| DALHOUSIE UNIVERSITY *Inspiring Minds* | **Policy Sponsor:** Assistant Vice President Facilities Management | **Approval Date:** September 2010 |
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| **Safe Work Instructions For Oxygen – Acetylene Equipment** | **Responsible Unit:** Trade Services | **Revisions:** January 2018 |

**Hazards Identified:**
Heat, bright light, explosion, fire, fumes, inhalation of toxic gases, cylinders under pressure

**Personal Protective Equipment Required:**
Safety boots, goggles with proper shading or face shield, gloves; fire retardant apron, coat or coveralls

**Training Required:**
Proper use of oxygen / acetylene gases, torches and welding and cutting techniques.
WHMIS (Including relevant MSDS sheets)
Equipment / Owner's Manuals
Applicable Safe Work Instructions

**Reference Material:**
Emergency First Aid Handbook
Safe Work Instructions for Tractor Operations

These safe work instructions in conjunction with material provided by the manufacturer about safe use of the equipment must be followed at all times.

**NOTE:** Always refer to the torch manufacturer's instructions for about selecting tip sizes and gas pressures for the type and thickness of metal to be worked on.

**PRE-USE CONSIDERATIONS**

1. Always follow the manufacturer's instructions for proper use of this equipment.
2. Do not use this equipment for anything other than its intended purpose.
3. Do not tamper with or attempt to modify this equipment in any way.
4. Do not use this equipment unless you have been properly trained.
5. Always use the required personal protective equipment.
6. Ensure that you have access to, and are familiar with, the MSDS's for the hazardous products being used.
7. Ensure that the lens in your protective eye wear is the correct lens shade number for the type for the activity to be performed.
8. Always ensure that the work area is well ventilated particularly when doing brazing.

**FIRE PREVENTION**

1. Remove all combustible material well away from the welding or cutting area.
2. Ensure that Class ABC Fire Extinguisher is readily available in the work area.
3. Never crack open an acetylene cylinder near an open flame.
4. Ensure that all clothing and PPE is free from oil and grease.
5. Change any clothing that is soiled with oil or grease.
6. Keep work area, hoses, tanks and torches free of grease and / or oil.
7. Always shut off all oxygen and acetylene valves and purge lines when work is completed.
8. After shutting down oxy-acetylene equipment always check for smoldering objects before leaving the work area.

**CYLINDER, REGULATOR AND HOSE SAFETY**

1. Inspect all hoses, tanks, regulators and torches before use.
2. Replace any of the oxy / acetylene equipment / hoses that show cracks or excessive wear.
3. Do not use any of the equipment if oil and / or grease are present or if it is damaged in any way.
4. Ensure that any required repairs and cleaning are carried out by a qualified person before using equipment.
5. Ensure that flashback arrestors are installed between the regulator and the hose if the torch does not have one built into its handle.
6. Check the two “O” rings at the cone end of the torch are both in place and in good condition.
7. Keep hoses and gas cylinders away from sparks, torch flames, heat, falling objects, e.g. metal ends that have been cut off.
8. Always check tank identification labels. Do not rely on the colour of a cylinder to identify its contents.
9. Crack open, and close quickly, cylinder values to clear the valve of any dirt before installing regulator.
10. Do Not use acetylene at pressures higher than 15 psi.
11. Only use properly designed wrenches or your hand to open cylinder valves.
12. Never strike an arc on a cylinder.
13. Never leave a lit torch unattended.

**SETTING UP OXYGEN / ACETYLENE EQUIPMENT**

1. Select a work area that is well away from electrical equipment, combustible materials, sources of ignition or areas where the cylinders could be knocked over.

2. Ensure that cylinders are either chained in a proper cart or in the vertical position to a substantial structure.

3. Remove the valve protective cover one cylinder at a time.

4. Face the valve opening away from yourself and anyone else in the area.

5. Crack open each cylinder valve by turning it on and off quickly in order to clear the valve of any dust that may have accumulated during storage or shipment.

