

Fire Prevention

Safety Leadership Training

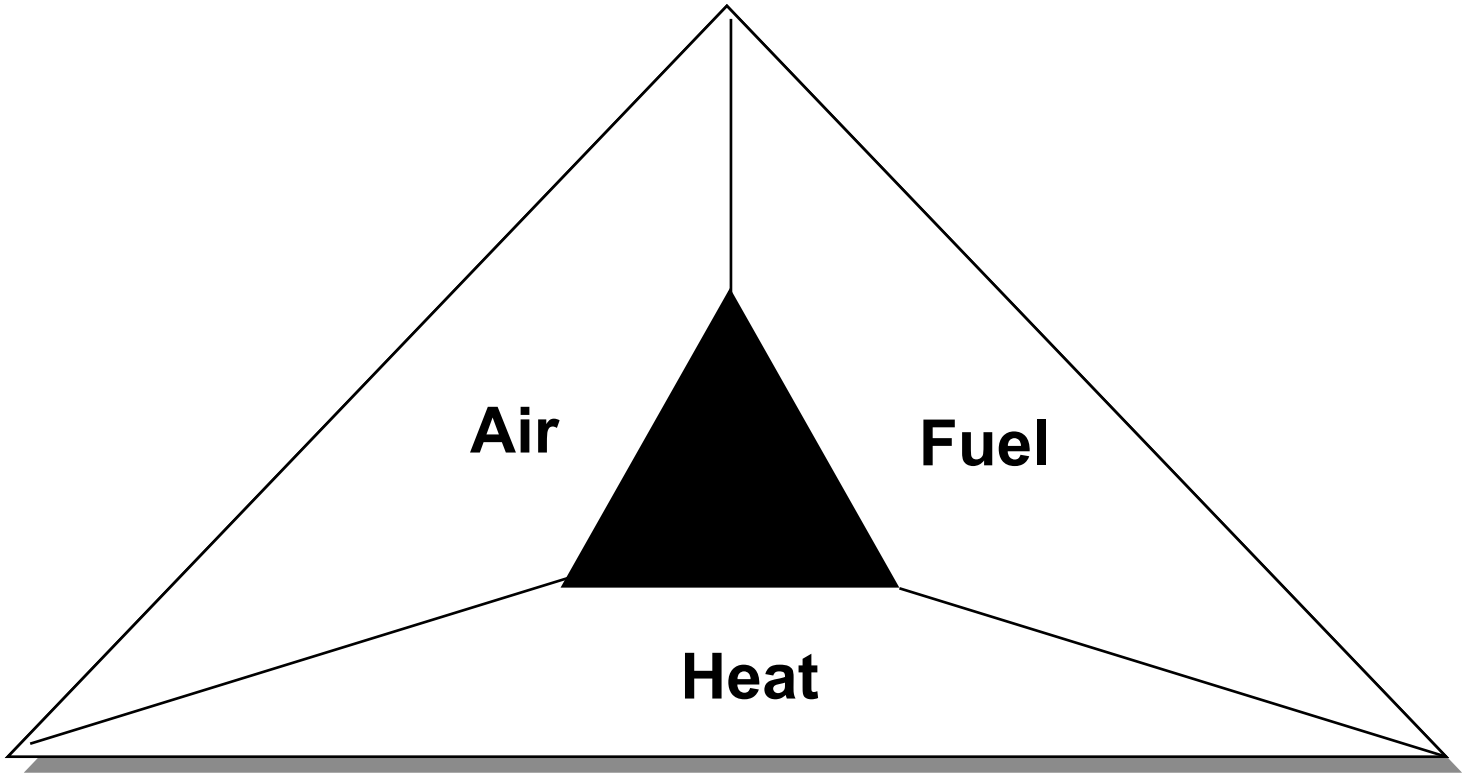
Do's

- Actively participate by contributing
  - Ask questions
  - Share experiences
  - Request explanations
- Be supportive of your co-workers
- Apply what you learn to your job
- Pass on the information

Objectives

- As a result of today's session, you will:
- Explain the causes (ignition sources) of fires in the industrial environment
- Recognize uncontrolled ignition sources in their work areas
- Recognize potential sources for mechanical and/or chemical explosions
- Take steps to eliminate or control these risks

