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## Hot Work Procedure

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### PURPOSE

The purpose of this program is to protect the health and safety of college community members which includes employees, students and contractors, who perform hot work activities on NBCC property. This program describes the procedures to control or eliminate the risks of fire or explosion because of hot work.

### SCOPE AND LIMITATIONS

This program applies to college community members who will be performing hot work activities at NBCC.

This program does not apply to activities such as smudging, electric soldering iron, controlled use of bunsen burners, hot work in designated areas or the NBCC Fire Training Center as they follow the NFPA standard for live fire training.

### 1.0 DEFINITIONS

#### **College community member**

Any person who studies, teaches, conducts research, or works at or under the auspices of the College, including, but not limited to:

- Any person who is an employee of the College
- Students of the College
- Visiting scholars, and any other persons while they are acting on behalf of or at the request of the College
- A contractor engaged by the College

#### **Designated areas**

Approved locations which are fire-safe, selected to be designated for performing hot work activities (e.g., a welding shop). For a location to be approved as a designated area, it must:

- Be equipped with mechanical ventilation to control smoke and fumes
- Be built using fire-resistant and non-combustible materials
- Not contain any combustible or flammable materials
- Be properly segregated from adjacent areas
- Be equipped with necessary personal protective equipment (PPE) for hot work
- Be equipped with an appropriate fire extinguisher, e.g. type 4A:40B: C.

#### **Fire watch**

An individual or a group of individuals assigned to work with the hot work operator to actively watch for fires that may be a result of hot work activities. A fire watch has extensive knowledge about fire reporting and emergency procedures.

**Hot work**

Any work that involves open-flame work or generation of sparks or heat, that can produce a source of ignition. This includes, but is not limited to brazing, metal cutting, welding, grinding, soldering, and torching.

**Hot work area**

An area where hot work activities are regularly performed.

**Hot work operator (authorized worker)**

A trained individual deemed to be capable of safely performing hot work activities. Applies to all workers such as maintenance personnel, instructors, and contractors.

**Hot work permit (Appendix A)**

Documentation required to be completed and approved by permit-authorizing individual or designate prior to performing any hot work activities outside of the Designated Areas.

**NFPA**

National Fire Protection Agency

**Permit-authorizing individual (PAI)**

Is the person designated by the College to authorize hot work. The PAI at the College is usually the facilities manager or designated employee in the facilities and ancillary services department. The PAI cannot be the hot work operator unless specifically allowed under certain regulations.

## 2.0 IMPLEMENTATION

### 2.1 Roles and Responsibilities

#### 2.1.1 Permit-authorizing individual

- Actively support the process through regular inspection of work practices and provide supervision of workers authorized to perform hot work to ensure that the established procedures are followed.
- Ensure compliance with *OHS Act* and the hot work procedure including training and record keeping.
- Ensure all authorized workers are trained and competent in this procedure.
- Ensure outside contractors comply with the requirements when performing hot work.
- Investigate near misses, incidents or injury that occur related to hot work and take corrective action.
- Prior to commencing hot work activities, review this procedure with the authorized worker.
- Assess work activities to identify where and when the hot work procedure will apply.
- Review and authorize by signing the hot work permits received.
- Ensure a hot work permit has been obtained where required.
- Stop hot work operations that have not been authorized.
- Conduct periodic inspections of hot work sites.

- Comply with all requirements listed on the applicable permits.
- Maintain records of permits, worker training, hot work equipment maintenance
- Monitor all hot work performed under their direction

#### **2.1.2 Manager Health and Safety**

- Develop and maintain the hot work procedure to ensure regulatory compliance. Upon request, review specific permits or procedures.
- Provide support, resources and tools for conducting risk assessments.
- Provide training on hot work procedure requirements.
- Provide support for the development of specific hot work procedures.
- Audit the hot work procedure when required.

