



COUNTY OF NORTHERN LIGHTS

POLICY

HOT WORK

CREATED: 2/9/2025

REVISED:

TOTAL PAGES: 7

PURPOSE

The purpose of this program is to develop and implement safe work procedures respecting hot work processes performed in the workplace in Alberta.

SCOPE

This program is applicable to all employees directly involved or assisting in the welding, cutting and hot work operations in Alberta. When work is performed on a non owned or operated site, the operator's program shall take precedence, however, this document covers all company employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

DEFINITIONS

- **Welding/Hot Work Procedures** - any activity which results in sparks, fire, molten slag, or hot material which has the potential to cause fires or explosions.
- **Examples of Hot Work** - Cutting, Brazing, Soldering, Thawing Pipes, Grinding, using an electric tool in a hazardous area and Welding.
- **Special Hazard Occupancies** - any area containing Flammable Liquids, Dust Accumulation, Gases, Plastics, Rubber, and Paper Products.
- **Hazards** - includes, but not limited to the following; fires and explosions, skin burns, welding "blindness," and respiratory hazards from fumes and smoke.

KEY RESPONSIBILITIES

Managers and Supervisors

- Determine if its property is safe for welding and cutting operations.
- Establish safe areas for welding and cutting operations.
- Provide training for all employees whose task includes heat, spark, or flame producing operations such as welding, brazing, or grinding.
- Develop and monitor effective hot work procedures.
- Provide safe equipment for hot work.
- Provide proper and effective PPE for all hot work.
- Monitor all hot work operations.
- Ensure all hot work equipment and PPE are in safe working order.
- Allow only trained and authorized employees to conduct hot work and conduct inspections of the hot work area before operations begin.
- Ensure permits are used for all hot work

Employees

- Follow all hot work procedures; properly use appropriate hot work PPE.
- Inspect all hot work equipment before use; report any equipment problems or unsafe conditions.
- Ensure area is safe to perform hot work.
- Inspect area and complete permit prior to performing hot work.
- Monitor work area after completion.

PROCEDURE



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- Management must ensure a hot work permit is completed before performing hot work:
 - A hot work permit is issued that indicates the nature of the hazard, the type and frequency of atmospheric testing required, the safe work procedures and precautionary measures to be taken and the protective equipment required.
 - The hot work location is cleared of combustible materials or suitably isolated from combustible materials.
 - Procedures are implemented to ensure continuous safe performance of the hot work.
 - Testing shows that the atmosphere does not contain a flammable substance, in a mixture with air, in an amount exceeding 20 percent of that substance's lower explosive limit for gas or vapours, or the minimum ignitable concentration for dust.
- Hot work must comply with the requirements of CSA Standard W117.2-06, Safety in Welding, Cutting, and Allied Processes (or current version).
- Gas welding, burning, and/or cutting equipment shall be properly maintained. No gas welding, burning, or cutting equipment shall be used unless it is free from defects, leaks, oil, and grease.
- Precautions to prevent a fire shall be taken when using a blow torch or welding or cutting equipment or a similar piece of equipment. Before cutting or welding is permitted the area shall be inspected by a supervisor responsible for inspection and granting authorized welding and cutting operations. Precautions that are to be taken shall be in the form of a written Hot Work permit.
- The work area is inspected before hot work begins. Management must ensure that, before a welding or allied process is commenced, the area surrounding the operation is inspected, and all combustible, flammable, or explosive material, dust, gas, or vapour is removed, or alternate methods of rendering the area safe are implemented.
- Ducts, conveyor systems, and augers that might carry sparks to distant combustibles shall be protected or shut down. Where cutting or welding is done near walls, partitions, ceilings, or openings in the floor (grating, manholes, etc.), fire-resistant shields or guards shall be provided to prevent ignition.
- If welding is to be done on a metal wall, partition, ceiling, or solid decking/flooring, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation of heat. Where combustibles cannot be relocated on the opposite side of the work a fire watch person shall be provided on the opposite side of the work.
- Welding shall not be attempted on a metal partition, wall, and ceiling or decking/flooring constructed of combustible sandwich panels.
- Cutting or welding on pipes or other metal in contact with combustible walls, partitions, floors, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by combustion.
- Management must protect persons when performing hot work above workers. If a welding or allied process is performed above an area where a worker may be present, Management must ensure that adequate means are taken to protect a worker below the operation from sparks, debris, and other falling hazards.
- Cutting or welding shall not be permitted in the following situations:
 - In areas not authorized by management.
 - In sprinkled buildings while such protection is impaired.
 - In the presence of potentially explosive atmospheres, e.g. flammables.
 - In areas near the storage of large quantities of exposed, readily ignitable materials.
 - All dust accumulation shall be cleaned up before welding or hot work is permitted.
- Whenever welding or cutting is performed in locations where other than a minor fire might develop or any of the conditions mentioned above cannot be met, a fire watch shall be provided:
 - The fire watch shall be provided during and for a minimum of 1/2 hour past the completion of the welding project.
 - The fire watch shall be trained in the use of fire extinguishers and the facility's alarm system.
 - During this time the fire watch will have appropriate fire extinguishers readily available.
 - Suitable extinguishers shall be provided and maintained ready for instant use.
 - A hot-work permit will be issued on all welding or cutting outside of the designated welding area.



