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Boilers and Pressure Vessels Safety

## **GUIDELINE FOR REGISTRATION OF MEDICAL GAS PIPING SYSTEMS**

Anyone, or any company, intending to design, fabricate, and/or install a piping assembly in Ontario should first refer to the Technical Standards and Safety Act, 2000, (Act) and Regulations for Boilers and Pressure Vessels (Regulations) which govern such actions. The Act and Regulations require compliance with the applicable CSA Standards, ASME and ANSI Codes and reference should also be made to these standards.

### **1. Preamble:**

This guideline sets out the registration requirements for the medical gas piping systems, in compliance with the Act and Regulations, CSA B51-03, CSA Z7396.1-06 **Medical Gas Pipeline Systems – Part 1: Pipelines for medical gases and vacuum**, and applicable ASME and ANSI Codes.

### **2. Submission of Drawings and Specifications:**

A submission shall consist of the following as a minimum:

- 2.1 A covering letter requesting registration with a contact person's name, address, telephone and fax number, location of installation, and an estimate of total length of pipe to be installed.
- 2.2 Three copies of design specifications and piping diagrams/drawings highlighting the medical gas piping system which require registration.

(Folded drawings should be submitted. Reproducibles and mylars are not acceptable. Where many drawings are involved, a table of reference drawings must be provided.)

- 2.3 Design specifications, as a minimum, should include the following information:
  - 2.3.1 code of construction
  - 2.3.2 design pressure and design temperature

- 2.3.3 safety relief valve setting and location
- 2.3.4 pipe materials (i.e. ASME or ASTM material specifications) sizes, and schedules
- 2.3.5 test pressure and medium
- 2.3.6 non-destructive examination (NDE) if any is required by the code of construction.
- 2.3.7 a statement attesting all fittings have Canadian Registration Numbers (CRN's) for use in Ontario.
- 2.3.8 fluid service
- 2.3.9 pipe size and wall thickness (e.g. type K or L)
- 2.3.10 pipe material specification (e.g. ASTM B819)
- 2.3.11 pipe joining method(s)
- 2.3.12 fitting classification and ratings and bolting material specifications
- 2.3.13 Statement describing maximum support spacing and type and anchor location.

### **3. Medical Gas Piping System Requirements:**

A medical gas piping system consists of a source of supply, a distribution system, and terminal units. Medical vacuum systems are exempt from registration.

The following is intended to explain some of the system requirements but is not meant to serve as a substitute for the governing documents themselves.

#### **3.1 Supply Systems**

The code of construction shall be ASME B31.1 or B31.3. In addition, any other requirements as set out in CSA Z7396.1- 06 Clause 5, Supply Systems, shall also be met.

#### **3.2 Pipeline Distribution System**

CSA Z7396.1-06 Clause 7, Pipeline distribution system, sets out some of the requirements necessary for registration.

- 3.2.1 Pipe material shall be ASTM B819 seamless, type K or L. Minimum nominal pipe size 1/2 inch.

- 3.2.2 Fittings shall be wrought copper, brass or bronze.
- 3.2.3 Maximum pressure relief valve set pressure:
- |                                       |   |
|---------------------------------------|---|
| nitrogen gas                          | 200 psi   |
| medical air, oxygen and nitrous oxide | 75 psi  |
| carbon dioxide and all other gases    | 50% above nominal pipeline pressure but not exceeding 200 psi |

Design pressure must be equal to or greater than the pressure relief valve set pressure.

- 3.2.4 Test pressure: the greater of 1.5 times Design Pressure or 150 psi, whichever is greater using oil-free dry air or oil-free dry nitrogen: CSA Z7396.1-06, A 2.2
- 3.2.5 Pipe joints shall be silver brazed using AWS Standard 5.8, Classification BCUP-5 or otherwise threaded. (Note: The use of threaded joints should be minimized).
- 3.2.6 Brazing Procedure Specifications (BPS) shall be registered with the Boilers and Pressure Vessels Safety Division of TSSA. Procedure Qualification Records (PQR) and BPS which previously were qualified using ASTM B88 pipe material are acceptable for use with ASTM B819.

### 3.3 Terminal Units

Terminal units must have a Canadian Registration Number (CRN) for fittings. CSA Z7396.1-06 Clause 9, Terminal Units, sets out requirements for terminal units.

## 4. Inspection:

The local TSSA Inspector must be notified prior to commencement of the installation. Two copies of the Piping System Installation and Test Data Report must be completed and, signed by the individual responsible for the installation. Upon successful completion of the inspection, the reports will be countersigned by the TSSA Inspector; one copy to be retained by the owner of the installation and the second copy to be retained by TSSA.