The Fire Triangle



Ignition Sources

- Electrical
- Incendiary/ suspicious
- Overheated equipment
- Hot surfaces
- Open flames
- Friction
- Spontaneous combustion
- Smoking

Electrical Fire Sources

- Overloading circuits & equipment
- Wiring or equipment worn out or damaged
- Improper use
- Defective installations

Electrical Fire Prevention

- All installations
  - meet local, state, and NEC
  - made by authorized personnel
- New and replaced equipment is only UL listed
- Equipment is listed for use
- Maintenance called when equipment is overloaded
- Daily inspection observations are recorded:
  - loose connections
  - severe sparking at brushes
  - oil-soaked insulation

Static Electricity Sources

- Finely powdered materials flowing through chutes or pneumatic conveyors
- Liquids flowing through pipes or splashing into containers
- High-velocity steam, air, gas, or liquids flowing through pipes and discharging
- Non-conductive power or conveyor belts in motion
- Vehicles in motion
- Motions involving friction between contacting surfaces

Static Electricity Prevention

- Install ground connections between fixed surface and ground
- Electrical bonding between metallic parts
- Supervisors must recognize:
  - Means for collecting and discharging static
  - Devices in good operating condition

Incendiary / Suspicious Fire Prevention

- Good physical security
- Lock doors and windows
- Remove trash
- Keep unnecessary combustibles to a minimum
- Secure accelerant flammables
- Lock open sprinkler control valves

Overheated Equipment Sources

- Furnaces
- Smoke pipes
- Vents
- Cooking ranges
- Incinerators
- Salamanders
- Process baths

Overheated Equipment Prevention

- Operate standard safe procedures
- Locate equipment with ventilation
- Provide clearance from fuel source
- Install high temperature interlocks
- Install fixed fire suppression systems

Hot Surfaces

- Sources
  - Drying ovens
  - Plastic bag sealing devices
  - Furnaces

- Prevention
  - Adequate clearance from combustible materials
  - Do not placement of combustible & flammable items inside of regular ovens

Open Flame Sources

- Improper use of cutting and welding equipment
- Equipment use around highly combustible fuels
- Arcs from the electrode
- Cutting torch flame
- Molten slag
- Hot pieces of cut metal
- Flying sparks

Open Flames Prevention

- Use Hot Work Permits
- Provide and ensure use of portable non-combustible barriers
- Move combustibles at least 35 feet away from the work area or
- Cover combustibles with non-combustible tarps
- Wet combustible floors
- Plug any holes through which slag or sparks could enter
- Post a fire watch
- Cease work 30 minutes before quitting time

Friction Sources

- Equipment is operated beyond its rated capacity
- Lubrication fails
- Belts pass over pulleys that are frozen to a shaft or otherwise stalled
- Improperly placed raw materials or parts in process rub against moving parts
- Shafts, bearings, or brackets are misaligned

Friction Prevention

- Eliminate friction fire sources
- Watch for and correct abnormal conditions
- Supervisor accountability

Spontaneous Combustion Sources

- Oily rags – especially linseed oil
- Paint-soaked clothing
- Organic materials such as grains, flour, sawdust, fertilizers
- Oil or solvent-soaked production wastes such as cloth, plastic, or wood

Spontaneous Combustion Prevention

- Adequate ventilation
- Dry storage areas
- Safety-type containers
- Good housekeeping
  - Provide proper storage containers
  - Dispose promptly
  - Constant supervision

Fires Caused by Smoking Sources

- Not fully extinguishing a cigarette before discarding
- Thoughtlessly tossing a lighted cigarette
- Hurriedly discarding a lighted cigarette
- Leaving and forgetting a cigarette resting on a combustible material
- Emptying a smoldering cigarette into a waste basket
- Smoking in a highly flammable area

Prevent Fires Caused by Smoking

- Establish & enforce a program
- Designate “no smoking” sections
- Enforce disciplinary action for infractions
- Designated “smoking permitted” sections
- Provide ashtrays in designated sections
- Employee education

Summary

- Maintain an awareness of the various types of fire exposures that exist in your area
  - Perform surveys of your departments
  - Institute fire prevention controls
  - Periodically inspect controls to ensure effectiveness
- Supervise employee work practices
- Cooperate fully in all emergency evacuation drills
- Set a good example