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Any person performing a gas welding or allied process tests a regulator and its flexible connecting hose immediately after it is connected to a gas cylinder to ensure that there is no leak of the gas supply. A container which may have held a combustible substance must be thoroughly cleaned before any welding or burning operation is carried out on the container. If an object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat sparks and slag and to protect the immovable fire hazards.

Cleaning Chemicals

In the use of cleaning materials, because of their possible toxicity or flammability, appropriate precautions such as manufacturer instructions shall be followed, also:

- Degreasing and other cleaning operations involving chlorinated hydrocarbons shall be so located that no vapours from these operations will reach or be drawn into the atmosphere surrounding any welding operation.
- In addition, trichloroethylene and perchloroethylene shall be kept out of atmospheres penetrated by the ultraviolet radiation of gas-shielded welding operations.
- A designated welding area shall be established to meet the following requirements:
- Floors swept and cleaned of combustibles within 35 feet of work area.
- Flammable and combustible liquids and material will be kept 35 feet from work area.
- Adequate ventilation providing 20 air changes per hour.
- At least one fire extinguisher of a suitable type and capacity must be immediately available at a work location where welding or cutting is done.
- Fire extinguisher locations must be marked and made known to workers.
- Protective dividers such as welding curtains or non-combustible walls will be provided to contain sparks and slag to the combustible free area.

Fire Suppression

Fire watch personnel MUST be maintained at least a half an hour after welding or cutting operations have been completed. Requirements for welding conducted outside the designated welding area:

- Portable welding curtains or shields must be used to protect other workers in the welding area.
- A hot-work permit must be completed and complied with prior to initiating welding operations.
- Respiratory protection is mandatory unless an adequate monitored airflow away from the welder and others present can be established and maintained.
- Plastic materials must be covered with welding tarps during welding procedures.
- Fire Watch must be provided for all hot-work operations.

After welding operations are completed, recently welded or flame cut work must be marked "HOT" or effectively guarded to prevent contact by a worker, if a worker not directly involved in the hot work is likely to enter the work area. Welding work areas shall be kept free of electrode stubs, metal scrap and other slipping or tripping hazards and receptacles for electrode stubs shall be provided and used.

Safe Handling and Storage of Compressed Gas Cylinders

Management must ensure that:

- Compressed or liquefied gas containers are used, handled, stored, and transported in accordance with the manufacturer's specifications.
- A cylinder of compressed flammable gas is not stored in the same room as a cylinder of compressed oxygen, unless the storage arrangements are in accordance with Part 3 of the Alberta Fire Code (1997).
- Compressed or liquefied gas cylinders, piping, and fittings are protected from damage during handling, filling, transportation, and storage.
- Compressed or liquefied gas cylinders are equipped with a valve protection cap if manufactured with a means of attachment and oxygen cylinders or valves, regulators, or other fittings of the oxygen using apparatus or oxygen distributing system are kept free of oil and grease.



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Cylinder valves shall be closed and hoses drained when work is finished and when cylinders are spent or not being used, and valve protection covers shall be kept in position when the cylinders are not connected for use.

