

Hot Work Procedure

Nova Scotia Public Schools



September 2022

This procedure has been developed by the Nova Scotia Department of Education and Early Childhood Development with assistance from the Nova Scotia Office of the Fire Marshal and the Nova Scotia Public Schools Fire Safety Committee.

Hot Work

The National Fire Code of Canada (NFCC), defines hot work as “Any operation that produces heat, flames, or sparks such as welding, brazing, torch soldering, grinding, plasma cutting, other spark producing activities.”

This procedure is to be followed when the applicable hot work activities listed below are performed in any learning spaces in Nova Scotia public schools. Teachers planning activities involving hot work not listed in this document (including use of open flames) must consult their administration and their Region/Board’s Fire Safety Representative before engaging in the activity.

Applicable Hot Work Activities

- Soldering (electronic, sweat, stained glass)
- Grinding (bench and hand-held)
- Metal Cutting Chop Sawing
- Plasma Cutting
- Wood Burning
- Welding (MIG, TIG, stick, spot)

Hot Work Activities Not Permitted

- Foundry operations
- Performing hot work on enclosed containers

Approved Hot Work Designated Area

An *Approved Hot Work Designated Area* is a permanent location designed for hot work approved by the Office of the Fire Marshal. It must be maintained as an area free of combustible and flammable contents, with walls, ceilings and floors of noncombustible construction or lined with noncombustible materials.

- Hot work performed in an *Approved Hot Work Designated Area* does not require a *Hot Work Permit* or a fire watch.
- *Approved Hot Work Designated Areas* must display signage: “CAUTION – HOT WORK AREA – Must be kept free of combustible and flammable items”.
- All teachers supervising *Approved Hot Work Designated Areas* are required to maintain a record of completed *Daily Safety Checklists*. See Appendix B for the *Daily Safety Checklist Procedure*.

Ceramic Kilns

Any process such as a ceramic kiln that involves hot surfaces that can accumulate dust is not permissible in a wood production lab or skilled trades centre.

Clean-up Procedures

Waste debris from hot work procedures must be disposed of in a covered metal receptacle. Debris from hot work must not be mixed with other debris from the learning space.

Cold Metal Processes

Can take place in any learning space.

Fire Watch

A continuous fire watch shall be provided during the hot work and for a period of not less than 60 minutes after its completion. A final inspection of the hot work area and adjacent exposed areas shall be conducted 4 hours after completion of the hot work. In specific circumstances, this may be transferred to other personnel provided they are trained and following the procedures in the *Hot Work Permit*. The fire watch must be documented on the *Hot Work Permit*. During the fire watch the person responsible must ensure there are no signs of smoke or fire and monitor that any waste from the hot work activity does not cause an undue fire hazard. **A fire watch and final fire inspection are not required in an *Approved Hot Work Designated Area*.**

Hot Glue Guns

Are not considered hot work.

Hot Work Permit

Hot work being performed in an area other than an *Approved Hot Work Designated Area* shall only be approved if the teacher providing direct supervision has a completed *Hot Work Permit* approved by school administration. The *Hot Work Permit* process is outlined in *Appendix A*. **Hot work performed in an *Approved Hot Work Designated Area* does not require a *Hot Work Permit*.**

If Conditions Cannot Be Met

Hot work processes can take place outside or within an *Approved Hot Work Designated Area*.

Non-Combustible Surfaces

- **Floors:** concrete, ceramic tile, stone, epoxy resin
- **Work Surfaces:** Sheet metal over hardwood benchtop; metal benchtop; ceramic tile; stone; fire resistant panel board, brick, concrete, marble, granite, silicone soldering mat.

Trained Employee

A Region/Board employee who has received training on this *Hot Work Procedure* including use of a fire extinguisher; familiarity with the hot work learning space(s); and the fire watch and final inspection requirements of the *Hot Work Permit* process. Consult your Region/Board's Fire Safety Representative for further guidance on training requirements.

Ventilation

Welding processes require code compliant ventilation. Fire code compliant downdraft table venting and other ventilation techniques are acceptable for welding stations. Consult your Region/Board's Fire Safety Representative when plans are being made to add welding activities to programming to ensure the space is designed appropriately for the activity.

