



**Labour and Advanced Education**

**OCCUPATIONAL HEALTH AND SAFETY DIVISION**

**Welding, Cutting, Burning and Soldering**

**A guide to Part 10 of the**

**Occupational Safety General Regulations**

*October 2007*

## A GUIDE TO PART 10 – WELDING, CUTTING, BURNING AND SOLDERING - of the OCCUPATIONAL SAFETY GENERAL REGULATIONS

The information contained in this publication is a guide only and should be read with the *Occupational Safety General Regulations* for specific requirements. The Regulations are available through our web site at <http://www.gov.ns.ca/lwd/healthandsafety/pubs.asp> or copies may be requested by calling the Information Specialist at 902-424-5400 or toll-free 1-800-952-2687. For your reference and convenience the section of the Regulation has been included where possible

## **Part 10 – Welding, Cutting, Burning and Soldering**

### **General provisions (sections 109-112)**

#### **What is a trained or skilled person?**

A trained or skilled person is someone with the knowledge, training and experience to do the assigned work safely.

#### **What is considered a “welding or allied process”?**

Welding may be arc welding, brazing, solid-state welding, soldering, resistance welding, or other welding. An allied process includes arc cutting, oxygen cutting, thermal spraying, thermal adhesive bonding and other cutting

#### **As an employer what are my duties?**

The employer must establish a welding Health and Safety Program. The program should include:

- Hazard identification
- Safe work procedures for different types of welding practises in use
- proper controls, like personnel protective equipment, ventilation, fire protection
- Training
- Program evaluation.

The equipment must also be built and maintained as set out in the manufacturer’s instructions.

#### **What should training include?**

As a minimum, training should include:

- Hazard identification
- Safe welding, brazing and cutting practices in use
- Fire and safety precautions
- Methods to control welding hazards
- The use, maintenance and limitations of personal protective equipment.

#### **As an employee what must I do before starting a welding or allied process?**

Before welding, you should inspect the surrounding area for hazardous material or work that produces combustible, flammable or explosive dust, gas or vapour. If you find any hazards, be sure to address them before welding.

### **What if I am working near a person who is welding or cutting?**

The employer must provide screens or prevent the second person from entering the area. Where screens are used, the employer must ensure the screen prevents radiation and reflection from affecting the second person.

### **Work on containers (sections 113-115)**

#### **Can welding or cutting be done on a container, pipe, valve or fitting?**

Where a container, pipe, valve or fitting holds or held an explosive, flammable or hazardous substance or can become pressurized, you need a written work procedure before you start welding or cutting.

A work procedure includes:

- A procedure for disconnecting and blanking off or moving out of alignment pipes or locking out valves in the closed position
- A procedure for examining the area after ventilation to ensure it is free of residue
- Testing the air to ensure that the explosive, flammable or hazardous amounts of gas have been reduced to less than 1 percent.

A trained and knowledgeable person must certify in writing that the work involving heat can be done safely. The next page shows an sample certificate. The certificate is valid for a maximum of 24 hours from the first test time.

#### **Can welding or cutting be done on a natural gas or associated pipeline?**

Yes, if the employer has a written work procedure certified by an engineer.

#### **If I am an operator of an electric welding machine, can I leave my machine unattended?**

The electrode must be removed before an electric welding machine can be left unattended.

### **Gas welding and allied process (sections 116-117)**

#### **Must I test the regulator before welding or cutting?**

Yes. Before gas welding or cutting begins, the regulator and the connecting hose must be tested to ensure there are no leaks in the gas supply. These tests cannot be performed with a substance that is oil, fat, or grease-based.

#### **What do I do if a leak in the gas supply develops during gas welding or allied process?**

Cut off the supply of gas and do not resume work until leak is repaired.

Example certificate:

Company Name: John Doe Welding Shop

Date of Certification: June 6, 2006

Time: 1402h

Flammable Gas: less than 1%

Other Gases: less than 1%

Comments: \_\_\_\_\_  
Arc welding can be done, with no heat restrictions

Expires: June 7, 2006 1402h

Signature: John Doe

Company Name: \_\_\_\_\_

Date of Certification: \_\_\_\_\_

Time: \_\_\_\_\_

Flammable Gas: \_\_\_\_\_

Other Gases: \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Expires: \_\_\_\_\_

Signature: \_\_\_\_\_

## **During gas welding or cutting, what must the employer provide?**

The employer must provide:

- A flashback arrestor between the torch and fuel gas and oxygen supply
- Legibly marked hose lines or pipelines
- proper couplings to ensure the hoses are not interchanged
- a lighting device that is designed to light the torch

## **What is a flashback arrestor?**

A flashback arrestor prevents the reverse flow of fuel from the torch to the supply lines, and stops the flame from burning back up into the supply line.

## **Where should a flashback arrestor or reverse flow-check valve be placed?**

NS legislation requires a flashback arrestor to be located “between the torch and the fuel gas and oxygen supply”. Regardless of the position chosen for the flashback arrestor, in accordance with OHS Act Section 13, the employer shall “ensure the health and safety of persons at or near the workplace” and provide equipment that is “properly equipped with safety devices.” This requires an assessment of the task and risks and, in this case, the selection of the appropriate safety device and location. Once chosen, the employer shall ensure that the device is installed, maintained and operated in accordance with manufacturer’s instructions. The following excerpt from CSA W117.2 may assist in determining the placement of the device(s).

“Reverse-flow check valves, flashback arrestors, and/or hose line safety devices used in oxygen-fuel gas systems are to be installed and maintained in accordance with the manufacturer’s instructions.

CSA Standard W117.2-06 (Safety in welding, cutting and allied processes) offers the following information on the location for the flashback arrestor/reverse-flow check valve(s):

### **Installation at the regulator outlet**

Installation at the regulator outlet has the advantage of being less prone to damage and fouling in service. Devices mounted on regulator outlets are generally out of harm’s way and will not collect dirt and contaminants from the hose. They also do not hinder manipulation of the equipment as torch-mounted devices can. Devices mounted at the regulator outlets can be larger, with greater flow capacity, to suit the requirements of high-flow apparatus, such as heavy heating nozzles. Regular outlet mounting does not protect the operator from burst hose lines, but protects the high-pressure components of the system (regulator and cylinder) that would cause more serious consequences if an incident were to occur.

### **Installation at the torch inlet**

Installation of flashback arrestors and reverse-flow check valves at the torch inlet has the advantage of being at the farthest downstream point in the system. This best protects the operator from burst hose lines and limits backfires and flashbacks to within the torch. However, the location allows fouling and contamination from dirt in the hose lines. Reverse-flow check valves are particularly susceptible to leakage due to fouling of the seating surfaces and shall be tested frequently when torch-mounted. Also, users shall be aware that reverse-flow check valves alone do not stop propagation of flashbacks. Weight and physical dimensions affect ease of manipulation of the torch. Size constraints limit flow capacity. Certain high-flow apparatus may require flow greater than that provided by torch-mounted devices". (June 2, 2011)

**Acetylene** (section 118)

**Compressed flammable gas (section 119)**

**Can cylinders of compressed flammable gas be stored with compressed oxygen cylinders?**

No. Flammable gas cylinders and oxygen cylinders must be stored in different rooms.