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**Learning Outcomes**

- Understanding Fire
- The Fire Triangle / Tetrahedron
- The RACE Principle
- Fire Stages and Fire Groups
- Fire Extinguishers and P.A.S.S.
- Why An Emergency Action Plan Is Critical
- Knowing What Systems Are In Your Buildings and How They Work
- Importance of Fire Alarms and Drills



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**Fire Prevention**

- The OSHA Standard for fire prevention plans can be found in 29 CFR 1910.138 (b).
- The NFPA Standard for it can be found in NFPA 1.
- Both standards require a written fire prevention plan for the business.
- The plan must contain a list of workplace hazards along with a list of possible ignition sources and how to control them.
- The plan must also identify all of the fire protection equipment in place to control these hazards.
- In practical terms, the employer needs to conduct an initial evaluation of the workplace to determine hazards.



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**What is Fire?**

- Fire, in very simple terms is a chemical process of combustion that involves the oxidation of a fuel source at a high temperature. When this happens, it releases energy and produces heat and light.
- Flames are produced following the chemical reaction between the oxygen and another gas.
- Flames are intensified by increasing the rate of combustion.
- Four elements, also known as the Fire Tetrahedron, must be present for a fire to start.



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### The Fire Tetrahedron

**Required Elements:**

- Oxygen
- Heat
- Fuel
- Chemical Reaction

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### Four Stages of Fire

- **Ignition:** At this stage, usually a fire extinguisher can be used to control the fire if done so properly.
- **Growth:** As additional fuel ignites, it causes the size of the fire to increase.
- **Fully-Developed:** This is when the fire intensifies and the temperatures reach their peak, causing damage.
- **Burnout:** This is the final stage when the fire gets less intense and/or is extinguished.

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### The RACE Principle

If you ever find yourself involved with a fire, you want to remember the acronym R.A.C.E. to help you to respond correctly:

- R:** Rescue anyone in immediate danger from the fire, if doing so will not endanger your life;
- A:** Alert by activating a fire pull box or by calling 9-1-1;
- C:** Confine the fire by closing doors and windows, again, if safe to do so;
- E:** Extinguish the fire using a fire extinguisher and/or Evacuate the area if the fire is too large to battle yourself.

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### Fire Groups

- **Class A:** These fires consist of ordinary combustible solid materials such as wood, paper, cloth, trash and plastics.
- **Class B:** These fires are fueled by flammable or combustible liquids, such as gasoline, oil, grease, alcohol or other flammable liquids.
- **Class C:** These are electrical fires or "energized" fires. They involve electrical equipment, such as motors, transformers, appliances, power cords, faulty outlets, space heaters etc.
- **Class D:** These are fires that involve combustible, burning metals, such as sodium, aluminum, potassium, and magnesium.
- **Class K:** These fires involve cooking oils or grease such as vegetable or animal fats as defined by the U.S. Fire Administration.



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### Types of Fire Extinguishers

		Ordinary Combustibles	Wood, Paper, Cloth, Etc.
		Flammable Liquids	Grease, Oil, Paint, Solvents
		Live Electrical Equipment	Electrical Panel, Motor, Wiring, Etc.
		Combustible Metal	Magnesium, Aluminum, Etc.
		Commercial Cooking Equipment	Cooking Oils, Animal Fats, Vegetable Oils



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### Fire Extinguishers and P.A.S.S.

For proper use of fire extinguishers, you want to remember the acronym P.A.S.S.

- P:** Pull the pin on the fire extinguisher;
- A:** Aim the extinguisher nozzle at the "base" of the fire;
- S:** Squeeze the handle;
- S:** Sweep from side-to-side until the fire is out.