Compressed gas cylinders shall be:

- approved and legibly marked near the shoulder of the cylinder for the purpose of identifying the gas content with either the chemical or trade name of the gas,
- kept away from sources of heat and from radiators and piping systems that may be used for grounding purposes,
- stored valve-end up,
- secured against falling during storage, transportation or use, and
- stored and used only in the upright position

Compressed gas cylinders shall not be:

- hoisted by slings,
- dropped or subjected to impact,
- lifted by the valve protection caps, the regulators must be removed and cylinders shall not be dropped or permitted to strike each other,
- tampered with nor should any attempt be made to repair them,
- kept in unventilated enclosures such as lockers and cupboards, or
- dropped, hoisted by slings or magnets or transported or stored in a horizontal position.

Assigned storage spaces shall be located where cylinders cannot be knocked over or damaged by falling objects or subject to tampering by unauthorized persons. Additionally:

- Back flow protection shall be provided by an approved device that will prevent oxygen from flowing into the fuel-gas system or fuel from flowing into the oxygen system.
- An approved device that will prevent flame from passing into the fuel-gas system shall provide flashback protection.
- An approved pressure-relief device set at the appropriate pressure shall provide backpressure protection.

Special care must be taken when transporting gas cylinders:

- Cylinders must be secured with valve cap installed.
- Removed regulators must be carried in the cab of the vehicle.
- They shall be handled carefully - rough handling, knocks, or falls are liable to damage the cylinder, valve, or safety device and cause leakage.
- Safety devices shall not be tampered with.

Welding Equipment Safety

- All equipment will meet manufacturer's specifications. Management must ensure that welding or allied process equipment is erected, installed, assembled, started, operated, used, handled, stored, stopped, inspected, serviced, tested, cleaned, adjusted, carried, maintained, repaired and dismantled in accordance with the manufacturer's specifications.
- Connections between the cylinder, hose, and regulator are tested for leaks before operation.
- Gas management systems are equipped with flash back arrestors between the torch and regulator.
- Arc welding must not be carried out unless workers who may be exposed to radiation from the arc flash are protected by adequate screens, curtains, or partitions or wear suitable eye protection.
- A screen, curtain or partition near an arc welding operation must be made of or be treated with a flame-resistant material or coating and must have a non-reflective surface finish.
- All personnel operating, installing, and maintaining welding equipment shall be qualified or trained to operate and maintain such equipment.



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- All workmen assigned to operate or maintain equipment shall be familiar with and electrical welding equipment shall be chosen for safe operation and comply with applicable standard.
 - Arc welding equipment must be designed to meet conditions such as exposure to corrosive fumes, excessive humidity, excessive oil vapour, flammable gasses, abnormal vibration or shock, excessive dust and seacoast or shipboard conditions.
 - It shall be operated at recommended voltage in accordance to the manufacturer recommendations.
 - All leads shall be periodically inspected and replaced if insulation is broken or splices are unprotected.
 - Leads shall not be repaired with electrical tape.
- All ground connections shall be checked to determine that they are mechanically strong and electrically adequate for the required current.
- A disconnecting switch or controller shall be provided at or near each welding machine along with over current protection.
- All direct current machines shall be connected with the same polarity and all alternating current machines connected to the same phase of the supply circuit and with the same polarity. Additionally:
 - To prevent electrical contact with personnel, all electrode holders shall be placed where they do not make contact with persons, conducting objects or the fuel of compressed gas tanks.
 - All cables with splices within 10 feet of the holder shall not be used.

Resistance Welding

- All personnel operating, installing, and maintaining welding equipment shall be qualified or trained to operate and maintain such equipment. Additionally:
 - Voltage, interlocks, guarding, grounding and shields shall be in accordance with manufacturer recommendations.
 - Precautions such as flash guarding, ventilation and shields shall be provided to control flashes, toxic elements, and metal fumes.
- If the object to be welded or cut cannot readily be moved, all moveable fire hazards should be removed.

Transmission Pipeline

When arc welding is performed in wet conditions, or under conditions of high humidity, special protection against electric shock shall be supplied.

Pressure testing:

- In pressure testing of pipelines, the workers and the public shall be protected against injury by the blowing out of closures or other pressure restraining devices.
- Protection shall be provided against expulsion of loose dirt that may have become trapped in the pipe.
- The welded construction of transmission pipelines shall be conducted in accordance with the applicable standard.

