 <b>THOMPSON RIVERS UNIVERSITY</b> Occupational Health & Safety	<b>Number:</b> OH&S 118.37.1
	<b>Revision Date:</b> 06.09.2014
	<b>Safety for Arc Welding</b>

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### 1. PURPOSE








1.1. The purpose of this safe work procedure is to provide safety guidelines while performing Arc Welding tasks on or around the Thompson Rivers University Campus and its properties.




### 2. SCOPE

2.1. These procedures apply to all Facilities Workers, Trades Instructors, Visual Arts Instructors and Students when on TRU property including the Mobile Training Unit.






### 3. PRECAUTIONS



#### **POTENTIAL HEALTH & SAFETY HAZARDS**

HAZARD		TO PROTECT YOURSELF
<b>PINCH POINTS</b> There are gears and exposed moving parts on machinery.		Use LOCK-OUT procedures when performing maintenance or conducting any work within 12" of an exposed pinch point. NEVER put your hands or feet near an exposed pinch point or gears!
<b>ELECTRICAL HAZARD</b>		Ensure all electrical equipment and machines have plugs and wires that are in good condition.
<b>EXPLOSIVE</b>		Make sure volatile chemicals are stored and handled correctly. Proper grounding must be used for all containers.
<b>HIGH SOUND LEVELS</b> Sound levels exceed 85 dB		<b>HEARING PROTECTION</b> is required when working in designated areas.
<b>EXPOSURE</b>		Understand the chemical(s) you are working in the vicinity of. Consult the MSDS and wear the appropriate PPE.
<b>UV Light</b>		Ensure you are taking safety means to protect yourself from UV rays while welding
<b>FOOT INJURY</b>		Approved protective footwear is needed when there is the risk of foot injury due to slipping, uneven terrain, abrasion, crushing potential, temperature extremes, corrosive substances, puncture hazards, electrical shock and any other recognizable hazard

<p><b>COMPRESSED GASES</b></p>		<p>Do not</p> <ul style="list-style-type: none"> <li>• drop</li> <li>• keep near heat</li> </ul>
<p><b>FIRE</b> Due to flammable liquids, gases or combustible dusts</p>		<p>Ventilate the CS. Complete a hot work permit work requires it.</p>
<p><b>FOOT INJURY</b> Falling objects</p>		<p>The appropriate ASTM or CSA approved footwear must be worn when job hazard analysis shows it is needed.</p>

4. **PERSONAL PROTECTIVE EQUIPMENT**

	<p>Safety glasses must be worn at all times in work area!</p>
	<p>Respirator with HEPA filters must be worn when working with materials that give off harmful fumes and ventilations is not adequate.</p>
	<p>Work Boots must be worn at all times when working in an area where there is risk of serious foot injury due materials falling onto the foot.</p>
	<p>Work Gloves should be worn when there is a risk of hand injury during the course of work tasks.</p>
	<p>Hard hats must be worn when working in an environment where there is a risk of objects falling from above or where there is a high risk of striking your head on objects.</p>

	Welding helmets must be kept in good shape and have protective lenses meeting shade selection requirements for the task.
	Protective clothing must be worn whenever cutting, welding and grinding is done. This includes welding jacket, welding gloves, and respirator is required.

## 5. PROCEDURES

### 5.1 Setting up Work Piece on Fixtures

- 5.1.1 Use mechanical hoists or get assistance from co-workers to set-up or adjust work pieces.
- 5.1.2 Wear recommended footwear.
- 5.1.3 Wear recommended gloves when handling work pieces with sharp edges.
- 5.1.4 Ensure work pieces are securely clamped to fixture where necessary.
- 5.1.5 Clean work areas and surfaces of unused tools and materials
- 5.1.6 Work pieces should be clean and secure to fixture.

### 5.2 Installing electrode rods into torch

- 5.2.1 Ensure Arc welding machine power to arc is electrically de-energized when changing electrical rods.

### 5.3 Energize and set Arc welding machine amperage and current.

- 5.3.1 Ensure welding machine is properly grounded
- 5.3.2 Welder should be insulated from live electrical parts and kept dry.
- 5.3.3 Inspect and replace cables, plugs and leads that show any signs of defects.
- 5.3.4 Wear recommended gloves and clothing
- 5.3.5 Refer to Operator's sheet or welders manual for correct amperage and current to be used.

### 5.4 Turning on gas and setting flow rate

- 5.4.1 Consult Operator sheet or Welder manual for correct flow rate for task.
- 5.4.2 Practice caution around compressed gas cylinders.
- 5.4.3 Protect gas cylinders from excessive heat, mechanical shock and arcs.

- 5.4.4 Ensure cylinder is insulated and fastened so it will not fall.
- 5.4.5 Do not use a compressed gas cylinder that appears to be damaged and/or defective.

**5.5 Welding Work pieces**

- 5.5.1 Wear welding helmet with proper grade of filter plate.
- 5.5.2 Ensure flash curtains/ barriers are used to protect bystanders/observers
- 5.5.3 Wear recommended protective clothing. Ensure any exposed skin is covered during the welding process. Do not wear metal jewelry and clothing with cuffs and or pockets. Stay a safe distance away from arc.
- 5.5.4 Use local exhaust ventilation and a fan to maintain good air circulation.
- 5.5.5 Do not weld work pieces unless it is properly cleaned.
- 5.5.6 Ensure welding machine is properly grounded. Welder should be insulated from live electrical parts and be dry. Inspect and replace cables, plugs and leads that show any sign of defect.
- 5.5.7 Ensure you are wearing hearing protection at all times.
- 5.5.8 Remove any combustible material from the immediate welding site. Keep a fire extinguisher readily available.
- 5.5.9 When an electrode gets too short, stop welding and restart with a new electrode rod. Wear recommended gloves when welding and changing electrode rods.

**5.6 Complete welding**

- 5.6.1 Ensure Arc welding machine power to arc is electrically de-energized. When not in use electrode rod should be removed from the holder and the holder should be placed so it cannot make contact with conducting objects, flammable liquids, and /or compressed gas cylinders.

**5.7 Removing Work Piece from Fixture and Transport to Inspection**

- 5.7.1 Use a mechanical hoist or get assistance from co-workers to transport work pieces.
- 5.7.2 Ensure work areas and surfaces are clean and clear of unused tools and materials.
- 5.7.3 Remove dust and debris regularly to maintain and clean work site.

**6. ASSOCIATED DOCUMENTATION**

<u>Doc. Number</u>	<u>Doc. Title</u>
OH&S 18.35.1	Welding Safety Procedures
OH&S 18.36.1	Safety for Oxyacetylene welding

7. **RECORDS/VERIFICATION OF UNDERSTANDING**

7.1. Records

7.2. Verification of Understanding

7.2.1. A training master log will be maintained by all Supervisors and Student Instructors

8. **SUMMARY OF CHANGES**

Revision #	Date	Change (include section #)	Issued By
1	06/09/2014	NEW	OHS Officer