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**Emergency Action Plan**  
a/k/a Fire Emergency Evacuation Plan



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**Why An Emergency Action Plan Is Critical**

- An Emergency Action Plan (EAP), also known as a Fire Emergency Evacuation Plan (FEEP), is a written plan, document, policy or procedure that outlines what responsibilities or action needs to be taken by **staff** in response to a fire.
- This document is oftentimes included as its own section within a much larger, more comprehensive safety plan or program.
- Whether your plan is a stand-alone document, or it is part of a broader safety program, everyone on staff needs to be adeptly aware of what the plan's contents are and what is expected in the event of a fire or other emergency.
- Remember: Safety is everyone's responsibility!



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**Expectations of the Plan**

- OSHA requires all organizations with eleven (11) or more employees to have a written emergency action plan available for all employees.
- The EAP requires notification procedures to alert employees and others to the fire, by alarm or public address systems.
- OSHA also strongly urges that at least one employee per shift, as applicable, should have adequate training in both first aid and CPR if a medial facility or hospital is farther than three or four minutes away from the location of the site.
- Learn more about what you may need to do by clicking on the OSHA website: [www.osha.gov](http://www.osha.gov) or visit your state's OSHA Plan website at: [www.osha.gov/stateplans](http://www.osha.gov/stateplans)



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### Expectations of the Plan

- The EAP must describe all the major hazards at the workplace that could initiate or exacerbate the potential for fire spreading.
- The plan shall include the following:
  - List of all building systems and equipment that is in-place to prevent or control ignition of fires.
  - Proper chemical handling, storage, and control procedures.
  - Who is responsible for controlling the hazards and maintaining the control systems.
  - Training that is required for all employees who have direct responsibilities to carry-out the plan.



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### Emergency Action Plan Structure

The EAP should include the following:

- Name of the organization, address(es), phone numbers.
- Organization's corporate safety policy mission statement.
- Company official's letter or statement of commitment.
- List of Key officers, leadership, and emergency response team members.
- Contact information for the safety officer or person in charge of the safety program.
- What personnel, or other stakeholders need to be contacted regarding any incidents.



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### Emergency Action Plan Structure

The Plan should also include the following:

- Complete list of staff and service contractor's emergency phone numbers
- Contact list for insurance carriers, broker/agent and any public adjuster
- Contact list for mortgage holder and intergovernmental agency officials
- The method(s) of communication to notify others about an incident
- A list of safety and health protocols to be undertaken and by whom - a list of "roles and responsibilities"
- List of any OSHA and general safety rules to be followed



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### Emergency Action Plan Events

Types of incidents and what immediate actions need to be taken for each:

- Fires / Explosion
- Major Mechanical and Equipment Failures
- Utility Interruptions
- Natural & Meteorological Disasters
- Medical Emergencies
- Pandemic and Infectious Disease Response
- Deaths
- Civil Disobedience / Protests



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### Emergency Action Plan Events

List of incidents and what immediate actions need to be taken for each:

- Vehicle Accidents
- Workplace Violence
- Bomb Threats
- Criminal Activity
- Chemical Spills
- Terrorism
- Cyber Attacks



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### Plan Structure

- Map of evacuation routes and meet-up locations
- List of required staff safety trainings
- What tools and other items like PPE are needed to effectively respond and address any given situation
- Safe handling instructions and applications
- Waste and/or equipment disposal
- Media relations guidelines
- Copy of the Business Continuity Plan
- Copies of most up-to-date testing reports, deficiencies, recommended repairs, upgrades as well as any special services by vendors/contractors



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### Plan Structure

- Various hazard identification, assessment, and control procedures
- List of residents or staff that may require assistance during an evacuation
- Various reports, templates and checklists etc.
- Site Plans / Blueprints
- List of all life/safety areas; fire alarm control room, sprinkler room, etc.
- List/Map of all fire extinguisher locations
- List and location of all utility mains and shut-offs
- List of all areas with stored "Emergency" equipment



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### Plan Additional Information

