify the Risks and Hazards

There are three things that are needed to start a fire; heat, fuel and oxygen.

It is important that you be able to observe the following factors and to eliminate them whenever possible.

- ✓ sources of ignition
- ✓ naked flames
- ✓ sparks and arcs
- ✓ smoking habits
- ✓ malfunctioning electrical equipment
- ✓ friction generated from equipment
- ✓ sources of finely divided fuels such as shavings, sawdust and kindling
- ✓ flammable liquids and gases , especially LPG
- ✓ paper, cardboard, trash and debris
- ✓ a source of oxygen
- ✓ natural airflow

Smoking

The reason smoking should be prohibited especially in areas where combustibles are located is because smoking habits include the use of open flames and the disposal of smoking materials can be a source of ignition. Large safety signs indicating "no smoking" should be appropriately displayed. Proper discipline of employees who violate smoking regulations need to be enforced.

Step Two: Determine Who is at Risk

It is important to identify just who is most at risk if you have a fire in a building under construction. Construction sites can be a dangerous environment all by themselves. The building becomes more and more dangerous when there is a multitude of workers are plying their trade at different levels in a building. This checklist can be used to improve the safety on your construction site in the event of fire.

- ✓ Where are the tradesmen and steel workers located within the building?
- ✓ Can they evacuate safely?
- ✓ What factors place them in danger?

- flame
- smoke
- ✓ Potential for structural collapse?

Step Three: Evaluate and Protect

Next it is important to use your findings to implement your fire safe strategies. It is important to remember to:

- ✓ Reduce the risk of a fire actually occurring
- ✓ Remove or reduce all sources of ignition
- ✓ Remove reduce or control the availability of fine fuel such as sawdust, paper and cardboard
- ✓ Remove or reduce any at excess oxygen
- ✓ Address the risks to people that are working above you
- ✓ Be prepared to implement general fire precautions

Step Four: Record, Plan and Train

As in any safety feature there are always further elements to ensuring that your safety assessment of your construction site is managed accordingly and properly thought out.

- ✓ Record your findings and the necessary actions that should have been done
- ✓ Ask yourself the question-have I removed or reduced the risk. Are my records accurate regarding the situation
- ✓ Instruct your work force to make sure they understand how the emergency plan works. Make sure the workforce is trained and drilled in overall strategies

Step Five: Review, Review, Review

The constant monitoring and implementation of your fire risk assessment and completion of periodic fire drills are essential to assuring the safety of a worksite. Construction site conditions change hourly and daily. This means that frequent assessments must be carried out to assure that the measures remain current the reason for a new review may be:

- ✓ The progression of building construction on the site
- ✓ Change in labor force on the site
- ✓ Introduction of a new hazardous substance
- ✓ Change in the quantities and types of materials
- ✓ Increase in the number of personnel

Better Safe Than Sorry

Combustible Refuse

Create designated areas for waste. Regularly clear away any waste material that builds up on-site. There should be clean up procedures at the end of each workday. There should also be procedures for housekeeping at the end of the workweek. Never allow combustible refuse to be piled up and set afire even if it is a considerable distance from a building.

Hot Work

Flame producing equipment such as oxy-acetylene, brazing, welding and cutting torches is a primary concern in on building sites. This process must be carefully monitored and a permit process established. Stop all Hot Work at least one hour before the end of the shift. Fire checks should be made at a minimum of 30 minute intervals. An examination of the area one hour after Hot Work has ended should be required. Always have suitable fire extinguishers located nearby and ready to use.

Electricity

Frequently on a building site there are temporary electrical services. Unfortunately during building operations these temporary electrical services are subject to mechanical damage by wheelbarrows, forklifts, and other mechanical injury. It is essentially cables and wires be protected to prevent

unnecessary damage. Vibration also damages the insulation around wires and therefore needs to be properly monitored. Regular checks should be made on joints and flexible leads. Remember damage to insulation on around electrical cords can cause short circuits.

Flammable Liquids and Gases

When highly flammable liquids or gases are being used on-site is important that local fire and building regulations are thoroughly complied with. Some municipalities limit the amounts of these materials which may be kept on-site unless stored in a properly constructed flammable liquid storage facility. Small quantities of gasoline, methylated spirits, cellulose solutions, paint strippers, acetone, etc. need to be kept in strong metal cans or labeled safety containers.

Gas Cylinders

All cylinders should be stored clear of buildings and a wire mesh enclosure, preferably with a protective covering and kept entirely free of vegetation and rubbish. Signs prohibiting smoking and naked flames needs to be prominently displayed around the storage site for gas cylinders.

Temporary Heaters

All temporary eaters must be properly installed in accordance with manufacturer's instructions. They should only be used on when they are kept in a stable condition and have appropriate protection. Heaters should not be left on if the building is unoccupied. High intensity lights sometimes generate heat and should be securely fixed. Both heaters and lights should be kept away from lightweight combustibles such as paper and plastic.

Contractors Sheds

Many sites have contractor huts, site offices or change rooms are located inside the building under construction. These often contain large quantities of combustible materials, temporary electrical wiring invaluable and often difficult to replace planning, blueprints, specification sheets and project records. As the sheds are usually constructed of combustible materials it should be recognized that huts or sheds that are external to the building should be at least 20 feet from the building.

Fire Protection Features

All fire extinguishers should be properly located, inspected periodically and readily available. Water supplies, fire service mains, hydrant connections, hose reels and other forms of water connections should be provided as early as possible during the construction. Many local regulations now require the ability for the local fire department to address fires on upper floors during construction work. Experience is shown the serious damage has occurred buildings which do not have adequate fire-flow available.

Fires have seriously damaged new buildings only days before the completion of sprinkler systems due to the systems not being operational yet. It is advisable to get the sprinkler system active as early as possible.

Specific Responsibilities

In large construction projects it is required that a competent person be specifically responsible for fire protection on-site. This person's duties should include identifying all risks and controlling existing and emerging fire hazards. They need to be involved in the commissioning of fire protection equipment, fire prevention inspection work, instruction of all employees on site and what to do in the event of a fire and the provision of adequate fire instruction notice. Everyone needs to know what their part is in a fire safety plan. Accountability begins with each employee making sure that conditions that create fires are eliminated.

Summary

Question One: Why is fire safety so important on a construction site?

Question Two: Name five sources of potential ignition?

Question Three: Why is Hot Work and smoking such a serious problem in work sites?

Question Four: Once Hot Work has been completed how long should it be observed?

Question Five: What is the primary use of a fire extinguisher on a construction site?