

# Fire Prevention & Response: How to Implement a Portable Fire Extinguisher Safety Program



A portable fire extinguisher is often the literal difference between life and death. That's because a fire's consequences turn on what happens in the critical first few moments after it starts, aka, the early or 'incipient stage':

- 93% of all fire deaths and 95% of direct property damage occur after the fire progresses beyond the incipient stage;
- Most fires can be put out during the incipient stage before ever reaching killing and catastrophic levels.

Here's a strategy you can implement over a 30-day period to ensure proper use, care and maintenance of portable fire extinguishers as well as compliance with OHS rules.

## PHASE 1: FIRE HAZARD ASSESSMENT (Day 1-5)

**Step 1: General Hazard Assessment:** Do a general fire safety assessment considering the jobs, materials, operations, equipment and tools that pose potential fire hazards at your workplace:

- Identify all flammable, combustible or explosive substances;
- Evaluate how these materials are used, handled and stored;
- Identify all ignition sources, i.e., things that can cause flammable, combustible or explosive substances to ignite;
- Identify all work operations involving fire hazards, such as welding and hot work;
- Observe workers performing these operations;
- Identify other fire hazards;
- Evaluate the fire safety aspects of the building's construction, e.g., ease of ingress and egress, use of fire-resistant materials, occupancy levels, installation of sprinklers, etc.;
- Evaluate current fire alarm and notification equipment and methods;

- Evaluate whether adequate portable fire extinguishers (and other firefighting equipment) are on hand;
- Interview workers and supervisors about fire hazards;
- Review written records of worker complaints or safety committee recommendations involving fire safety.

Be on the lookout for key fire safety risk factors such as:

- Unsafe storage, use and handling of flammable, combustible or explosive substances;
- Unsafe conducting of hot work and other hazardous operations;
- Overloading of electrical outlets;
- Frayed or damaged wiring or electrical equipment;
- Proximity of hazardous substances to heat or ignition sources;
- Accumulations of combustible dusts, fumes or vapours in the air;
- Accumulations of dangerous debris such as oily rags;
- Failure of workers to follow good housekeeping practices;
- Lack of fire safety awareness on the part of workers.

**Step 2: Fire Type Identification:** Identifying the category or class of a potential fire is crucial for determining how to prevent and extinguish it. Fires are grouped by classes based on the fuel they burn. Identify the class(es) of each fire hazard you identify during your general hazard assessment:

**Table 1: The 5 Classes of Fires**

Class	Fuel Source(s)/Other Defining Trait(s)
Class A	Ordinary combustible materials such as wood, cloth, paper, rubber, plastics
Class B	Flammable or combustible liquids, petroleum greases, tars, oils, paints, solvents, lacquers, alcohols, flammable gases
Class C	Energized live electrical equipment such as motors, power tools, appliances
Class D	Combustible metals such as magnesium, titanium, zirconium, sodium, lithium, potassium
Class K	Cooking appliances or combustible cooking materials such as vegetable or animal oils and fats

## **PHASE 2: SELECTION OF FIRE SAFETY CONTROLS (Day 6-15)**

**Step 1: Selection of Extinguishers:** Select the type of portable fire extinguisher(s) designed to fight the particular classes of fire identified in your fire hazard assessment.

**Table 2: Matching Fire Type to Portable Fire Extinguisher Type(s)**

Class of Fire	Type(s) of Approved Portable Fire Extinguisher
Class A (ordinary combustibles)	Type A Type A-B

Class B (flammable liquids)	Type A-B Type B-C Type A-B-C
Class C (electrical)	Type B-C Type A-B-C
Class D (combustible metals)	Bucket of sand
Class K (combustible cooking materials or appliances)	Class K wet chemical*

\* Class K fire extinguishers require special training for safe use

Another way to distinguish among types of portable fire extinguishers is by the materials they use.