Oxygen Fuel Gas Welding and Cutting

Only approved apparatuses such as torches, regulators or pressure-reducing valves, setting generators and manifolds shall be used:

- Mixtures of fuel gases and air or oxygen may be explosive and must be guarded against.
- All hoses and hose connections shall comply with the applicable standards.
- Workers in charge of the oxygen or fuel-gas supply equipment, including generators, shall be instructed and judged competent by Management before being left in charge.

First Aid Equipment

First aid equipment shall be available at all times. All injuries shall be reported as soon as possible for medical attention. First aid shall be rendered until medical attention can be provided.



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Protective Equipment

Employees performing hot work shall be provided adequate protective equipment. Protection for workers to protect them against injury from fumes, radiation, and electric arcs produced during welding, burning, or cutting operations shall be provided and used.

TRAINING

Persons performing hot work shall be adequately trained. Every worker who as part of his or her work performs welding, burning, or cutting operations shall be a competent person. Training must include:

- Safe work and hot work procedures
- Position Responsibilities
- Cutters, welders and their supervisors must be suitably trained in the safe operations of their equipment and the safe use of the process.
- Fire Watch Responsibilities - specifically, the fire watch must know:
 - That their ONLY duty is Fire Watch.
 - When they can terminate the watch.
 - How to use the provided fire extinguisher(s).
 - Be familiar with facilities and how to activate fire alarm, if fire is beyond the incipient stage.
 - Operator Responsibilities
 - Contractor Responsibilities
 - Documentation requirements
 - Respirator Usage requirements
 - Fire Extinguisher training.

COMMUNICATION

As per the company's Safety Management System Manual, and corporate communication policy, all applicable policies and procedures are reviewed with all new employees prior to engaging in any work activities (during orientation) and annually with seasonal/returning employees (refresher training).

Chief Elected Official

Chief Administrative Officer

This Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, And Soldering, Thawing Pipe, Torch Applied Roofing and Welding.

Project Manager or Designee

- Verify precautions listed at right (or do not proceed with the work).

Required Precautions Checklist

- ☐ Available sprinklers, hose streams and extinguishers are in place, current for inspection and fit for purpose.



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- Complete and retain this permit.
- Send a completed copy to the Management

Hot Work Being Performed by:

- ☐ EMPLOYEE
- ☐ CONTRACTOR:

DATE:		PROJECT:	
LOCATION OF WORK:			
NATURE OF JOB:			
NAME OF EMPLOYEE PERFORMING HOT WORK:			
I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.			
SIGNED (PROJECT MANAGER OR DESIGNEE):			
PERMIT EXPIRES	DATE	TIME	
		A.M.	
		P.M.	

Requirements within 10 m (35 ft.) of work

- ☐ Flammable liquids, dust, lint, and oily deposits removed.
- ☐ Explosive atmosphere in area eliminated.
- ☐ Floors swept clean.
- ☐ Combustible floors wet down, covered with damp sand or fire-resistant sheets.
- ☐ Remove other combustibles where possible. Otherwise protected with fire-resistant tarpaulins or metal shields.
- ☐ All wall and floor openings covered.
- ☐ Fire resistant tarpaulins suspended beneath work.

Work on walls or ceilings/enclosed equipment

- ☐ Construction is non-combustible and without combustible covering or insulation.
- ☐ Combustibles on other side of walls moved away.
- ☐ Danger exists by conduction of heat into another area.
- ☐ Enclosed equipment cleaned of all combustibles.
- ☐ Containers purged of flammable liquids/vapours.
- ☐ Pressurized vessels, piping, and equipment removed from service, isolated and vented.

Fire watch/hot work area monitoring

- ☐ Fire watch will be provided during and for 30 minutes after work, including any coffee or lunch breaks.
- ☐ Fire watch is supplied with suitable extinguishers.
- ☐ Fire watch is trained in use of this equipment and in sounding alarm.
- ☐ Fire watch may be required for adjoining areas above, and below.
- ☐ Monitor Hot Work area for 30 minutes after job is completed.

Other precautions taken

- ☐ Confined space entry permit required if necessary.
- ☐ Ample ventilation is used to remove smoke/vapour from work area.
- ☐ Lockout/tagout required if necessary

**THIS PERMIT IS TO BE POSTED AT THE HOT WORK
WHERE WORK IS BEING PERFORMED**

**THIS PERMIT IS GOOD
FOR ONE DAY ONLY!**