- List and/or diagram of all gas mains, branch distribution lines, and shutoff locations
- List and/or diagram of all sprinkler system equipment, fire pumps, standpipes, hydrants, and their respective locations
- Map of all underground utility lines and/or tie-ins
- List and/or diagram all gas, water and electrical shutoffs and their locations
- List and/or diagram of any additional special services equipment such as building stairwell smoke evacuation fan systems



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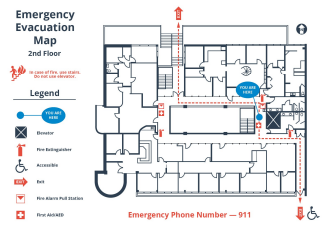
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## Floor Evacuation Plan



**Emergency Evacuation Map**  
2nd Floor

**Legend**

- Exit
- Director
- Fire Extinguisher
- Accessibility
- Exit
- Fire Alarm Pull Station
- Fire Alarm

Emergency Phone Number — 911

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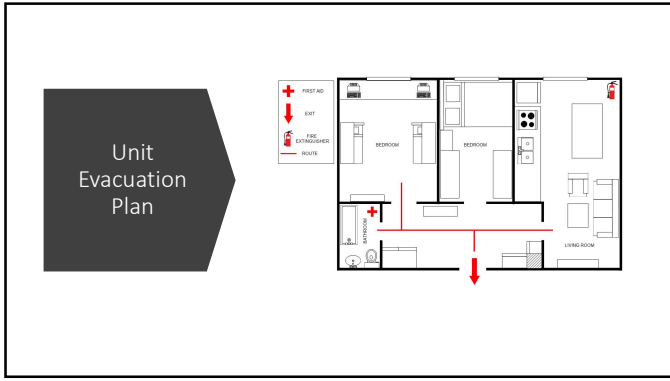
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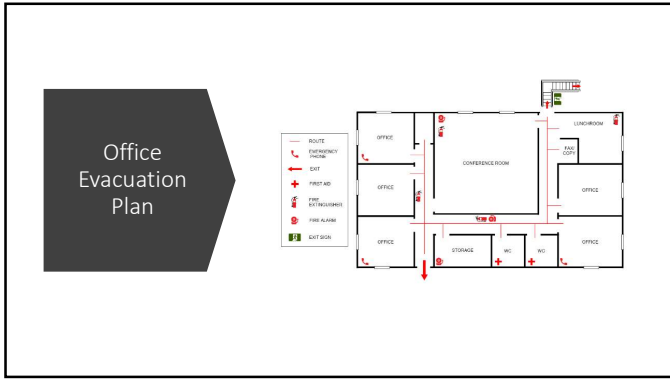
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**Fire Alarm Systems**  
and how they work...

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**Knowing What Systems Your Buildings Have and How They Work**

- Fire Alarm Systems
- Fire Sprinklers / Suppression Systems (i.e., wet/dry, halon )
- Fire Extinguishers
- Fire Pumps
- Fire Hydrants
- Fire Doors
- Fire Escapes & Fire Ladders
- Smoke Evacuation Systems



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**Importance of Fire Alarms and Drills**

- Fire drills help prepare employees and others to respond quickly, calmly, and safely during a fire or other emergency.
- Fire drills play a very important role in workplace fire safety.
- Although OSHA *does not* specifically require fire drills, it strongly recommends them. State and Local Codes can vary on this.
- Fire drill objectives include:
  - Giving employees and others an opportunity to practice emergency procedures in a simulated, but safe environment
  - Determining if employees understand and can carry out emergency response duties
  - Evaluates effectiveness of evacuation procedures and determining necessary changes or adjustments to procedures to improve performance
  - Complying with requirements of the local fire code



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**Importance of Means of Egress**

- Means of egress - also known as escape routes.
- There must be an unobstructed path of travel from any part of a building outside to a "public" way.
- There cannot be any obstructions or other factors that hinders anyone from using these emergency access routes to escape to safety.
- You need to ensure that all personnel and others in a building can evacuate quickly and safely.
- All means of egress must be properly illuminated.
- All fire doors must be always 100% operational.
- Inspect and document weekly.



