

## Fire Protection

As one of the most destructive things that can occur on our jobsites, fire control is always a high priority.

Since the easiest fire to control is the one that isn't permitted to start, our fire protection efforts concentrate on prevention as the first choice in fire emergency planning.



## Know the hazards

The Hazard or Risk Assessment process is where prevention begins.

- We see if a worksite is a “hazardous location” as described in the Canadian Electrical Code.
- Where the process indicates the possibility of a flammable and/or explosive atmosphere affecting a worksite
  - We determine the contaminating source and substance
  - conduct atmospheric tests to determine the level of concentration of the flammable and/or explosive substance
- You are not allowed to enter or begin work in an area that:
  - contains a flammable or explosive atmosphere in excess of 15% of the substance's LEL (Lower Explosive Limit)
  - the concentration of a flammable or explosive substance cannot be maintained at or below 15% of the substance's LEL for the duration of the work.



## Ignition sources

Your worksite operations may include sources of heat, spark or exposed flames.

- Isolate operations from each other
- Do not store any combustible items near these operations
- Clean equipment and work areas before and after each use so that they are free from dusts and oil particles
- Identify all sources of ignition
  - Sparks
  - Welding
  - Smoking
  - Hot plates
  - Pilot lights
  - Space heaters
  - Boilers
  - Furnace
- Make sure combustible or flammable items are not stored near ignition sources
- Ensure appropriate fire walls are erected around hot equipment when required
- Check ventilation rates for equipment and repair where appropriate
- Uncontained fires are not allowed on your worksite unless authorized in writing by the customer complete with a specific procedure.
  - No open flames of any kind are to be located less than 25 meters from the edge of a hazardous location.



- All company vehicles used on sites where there is the possibility of exposure to flammable gases should be equipped with automatic positive air shutoffs on the intake side of the engine.
  - Where the exhaust of an internal combustion engine could pose an ignition hazard, the equipment should be equipped with a flame-arresting device.
- Any vehicles not required in a hazardous location as part of the work are to be parked in a safe location outside of the area and shut down.



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Pay special attention to Hot Work such as welding, grinding or even cooking

- Observe the Hot Work permit system
- Make sure all the equipment and accessories used in hot work are in good working condition
- Ensure adequate fire extinguishers are located in all areas involving hot work.
- Separate hot work areas from other operations
- Keep combustible or flammable materials away from hot work areas
- Develop safe work procedures for operations involving hot work
- Use a “fire watch” attendant as necessary
  - Trained fire watch personnel should be employed for welding and cutting operations unless the work is being done in a designated area appropriate for hot work.
- Use appropriate personal protective equipment such as face shield, respirators, eye protection, etc.



Fire extinguishers are meant to be used to safely escape from a fire and not to fight a fire.



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A space heater is a fire hazard

- Perform an audit or hazard assessment to ensure the unit is functioning correctly and the space is being heated properly
- If a space heater is still required, develop guidelines about their safe use
- Include storage guidelines for combustible items within a certain distance of a heat source that complies with local fire codes



## Electrical

Verify wiring and connections are done properly and appropriate to the current or voltage ratings

- Make sure that all electrical systems are installed and function according to any codes that may apply
- Identify and replace wiring that is not appropriate for the loads they are carrying
- Repair or replace any exposed wiring
- Do not overload electrical equipment or electrical outlets
- Replace extension cords that are being used for long term purposes with permanent wiring.
- Use lock-out/tagout protocols for any work done on energized systems
- Educate everyone on electrical safety
- Provide appropriate personal protective equipment (PPE) where a risk of arc-flash or arc-blast is present



## Storage and Handling

Keep an inventory of all flammable and combustible materials on site.

- Identify all flammable and combustible materials.
  - Gasoline
  - Diesel
  - Propane
  - Natural gas
  - Oxygen
  - Acetylene
  - Paints
  - Degreasers
  - Parts washers solvent
  - Alcohol based cleaners
  - Aerosols
- Maintain an inventory with the quantity, location of use, and storage
- Include all quantities such as small pails or cans

### General cleaning solvent tips

- Avoid using flammable materials for cleaning purposes if possible
  - Try not to use gasoline and other flammable solvents
- Take precautions with cleaning agents.
  - Do not heat
  - Do not use on hot surfaces
  - Do not use near open flames
- Areas where solvents are used must be well ventilated
- Place rags in designated covered metal containers until the rags can be properly cleaned or disposed
- Remove clothing that becomes contaminated with a cleaning agent as soon as possible
  - Clean as directed by the manufacturer of the product

## Flammable materials storage and treatment

- Engines must be shut down and other sources of ignition including smoking eliminated within 7.5 meters of a refueling station or situation. This includes refueling:
  - Vehicles
  - mobile equipment
  - ATVs
  - Chainsaws
  - transferring flammable liquids from one container to another,
- Place suitable warning signage at all refueling stations.
- Do not allow hot work, open flame, or smoking in storage areas
- Do not store other combustible materials near flammable storage areas or lockers
- Separate flammable liquid transfer areas from other operations by distance or by fire walls with the proper fire resistance
- Make sure there are routes of exit for the spaces in which flammable materials are stored or handled
  - Exits must be located so that occupants can exit quickly and not be trapped in the event of fire
- Use explosion-resistant light fixtures in storage rooms
- Store flammable liquids in approved storage lockers, or containers
  - Bulk drums of flammable liquids must be grounded and bonded during dispensing
  - Large bulk storage of gasoline, diesel, or oil must be kept in above ground tanks
- When not in use, keep flammable liquids in covered containers
- Clean the spills promptly
- Keep combustible waste material and residues to a minimum
  - Store in covered metal receptacles

- Dispose daily
- Make sure appropriate fire extinguishers are mounted within the required distance for both indoor and outdoor areas containing flammable liquids.
  - Check the local fire code for specifications
- Provide appropriate ventilation, including continuous mechanical exhaust ventilation system for every indoor storage room
- Ensure adequate static electricity control in place when products are being transferred from one conductive container to another.





## Maintenance

All fire suppression equipment must be inspected at least annually by a certifying agency and repaired or replaced if found defective.

Fire suppression equipment that is in use must be inspected monthly for pressure reading, damage, seal and access. This inspection must be recorded (see monthly fire extinguisher checklist form).

## L.I.E.S.

Here is the *L.I.E.S.* strategy for fire prevention.

→ **L – Limit**

- Reduce the amount of flammables and combustibles in the workplace
- Store and bring in only quantities that are needed for short term needs
- E.g. Have equipment refueled daily by a supplier rather than store fuel

→ **I – Isolate**

- Isolate materials or processes that present a high risk of fire
- E.g. Clear areas of flammables and combustibles before welding, grinding or gouging

→ **E – Eliminate**

- Get rid of excess materials and waste on a regular basis
- Eliminate anything that is not required for the work
- Remove material that poses a fire risk and does not need to be in the workplace
- E.g. Excess supplies of flammables and combustibles

→ **S – Separate**

- Separate materials or processes that could cause a fire if allowed to interact
- Separate materials that could increase fire damage by their proximity to each other
- E.g. Oxygen and fuel gases separated in storage according to code