Welding Curtains

Must be ANSI approved. See NFPA 51B. A.3.3.8 *Welding Curtain*. *Welding curtains are required to be listed, approved, or the equivalent for such use. One such listing includes ANSI/FM 4950, American National Standard for Evaluating Welding Pads, Welding Blankets and Welding Curtains for Hot Work Operations.*

Welding Outside

In addition to the normal indoor safety protocols, the following additional precautions must be taken:

- The welding area must be curtained off with welding curtains to control wind and to protect others from flash. If the welding area is visible from windows above, those sight lines must also be curtained.
- The welding area must be positioned over concrete or pavement.
- The welding must only be performed in dry conditions. Do not weld if the concrete or pavement under the welding area is damp or wet.
- Consult your Region/Board's Fire Safety Representative when initial plans are being made to weld outside.

Hot Work Procedures

These procedures must be followed whenever hot work is being performed as part of a learning program in or around a school. These procedures apply to teachers and students in learning environments. Operational Services staff and outside contractors are responsible to follow their own hot work procedures.

Students and teachers may perform hot work as outlined in this document, provided the following controls have been established:

- Hot work shall be permitted only when conducted under the direct supervision of a teacher/facilitator who is familiar with the proper use and handling of the hot work equipment that is to be used. (NFCC 5.2.1.2)
- Hot work not performed in an *Approved Hot Work Designated Area* shall be permitted only if the teacher providing direct supervision has an approved *Hot Work Permit* in place. The *Hot Work Permit* process is outlined in *Appendix A* found at the end of this document. **Hot work performed in an *Approved Hot Work Designated Area* does not require a *Hot Work Permit*.**
- A fire extinguisher is in the room and within 5 metres of the hot work activity. (NFCC 5.2.3.6)
- All wood dust and combustible materials in the vicinity where the hot work will be performed have been cleaned up and removed from the room (see chart for vicinity details).
- Hot work processes must take place over a non-combustible surface, wetted area, or in an *Approved Hot Work Designated Area*.
- Hot work activities may not take place in learning spaces with soft floor coverings.
- Dust producing activities must be stopped and all hazardous conditions removed/addressed before any hot work is carried out. The dust collector must be turned off, and all sawdust and combustible materials in the vicinity where the hot work will be performed must be removed.
- A continuous fire watch shall be provided during the hot work and for a period of not less than 60 minutes after its completion. A final inspection of the hot work area and adjacent exposed areas shall be conducted 4 hours after completion of the hot work. (NFCC 5.2.3.1 -2.c). The fire watch is to be documented on a *Hot Work Permit*. **A fire watch and final inspection are not required in an *Approved Hot Work Designated Area*.**

- Soldering activities must take place over a non-combustible surface or wetted surface. Flammable materials within 1 metre of the soldering activity shall be removed or protected against ignition.
- *Hot work equipment shall be maintained in good operating condition (NFCC 5.2.2.1)*
- *Hot work equipment shall be examined for leakage or defects prior to each use and shall be repaired prior to use (NFCC 5.2.2.2)*
- *Electric hot work equipment shall be de-energized when not in use (NFCC 5.2.2.3)*
- *Compressed gas hot work equipment shall be disassembled when not in use (NFCC 5.2.2.3)*
- ***Hot Work shall not be performed on enclosed containers. (NFCC 5.2.3.4 (2))***