**Table 3: Portable Fire Extinguisher Types Comparison**

Extinguisher Type	Class	Range	How Long Before It Empties	Other Key Characteristic(s)
Water	A	Long	60 seconds	Not to be used for electrical fires
CO <sub>2</sub>	B & C	Short	10-20 seconds	Displace oxygen and may make breathing difficult in confined spaces
Dry Chemical	B & C & some A	Moderate	10-25 seconds	Leaves potentially harmful residue
Liquid Gas	B & C & some A	Short	10 seconds	May make breathing difficult in confined spaces
Chemical Foam	A & B	Moderate	10-30 seconds	Leaves potentially harmful residue
Bucket of Sand/Dry Powder	D			Class D fire fighting may require special equipment
Wet Chemical	K			Leaves potentially harmful residue

Source: CCOHS

**Step 2: Implementation of Extinguisher Procedures:** Next, you need procedures covering use, maintenance, inspection and testing of portable fire extinguisher equipment including, at a minimum:

- Monthly visual inspection of portable fire extinguishers;

- Annual maintenance checks of fire extinguishers;
- Creating and retaining records documenting inspections and checks;
- Hydrostatic testing of portable fire extinguishers at regular intervals and in response to red flags, e.g., signs of corrosion;
- Creating and retaining hydrostatic testing records.

**Step 3: PPE & Protective Clothing:** Workers counted on to extinguish fires or otherwise exposed to fire and explosion risk must be equipped with and use appropriate PPE and protective clothing, including:

- Foot and leg protection;
- Protective footwear;
- Body protection;
- Gloves or glove systems;
- Head, eye and face protection; and
- Respiratory protective equipment (for indoor structural fire fighting).

### **PHASE 3: PORTABLE FIRE EXTINGUISHER EDUCATION & TRAINING (Day 16-20)**

**Step 1: Deliver Training:** Basic portable fire extinguisher use should be part of the general fire safety and prevention you provide workers exposed to fire hazards and include, at a minimum:

- Warning workers not to use an extinguisher unless trained to do so;
- The different fire classes;
- The types of extinguisher(s) approved for fighting each class;
- The PASS system of fire extinguisher use:
  - **PULL** the extinguisher pin;
  - **AIM** the extinguisher;
  - **SQUEEZE** the top handle or trigger; and
  - **SWEEP** the fire area until the extinguisher runs out;
- Evacuation instructions if fire extinguishing fails; and
- Fire department contact information and instructions.

**Step 2: Verifying Training:** Methods of verifying the effectiveness of training include:

- Quizzing workers on the lesson after you deliver it;
- Making workers demonstrate the safe work procedures covered;
- Making workers demonstrate proper use of the PPE covered; and
- Observing workers on the job to ensure they're actually following their training.

### **PHASE 4: INSTALLATION, INSPECTION & MAINTENANCE (Day 21-30 and forever after)**

**Step 1: Installation:** Make sure portable fire extinguishers are properly installed in clearly visible locations that are readily accessible to workers in accordance with the height and spacing requirements of your jurisdiction's Fire Code in locations that are marked by signs and kept unobstructed.

**Step 2: Marking of Extinguishers:** The National Fire Protection Association (NFPA) recommends using a set of symbols to mark portable fire extinguishers to show the class of fire they're designed to fight.

**Step 3: Inspection:** Ensure that a competent person visually inspects at least

monthly to verify, at a minimum that extinguishers:

- Are securely fastened and well supported;
- Are fully charged and ready to use;
- Are easily reached without any obstructions;
- Are properly marked;
- Have clear and unobstructed discharge openings; and
- Have their ring pin in place and seal in place.

**Step 4: Maintenance & Testing:** Extinguishers should be serviced by a competent person at least once a year or more often when inspection or manufacturing instructions indicate that servicing is necessary. Damaged, corroded, burned or defective equipment should be immediately removed from service.

**Step 5: Recordkeeping:** Keep careful records including tagging each extinguisher to show the dates of inspection, recharging or servicing and names of the servicing agency and person who did the service and office records showing maintenance items such as serial number and type of extinguishers, location, inspection date, description of tests, date of next inspection, date of annual servicing, comments and inspector's signature.