Fire Safety

Fire Risk Management Surveys

Know the Fire Escape Plan

- Pull
- Aim
- Squeeze
- Sweep

Know Location of Fire Exits and Extinguishers

How to use a Fire Extinguisher
OXYGEN

FUEL

CHAIN REACTION

HEAT
# Flammable Classification

<table>
<thead>
<tr>
<th>Class</th>
<th>Flammables</th>
<th>Flash Point</th>
<th>Boiling Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>I A</td>
<td>Gasoline</td>
<td>Lower than 73°F</td>
<td>Lower than 100°F</td>
</tr>
<tr>
<td>I B</td>
<td>Acetone Toluene</td>
<td>Lower than 73°F</td>
<td>At or above 100°F</td>
</tr>
<tr>
<td>I C</td>
<td>Xylene</td>
<td>At or above 100°F</td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>Flammables</td>
<td>Flash Point</td>
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</tr>
<tr>
<td>II</td>
<td>Kerosene</td>
<td>At or above 100°F</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stoddard Solvent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Asphalt</td>
<td>At or above 140°F</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brake Fluid</td>
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<td></td>
</tr>
</tbody>
</table>
## Leading Causes of Industrial Fires

<table>
<thead>
<tr>
<th>Percent of Fires</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>23%</td>
<td>Electrical</td>
</tr>
<tr>
<td>18%</td>
<td>Smoking Materials</td>
</tr>
<tr>
<td>10%</td>
<td>Friction</td>
</tr>
<tr>
<td>8%</td>
<td>Overheated Materials</td>
</tr>
<tr>
<td>7%</td>
<td>Hot Surfaces</td>
</tr>
<tr>
<td>7%</td>
<td>Burner Flames</td>
</tr>
<tr>
<td>3-5%</td>
<td>Combustion Sparks</td>
</tr>
<tr>
<td>3-5%</td>
<td>Spontaneous Ignition</td>
</tr>
<tr>
<td>3-5%</td>
<td>Cutting &amp; Welding</td>
</tr>
<tr>
<td>3-5%</td>
<td>Adjacent Fire</td>
</tr>
<tr>
<td>3-5%</td>
<td>Arson</td>
</tr>
</tbody>
</table>
Physics and Chemistry of Fire Definitions:

- **Fire**: Rapid oxidation of material during which heat and light are emitted.
- **Combustion**: is an exothermic (gives off heat), self sustaining reaction involving a solid fuel, a gaseous fuel or both.
Fire Safety

Evacuation/Fire Wardens or Coordinators

- Appointed for each building (alternates depending on size and number of levels)
- Coordinates emergency evacuation preparedness and fire prevention measure
Fire Prevention Program

- Building Inspections/Reports
- Fire Detection/Suppression Systems
  - Testing /Verification
- Emergency Action Planning
- Fire Prevention Training
- Liaison to City Fire Department
- Design Review and Consultation
- Fire Extinguisher Inspections/Training
Fire Safety

- Establish and enforce an effective Fire Prevention Program
- Mandatory Awareness Training
- Appoint a Evacuation/Fire Wardens
- Fire Risk Management survey for each building, and follow-up on findings and recommendations.
- Investigate fires and take corrective action.
Emergency Action Plan

- Standardized Plan
  - Ensure Plan is acceptable and provided that employers can inform their respective employees of their duties and responsibilities under the plan
- Emergency escape procedures
  - Emergency escape route assignments
- Procedures to be followed by Fire Wardens
  - Fight fires in incipient stage
  - Secure facilities against smoke/fire propagation
  - Procedures to account for all employees after
Emergency Action Plan Cont.

- Procedures to account for all employees after emergency evacuation has been completed
- Rescue and medical duties for personnel designated to perform them
- Preferred means of reporting fires and other emergencies
- Documenting names of personnel and their alternates who can be contacted for further information of duties under plan
- Ensuring Employee alarm systems comply with OSHA 29CFR1910.165
- Types of evacuation to be used in emergency circumstances
- Training and review
Emergency Action Plan Training

- Assure an adequate number of employees are available at all times during working hours to act as evacuation wardens
- Ensure employees can be swiftly moved from the danger location to the safe areas
  - Generally, one warden for each twenty employees
  - Provide adequate guidance and instruction at time for emergency
Emergency Action Plan Training

- Evacuation/Fire Wardens
  - Trained in complete workplace layout and various alternative escape routes from workplace
  - Trained in fighting fires in incipient stages with portable fire extinguishers
    - “IF IN DOUBT, GET OUT”
  - EMERGENCY NUMBERS:
  - Trained in checking rooms and other enclosed spaces for employees who may be trapped or otherwise unable to evacuate area.
Emergency Action Plan Training

- All Fire Wardens must understand that their objective is to ensure total evacuation of facility
  - ensure total evacuation of facility and staging employees away from incident area and emergency traffic
  - Containment of fire/smoke to single area if at all possible
  - extinguishment of fire in incipient stage
  - Ultimately the safety of themselves and all others
  - speedy notification of Emergency Agencies

- Be aware of handicapped employees and others who may need extra assistance
  - Use “Buddy System” during evacuation

- Be aware of hazardous areas to be avoided during emergencies
Emergency Action Plan Training

- Verify that all employees are accounted for and in safe locations
- Coordinate plans with others
  - In buildings with several occupancies
- Inform employees of their duties and responsibilities under plan
- Coordinate plan with others
  - Ensure that conflicts and confusion are avoided during times of emergencies
Portable fire extinguishers

- Employer Policy - OSHA recognizes 3 options:
  - employer policy to evacuate all employees from the workplace at the time of a fire emergency (fire extinguishers for use by fire service personnel only)
  - employer policy to permit certain employees to use portable fire extinguishers to fight fires and evacuate all other non-essential employees at the time of a fire emergency
  - employer policy to permit all employees in the workplace to use portable fire extinguishers to fight fires.
Portable Fire Extinguisher not intended for employee use

- fire prevention plan required
- emergency action plan required
- written fire safety policy which requires immediate and total evacuation of employees from the workplace upon the sounding of a fire alarm signal
- inspection and testing of any fire extinguishers placed in the worksite
Portable Fire Extinguishers intended for all employees use:

- Emergency Action Plan required
- Fire Prevention Plan not required
- Inspection and testing of fire extinguishers
- Education of all employees
- Specific fire extinguisher placement requirements: e.g. Class A or C fire potential, appropriate extinguisher every 75 feet, Class B fire potential every 50 ft
Portable Fire Extinguisher
Intended for Designated Employee use only

- Emergency Action Plan Required
- Written fire safety policy which requires the immediate and total evacuation of nondesignated employees from the workplace upon the sounding of a fire alarm signal
- Inspection and testing of fire extinguishers
- Education of designated employees
- Fire extinguisher placement convenient locations for the designated employees
Develop Facility Profiles

- Record
  - Facility Inspections
    - Frequency of inspections (weekly, monthly, semi-annual, quarterly, annual)
  - Fire detection/suppression systems inspections
    - As required by NFPA Fire Protection Systems Handbook
  - Fire extinguisher maintenance/testing
  - Training of all Fire Wardens and essential personnel
Fire Safety

Most fires are Preventable!!
Fire Safety

Questions?

Most fires are Preventable!!