6. Make sure that there are no sources of ignition near by when you crack open the acetylene tank valve.

7. Connect the correct regulator to each tank, first checking the threads on each cylinder valve and regulator nut.

8. Use a regulator wrench, not an adjustable wrench which can damage the brass nuts.

9. Do not over tighten any fitting. (Some regulators may require a fibre washer to ensure a tight fit.

10. Always leave the valve wrench on an acetylene cylinder to avoid having to look for the wrench if the cylinder must be shut down quickly.

11. Always check for leaks at the cylinder valve / regulator connection using a liquid soap and water mixture or a commercial product such as “LeakTech”.

12. When the regulators are in place loosen the pressure adjustment screws by turning them counter clockwise before opening the cylinder valve. **NOTE:** This precaution must be taken before the cylinder valves are opened.

13. Never open an acetylene cylinder valve more than 1 to 1 ½ turns.

14. Fully open oxygen cylinder valves for use.

15. Always open cylinder valves slowly to avoid damaging regulators and gauges.

16. Connect the oxygen (green hose) to the oxygen regulator and the acetylene (red hose) to the acetylene regulator.

17. Make sure torch valves are closed.

18. Attach the torch tip required for the type of work to be performed. (Refer to a welding chart for information about the proper size tip and correct oxygen and acetylene pressures.)

19. Open and close torch valves separately and fine tune pressure settings on regulators.

20. Depress cutting lever and adjust the torch pressure if necessary.

**LIGHTING AND ADJUSTING THE TORCH**

1. Separately purge both oxygen and acetylene lines.
2. Open acetylene valve ½ turn.
3. Light the acetylene gas first with a striker.
4. Do not light torches using cigarette lighters, matches or pilot lights.
5. Increase acetylene flow until flame leaves end of tip and no smoke is present.
6. Decrease flow until goes back to tip.
7. Open oxygen valve and adjust to neutral flame.
8. Depress oxygen lever and make necessary adjustments.

**SHUTTING DOWN TORCH OXY- ACETYLENE EQUIPMENT**

1. Close the acetylene valve on the torch.
2. Close the oxygen valve on the torch.
3. Close the acetylene cylinder valves.
4. Close the oxygen cylinder valve.
5. Open the oxygen torch valve to release all pressure from the oxygen regulator.
6. Close the oxygen valve on the torch.
7. Open the acetylene valve on the torch to release all pressure from the acetylene hose and the acetylene regulator.
8. Close the acetylene torch valve.
9. When all the cylinder gauges and line gauges read zero release the pressure adjusting screws by turning counter clockwise.
10. If equipment will not be used for a while disconnect torch and hoses and store according to manufacturer's instructions.
11. Disconnect regulators and store safely. (See manufacturer's instructions.)

12. Place protective valve caps on cylinders before removing cylinders from cart or their location at work site.

13. Store cylinders vertically in cylinder storage area.

**STORAGE AND TRANSPORTATION OF CYLINDERS**

1. Always transport cylinders in a well ventilated, preferably open, vehicle.

2. Never transport acetylene in a closed compartment within a vehicle.

3. Always close the valves on “empty” cylinders, there can always be a bit of gas remaining in the cylinder particularly in acetylene cylinders.

4. Store empty cylinders in a designated area ad mark them with an “EMPTY” tag.

5. Cylinder valves must always be closed when cylinders are in storage or being transported.

6. Regulators must be removed and cylinder valves protected by the valve cover before being stored or placed in storage.

7. When transporting cylinders ensure they are in an area separated from the drivers compartment and secured in a vertical position.

8. Ensure that cylinders are stored secured in the vertical position when stored.

9. Do Not smoke when transporting acetylene. Acetylene is HIGHLY FLAMMABLE.

10. When being transported in a vehicle, upon reaching your destination, remove cylinders from the vehicle immediately.

11. Ensure that oxygen cylinders are stored at least 6 meters (20 feet) from acetylene tanks and any other flammable gas or that they are separated by a non- flammable barrier .

12. Ensure there is adequate ventilation in the storage area.