#### **2.1.3 Authorized Hot Work Operator**

- Must be trained and authorized to perform hot work.
- Prior to commencing hot work activities:
  - Review this procedure and adhere to all the requirements.
  - Where work is carried out in a non-designated area or if fire safety system must be by-passed, complete the hot work permit and provide the permit to permit-authorizing individual for approval
  - Inspect the area where the hot work will occur.
  - Confirm that a fire extinguisher is readily available.
  - Wear appropriate PPE as required.
  - Ensure signs and the hot work permit are posted at the hot work area.
- Ensure all combustibles are located at a minimum distance of 10 m (35 ft) from the work site. If relocation is impractical, combustibles shall be protected by a welding curtain, welding blanket, welding pad, or equivalent.
- Ensure equipment used for hot work is maintained in good working condition.
- Participate in the development and review of procedures.
- Report any deficiencies or abnormality with related hot work equipment to the permit-authorizing individual.
- Immediately report all near misses, unsafe conditions and incidents to the permit-authorizing individual.

#### **2.1.4 Fire Watch**

- Verify that the permit is posted at the entrance of the work site and that appropriate signage and barriers are being used.
- Maintain constant surveillance of the hot work site as requested. This task is to be done exclusively.
- Maintain the surveillance of the immediate site of adjacent areas; these include areas above and below if there are openings present.
- Ensure that safe conditions are maintained during hot work operations.
- Stop the hot work operations if unsafe conditions develop.

- Maintain a fire watch for at least 1 hour after completion of the hot work operations to detect and extinguish smoldering fires.
- In case of a fire, follow established fire emergency procedures:
  - Ensure the presence of a functional and certified 4A:40B:C fire extinguisher within 6 m of the hot work operation and use it, if it is safe to do so, to extinguish a fire.
  - Advise the hot work operator on changing conditions such as excessive smoke, combustibles in the area which were not present previously or any deficiency in the hot work conditions established by the permit.
- Once surveillance is completed, approve the permit (sign-off) to resume normal operations. The permit must be signed by the permit-authorizing individual hot work operator, and the individual performing the fire watch.

### 2.1.5 Contractors

- Work in compliance with the NBCC's [Health and Safety Manual for Contractors](#), and this hot work procedure requirements.
- Prior to commencing any hot work, inform the permit-authorizing individual and apply for a hot work permit. Once it is approved and signed by the permit-authorizing individual, post the hot work permit on site.
- Contractors are required to provide training for their employees that will be involved in performing hot work. If a contractor fails to follow the hot work procedure, the hot work area will be shut down until the infraction has been corrected.

## 3.0 PROCEDURES

### 3.1 Hot Work Permit

#### 3.1.1 Permit Requirements

Hot work permit is required for all

- Hot work **outside of the designated areas** (e.g., welding shop)
- Where the fire protection (fire detection or fire suppression or fire alarm pull station) system must be bypassed and
- **All contracted hot work.**

A hot work permit is *not* required for work in designated areas, and when using the following equipment:

- Bunsen burners in laboratories.
- Fixed grinding wheels.
- Electric soldering iron.

Below are some examples of designated areas on campus which are exempt from obtaining a hot work permit. All areas must meet the definition of designated areas

- Welding shops
- Industrial mechanic shops
- Plumbing shops

### 3.1.2 Prior to Hot Work

Several tasks must be performed prior to commencing any hot work. They include, but are not limited to the following:

- Verify that automatic sprinklers, hose streams and extinguishers are in service.
- Verify that hot work equipment is in good condition.
- Floors swept, and work areas are clear of all combustibles within a radius of 10 m (35 ft) of the hot work area.
- Combustibles that cannot be moved are covered with fire retardant tarpaulin or are shielded by non-combustible material.
- Combustibles on the other side of any common or shared walls, ceilings or roofs are cleared away.
- Conveyors and suction systems in the area are shut down.
- All wall and floor openings are shielded.
- Fire resistive tarpaulins are suspended beneath any overhead work.
- Area wet down to be completed, except when arc welding.
- Any containers where work is being performed are purged of flammable liquids/vapors.
- Pressurized vessels, piping, and equipment are removed from service, isolated, and vented.
- Smoke detectors, and other sensors located in close proximity of the work area are covered to prevent false trips.

### 3.1.3 During Hot Work

Other precautions that must be taken during hot work include the following:

- Post the hot work permit in a conspicuous place in the immediate area of where the work is being conducted.
- A person designated to perform fire watch is to be stationed at the work site and must perform fire watch in the adjacent areas and lower levels. Firefighting equipment must be provided to the person performing the fire watch.
- Fire watch will be conducted during hot work activity and for a period of 1 hour after work is completed, including during breaks.
- Remove covers from any smoke detectors and sensors upon completion of the hot work.