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## Importance of Fire Doors

### NFPA 80



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### Fire Doors

- The newest edition of the National Fire Protection Association, (NFPA) standard, *NFPA 80 (2022)* regulates the installation and maintenance of fire doors used to prevent the spread of fire and smoke within, into, or out of buildings.
- The regulations continue to mandate annual inspections to meet federal, state, and local building, fire and/or life safety code compliance.
- Passing these inspections is especially important where we find large groups of people including residential buildings, hospitals, health care facilities, hotels, colleges and universities, as well as commercial buildings.
- Most insurance companies require some form of NFPA 80 compliance before they underwrite insurance for these buildings.



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### Fire Door Inspections

- The National Fire Protection Association, (NFPA) defines a qualified fire door inspector as "an individual who, by possession of a recognized degree, certification, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to deal with the subject matter, the work, or the project."
- NFPA requires that fire doors and fire door hardware pass "documented" 15-point inspections.
- These inspections should be saved electronically or in a safe place for future reference and review if needed.



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### Fire Doors - Inspection Checklist

- Door Fire Rating labels are clearly visible and legible
- Look for holes or breaks on any part of the door surface or frame then repair them.
- If the door is so equipped, inspect glazing, vision light frames and glazing beads. Make sure they are all intact.
- Check that the door, frame, hinges, hardware and non-combustible threshold are all secure, aligned and in working order.
- Inspect for missing, defective or broken parts and fix.
- Common red flags during inspections are damaged latch bolts and/or strike plates, closer arms and cover plates.

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### Fire Doors - Inspection Checklist

- With the door closed, measure clearances around the perimeter of the door and make sure they do not exceed clearances listed in NFPA 80 2022: 4.8.4 and 6.3.1.
- Clearance under the bottom of the door shall be a maximum of 3/4". Make needed adjustments to comply.
- Open the door fully and confirm that the self-closing device completely closes and latches the door. Adjust the device to get full closure.
- Clearance between door and frame: 1/8".
- If a coordinator is installed, confirm that the inactive leaf closes before the active leaf.

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**Fire Doors - Inspection Checklist**

- Verify the presence and integrity of any required meeting edge protection, smoke gasket, etc.
- Confirm that the gasketing does not interfere with the operation of the fire door. In compliance with NFPA 80, replace or repair gasketing as needed.
- Verify, that the top edge of the kick plate is not more than 16 inches from the bottom of the door (refer to NFPA 80 for kickplate compliance regulations).
- Confirm that signage affixed to the door is attached with adhesive; screws are never allowed. This signage cannot exceed five percent of the total door surface.



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**Evacuation Procedures**



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**Fire & Smoke**

- If you see fire, smell, or see smoke, you need to get out and call 9-1-1 immediately.
- If you need to evacuate through smoke, get down on the floor, and crawl to the nearest exit.
- If you need to exit through a closed door, always remember to touch the door first with the back of your hand to see if it is warm. Fire could be raging on the other side, and you may need to find an alternate route.
- If smoke, heat, or flames are restricting your safe evacuation from a room, find as safe a location as possible to wait for emergency responders to extricate you.
- If you can, try to signal for help verbally or with a bright-colored item at the window.



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**Fire Safety Resources**

- ✓ Ready.Gov: [www.ready.gov/business/implementation/emergency](http://www.ready.gov/business/implementation/emergency)
- ✓ NFPA: [www.nfpa.org](http://www.nfpa.org)
- ✓ FEMA: [www.fema.gov](http://www.fema.gov)
- ✓ American Red Cross: [www.redcross.org](http://www.redcross.org)
- ✓ State Departments of Emergency Management
- ✓ State Departments of Public Safety
- ✓ State Fire Marshals' Offices
- ✓ Local Fire Departments
- ✓ Company Insurance Carriers / Brokers



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**Questions & Answers**

There is no such thing as a silly question!



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**THANK YOU!**

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