Hot Work Activity	Controls and Conditions Met	National Fire Code of Canada Reference
Soldering Irons (Electronics, Stained Glass) Wood Burning Irons	<p>Can be carried out in any learning space (including labs with dust collection) that can meet the following:</p> <ul style="list-style-type: none"> • The learning space must have at least 1 fire extinguisher • The dust collector must be off and dust producing activities stopped • Thorough clean-up of the room is required to remove dust, paper, or other flammable objects within 1 metre of the work area prior to using soldering irons or wood burning irons • Soldering must take place over a noncombustible surface (silicone, concrete, metal, stone, ceramic) • Soldering irons must be unplugged after use. An auto shut-off timer feature is recommended. • When not in a user's hand, hot soldering irons must be in metal holders with an air space between tip and work surface • 60-minute continuous fire watch; final fire inspection after 4 hours 	<p><i>NFCC 5.2.3.2-3 Dust producing activities must be interrupted and hazardous conditions removed before any hot work is carried out</i></p> <p><i>NFCC 5.2.3.2 –1a Any combustible and flammable materials, dust or residue shall be removed from the area where hot work is carried out, or</i></p> <p><i>NFCC 5.2.3.2 -1b combustible and flammable material shall be protected against ignition by the use of noncombustible materials.</i></p>
Hot Work Activity	Controls and Conditions Met	National Fire Code of Canada Reference
Sweat Soldering	<p>Can be carried out in any learning space (including labs with dust collection) that can meet the following:</p> <ul style="list-style-type: none"> • The learning space must have at least 1 fire extinguisher • The dust collector must be off and dust producing activities stopped • Thorough clean-up of the room is required to remove dust, paper, or other flammable objects within 1 metre of the soldering area prior to using a soldering torch 	<p><i>NFCC 5.2.3.2-3 Dust producing activities must be interrupted and hazardous conditions removed before any hot work is carried out</i></p> <p><i>NFCC 5.2.3.2–1a Any combustible and flammable materials, dust or residue shall be removed from the area where hot work is carried out</i></p>

	<ul style="list-style-type: none"> Flammable framing materials around the soldering area must be wetted before soldering Ensure the torch is removed from the gas cylinder when it is in storage 60-minute fire watch, final fire inspection after 4 hours 	<p><i>NFCC 5.2.3.2-2 Combustible materials or building surfaces that cannot be removed or protected against ignition shall be thoroughly wetted where hot work is carried out</i></p>
Bench Grinding	<p>Can be carried out in any Technology Education or Skilled Trades learning space (including labs with dust collection) that can meet the following:</p> <ul style="list-style-type: none"> The learning space must have at least 1 fire extinguisher Dust collector must be off and dust producing activities stopped Thorough clean-up of the room is required to remove dust, paper, or other flammable objects within 15 metres of the grinding area prior to using the bench grinder 60-minute fire watch, final fire inspection after 4 hours 	<p><i>NFCC 5.2.3.2-3 Dust producing activities must be interrupted and hazardous conditions removed before any hot work is carried out</i></p> <p><i>NFCC 5.2.3.2 –1a Any combustible and flammable materials, dust or residue shall be removed from the area where hot work is carried out</i></p> <p><i>NFCC 5.2.3.1-2a flammable materials within 15 m of the hot work shall be protected against ignition by the use of non-combustible materials (such as a barrier curtain)</i></p> <p><i>NFCC 5.2.3.1 -3a When there is a possibility of sparks leaking on to combustible materials in areas adjacent to the area where hot work is carried out, openings in walls, floors, or ceilings shall be covered or closed to prevent the passage of sparks to such adjacent areas</i></p>
Hot Work Activity	Controls and Conditions Met	National Fire Code of Canada Reference
Oxyacetylene Processes	May be used only in an <i>Approved Hot Work Designated Area</i> , or outside.	<p><i>NFCC 5.2.3.1-1 Shall be carried out in an area free of combustible and flammable contents with walls, ceilings and floors of noncombustible construction or lined with noncombustible materials.</i></p> <p><i>NFCC 5.2.2.4 Compressed Gas Equipment must conform to NFPA 51 “Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes.”</i></p>

Hand-held Grinding	<p>May be used only in an <i>Approved Hot Work Designated Area</i>, or outside.</p> <ul style="list-style-type: none"> If the room has a fume extractor designed for hot work, this unit must be turned on prior to beginning use of the metal cut-off saw, hand-held grinder, plasma cutter, welder, or spot welder. 	<p><i>NFCC 5.2.3.1-1 Shall be carried out in an area free of combustible and flammable contents with walls, ceilings and floors of noncombustible construction or lined with noncombustible materials.</i></p> <p><i>See NFPA 51B</i></p>
Metal Cut-off Saw		
Plasma Cutting		
Spot Welding		
Welding		