### 3.1.4 After Hot Work

There are some responsibilities that must be undertaken after hot work is completed:

- Area will be thoroughly wet down again.
- Exposed lower level(s) areas will be thoroughly wet down again.
- Ensure the hot work area is monitored periodically for 5 hours after hot work has been completed. Security personnel can be tasked to monitor areas after hot work and fire watch has concluded.
- The permit will be posted for at least 24 hours following hot work.
- Equipment used to conduct the hot work must be stored properly.

## 3.0 OTHER RELATED DOCUMENTS

- NFPA 51B Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
- CSA W117.2:19 Safety in Welding, Cutting, and Allied Processes
- CCOHS Welding Hot Work
- WorkSafeNB OHS Regulation 91-191

## Appendix A

### HOT WORK PERMIT

Can hot work be completed using alternative methods or in a designated area, such as a welding or machine shop?

IF NOT, please adhere to the precautions listed below.

This hot work permit is required for any work performed involving open flames or that produce heat and/or sparks. This includes, but is not limited to, brazing, cutting, grinding, soldering, thawing pipe, torch-applied roofing, and welding.

*Note: The required precautions are not optional. They are required for fire-safe hot work. Please explain all "No" responses below. The permit-authorizing individual (PAI) is the person designated by the College to authorize hot work. The PAI at the College is usually the facilities manager or designated employee in the facilities and ancillary services department. The PAI cannot be the hot work operator unless specifically allowed under certain regulations.*

#### Instructions:

The permit-authorizing individual must:

- Inspect work area and verify precautions listed in the Required Precautions Checklist section are met.
- Complete permit, make copy for your records, display original in work area
- Conduct final check of work area once hot work is complete. Leave permit posted for 24 hours after hot work.

Hot work to be conducted by:

☐ Employee ☐ Contractor

Date:

Job/work order no.:

Location (building and floor):

Type of hot work:

Name of person(s) & company conducting hot work:

Name of person(s) assigned to fire watch:

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 work.

Permit-authorizing individual (print name):

Permit-authorizing individual (signature):

#### Permit Expiration

Expiration date:

Expiration time:

☐ AM  
☐ PM

**FINAL CHECK:** The fire watch period has elapsed and the work area found safe

Permit-authorizing individual (signature):

#### Required Precautions Checklist

- ☐ Available Sprinklers and extinguishers are in service and operable
- ☐ Hot work equipment is in proper working condition

Assess 10 m (35 ft) radius of work for potential fire hazards:

- ☐ All combustible materials removed, protected with fire-resistive covers or shielded from sparks
- ☐ Flammable liquids, dust, lint, and oil deposits removed
- ☐ Combustible floors wet down or protected with fire-resistive covers
- ☐ Floors swept clean of combustible materials
- ☐ Explosive atmospheres are absent, or the potential for their occurrence has been mitigated
- ☐ All wall and floor openings covered or shielded from sparks
- ☐ Fire-resistive covers suspended beneath work
- ☐ Ducts that could transport sparks to distant combustibles are shielded, shut down, or both

Work near walls, ceilings or roofs:

- ☐ Construction is noncombustible and without combustible coverings or insulation, or protected with fire-resistive covers
- ☐ Combustibles on other side of walls relocated or protected

Work on enclosed equipment:

- ☐ Enclosed equipment cleaned and protected from all combustibles
- ☐ Containers purged of flammable liquids/vapors

Fire watch/hot work area monitoring requirements:

- ☐ Continuous fire watch provided during and for *at least 1 hour* after hot work has concluded, including all breaks
- ☐ Thereafter, site is inspected at least every 30 minutes for 5 hours
- ☐ Person(s) assigned to fire watch supplied with suitable extinguisher(s) and trained in the use of fire extinguisher and fire safety procedures

Other precautions that may be required:

- ☐ Fire watch provided for adjoining areas, above, or below confined-space or lock-out-tag-out required/used
- ☐ Area smoke or heat detection disabled to eliminate false alarms

Other:

Comments: