



<b>Fuels Safety Program</b>	Ref. No.: FS-143-09	Rev. No.:
<b>Compressed Gas Code Adoption Document - Amendment</b>	Date: February 18, 2009	Date:

**IN THE MATTER OF:  
THE TECHNICAL STANDARDS AND SAFETY ACT, 2000,  
S.O. 2000, c. 16**

**- and -**

**ONTARIO REGULATION 223/01 (Codes and Standards Adopted by Reference)**

**made under the Act**

**- and -**

**ONTARIO REGULATION 214/01 (Compressed Gas)**

**made under the Act**

**Subject:** Amendment to the Compressed Natural Gas Code Adoption Document

**Sent to:** Posted on TSSA's Web-Site

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The Director of Ontario Regulation 214/01 (Compressed Gas) pursuant to section 3 of Ontario Regulation 223/01 (Codes and Standards Adopted by Reference) hereby provides notice that the Gaseous Fuels Code Adoption Document published by the Technical Standards & Safety Authority and dated June 1, 2001, is amended as follows:

The previous sections of the "Compressed Natural Gas Code Adoption Document" dated June 1, 2001 and all amendments to that document are revoked and replaced with the following:

**1. Definitions**

"Compressed gas" means gas as defined in the Compressed Gas Regulation that has been compressed either for storage or to be dispensed into vehicles fuelled by gas;

"Electrical Safety Code" means the Ontario Electrical Safety Code, issued by the Electrical Safety Authority, as amended from time to time;

"full service station" means a refuelling station at which only an operator or a station attendant can operate the refuelling equipment;

"operator" means a person who is responsible for all aspects of the day to day operation of a refuelling station, whether or not the person is on the premises of the station during hours of operation;

"portable container" means a portable container that is designed to contain and transport compressed gas and is not part of a vehicle;

"VRA" means vehicle refuelling appliance;

"station attendant" means the person present at a refuelling station responsible for the supervision of dispensing equipment and dispensing operations at the facility;

## **2. Standard for Compressed Natural Gas Pressure Piping and Storage**

The standard B51-03, Part 3 entitled "Compressed Natural Gas Refuelling Station Pressure Piping Systems and Ground Storage Vessels", prepared by the Canadian Standards Association is adopted.

## **3. Standard for Natural Gas Refuelling Stations**

The standard B108-99 (reaffirmed 2004) entitled "Natural Gas Fuelling Stations Installation Code" is adopted with the following amendments:

**3.1** Clause 1.1 is revoked and the following is substituted for it:

1.1 This Standard applies to natural gas fuelling stations that may be employed for private and public dispensing operations.

**3.2** Clause 3.1 is revoked and the following is substituted for it:

3.1 Where a conflict exists between the manufacturer's certified installation instructions and this standard, the most stringent requirements shall apply.

**3.3** Clause 3.3 is revoked and the following is substituted for it:

3.3 The installation of components, accessories, and equipment shall be made in accordance with the manufacturer's instructions except in the case of conflict with the standard adopted in section 3 of this CAD, the most stringent requirements shall apply.

**3.4** Clause 3.9 is revoked and the following is substituted for it:

3.9 Natural gas for vehicles shall be odorized in accordance with clause 10.12 of CSA Standard Z662-03, entitled "Oil and Gas Pipeline Systems".

**3.5** Clause 5.11 is amended by adding the following note at the end of the clause:

Note: When a wall with 4 hour fire resistance rating is located within the gas storage facility and either the dispensing point or receiving point, the distance shall be measured either around the end of or over the wall, but not through it.

**3.6** Clause 5.12 is amended by adding the following subclause:

5.12(c) Where a fence is made of combustible material, the fence shall not be closer than 1.5 m (5 ft) to any container.

**3.7** Clause 5.15 is amended by:

- a) adding the term "or" at the end of subclause 5.15 (a), and
- b) replacing the equivalent feet unit in parentheses for 0.75 m to 2.5 ft. in subclause 5.15 (d)(ii).

**3.8** Subclause 6.9(a) is revoked and the following is substituted for it:

6.9(a) that will disconnect when subjected to a force of 667 N (150 lbf) or less, but not less than 222 N (50 lbf);

**3.9** Clause 6.10 is revoked and the following is substituted for it:

6.10 There shall be prominently displayed sign within 3 m (10 ft) of a point of transfer at a natural gas dispensing point as follows:

a) NO SMOKING

b) TURN IGNITION OFF DURING VEHICLE FUELLING

c) NATURAL GAS VEHICLE FUEL CYLINDERS MUST BE PERIODICALLY INSPECTED TO ENSURE SAFE OPERATION OF THE VEHICLE. DO NOT FILL VEHICLE IF THE FUEL CYLINDERS HAVE NOT PASSED INSPECTION. FOR DETAILS SEE BROCHURE WITH ATTENDANT.

d) Letters shall be at least 7 mm high and the sign not smaller than 150 x 150 mm.

e) INTERNATIONAL SYMBOLS for NO SMOKING and IGNITION OFF at least 50 mm (2 in) in diameter, coloured in red and black on a white background may be used as an alternative for a) and b).

Additionally, at all refuelling stations a notice shall be made available to the vehicle operator stating the responsibility for owners for cylinder inspections, retesting and decommissioning the cylinders after the expiry dates. In the Notice indication of sources for more information shall also be provided.

**3.10** Clause 8.2 is revoked and the following is substituted for it:

8.2 A designated parking area for a vehicle transporting a bulk natural gas container shall allow easy ingress and egress and shall meet the requirements of clause 5.

## **4. Additional Requirements for Compressed Natural Gas Stations**

### **4.1 Electrical Equipment**

**4.1.1** Electrical equipment shall be installed at a refuelling station in compliance with the Electrical Safety Code, and with the electrical classifications assigned to locations by clauses 4.2, 5.8 and 6.2 of CGA-B108-99.

### **4.2 Gas Storage Facilities**

**4.2.1** A gas storage facility shall not be installed closer than 3 m (10 feet) measured horizontally from the vertical projection of any overhead electric power line over 600 volts nominal.

**4.2.2** A gas storage facility shall not be installed closer than 1.5 m (5 feet) measured horizontally from the vertical projection of any underground electric power line unless the requirements for underground electric power lines, as stated in the Electrical Safety Code, as amended from time to time, are met.

**4.2.3** A gas storage facility shall not be located within 6 m (20 feet) of aboveground storage of any liquid fuel.

#### **4.3** Dispensing

**4.3.1** The minimum distance between an underground gasoline storage tank vent and a dispensing point shall be 7.5 m (25 feet) measured horizontally.

#### **4.4** Signs

**4.4.1** A sign shall be erected in a conspicuous place at a refuelling station stating the name and telephone number of the local gas utility to be notified in case of emergency and shall be at least 220 millimetres (9 inches) in height and 280 millimetres (11 inches) in width with letters or numbers at least 45 millimetres (1 3/4 inches) in height.

**4.4.2** At every self-serve attended station signs shall be prominently displayed, readily visible to operators of vehicles approaching a natural gas dispenser from any direction, indicating that high profile trucks and vans are not permitted to enter the lane between the dispenser and the kiosk.

#### **4.5** Emergency Shut Down

**4.5.1** If a compressor supplies natural gas to both a fast-fill station and a slow-fill station, the operation of the compressor need not be interrupted by the emergency shut down (ESD) switch as required under clause 7.18 of CAN/CGA B108-M99 if,

a) a slow-fill station dispensing point is at least 30 m (100 feet) from the compressor and the natural gas storage facility; and

b) a self-closing valve which is activated by the emergency shut down (ESD) switch for the slow-fill system, is located on the supply line from the compressor to the slow-fill dispensing points.

#### **4.6** Supply of Natural Gas to Refuelling Station or VRA

**4.6.1** Natural gas supplied to a refuelling station or to a VRA shall not contain more than,

a) 112 milligrams of water per standard cubic metre (7 pounds of water per million standard cubic feet);

b) 23 milligrams of hydrogen sulphide and other soluble sulphides per standard cubic metre (1 grain of hydrogen sulphide and other soluble sulphides per hundred standard cubic feet);

c) 460 milligrams of total sulphur per standard cubic metre (20 grains of total sulphur per hundred standard cubic feet);

d) 1 percent by volume of oxygen;

- e) 3 percent by volume of carbon dioxide; and
- f) 4 percent by volume of all non-hydrocarbon gases excluding nitrogen.

#### **4.7 Operation Procedures**

**4.7.1** Where the dispensing pressure is controlled by a dome-load type system, the licensee shall ensure the dispensing pressure is checked at least once every two weeks by means approved for the purpose and shall,

- a) record the date of the check, the ambient temperature, the dispensing pressure and the temperature-compensated dispensing pressure;
- b) maintain the record at the site for at least two years after it is made; and
- c) produce the record, upon request, for examination by an inspector.

**4.7.2** If the check reveals that the dispensing pressure is more than the approved allowable pressure, the licensee shall immediately,

- a) have the temperature-compensating pressure-limiting device of the system checked and serviced; and
- b) cease all dispensing operations at the refuelling station until the device is operating in accordance with the requirements of this Document.

**4.7.3** The person performing these checks referred to in 4.7.1 and 4.7.2 for the licensee shall have a certificate for the purpose.

**4.7.4** Where the dispensing pressure is controlled by an electronic temperature-compensating pressure-limiting device, the licensee shall ensure the system is checked at least once every six months and shall,

- a) record the date of the check, the ambient temperature, the dispensing pressure and the temperature-compensated dispensing pressure;
- b) maintain the record at the site for at least two years after it is made; and
- c) produce the record, upon request, for examination by an inspector.

**4.7.5** If the check reveals that the dispenser pressure is more than the approved allowable pressure, the licensee shall immediately,

- a) have the temperature-compensating pressure-limiting device of the system checked and serviced; and
- b) cease all dispensing operations at the refuelling station until the device is operating in accordance with the requirements of this Document.

**4.7.6** The person performing these checks referred to in 4.7.4 and 4.7.5 for the licensee shall have a certificate for the purpose.

**4.7.7** The operator of a natural gas vehicle shall turn off the engine of the vehicle before refuelling the vehicle at a refuelling station.

**4.7.8** No person at a refuelling station shall have in possession lighted smoking materials or any other source of ignition within three metres (10 feet) of the dispensing point of natural gas, a vehicle refuelling receptacle or a container being refuelled.

**4.7.9** No person shall refuel a natural gas vehicle at a refuelling station unless,

- a) the engine ignition of the vehicle has been turned off; and
- b) the main burner and pilot light, if any, of an appliance on board the vehicle has been turned off

**4.7.10** The holder of a licence to operate a fast fill refuelling station shall prepare or cause to be prepared an operating manual for the station that sets out the general operating procedures of the station, including procedures for the station regarding security, safety requirements, emergency procedures and routine maintenance.

**4.7.11** The holder of a licence to operate a fast fill refuelling station shall,

- a) ensure that each station operator and station attendant has read and understands the operating manual for the station;
- b) keep the operating manual at the station for use by the operator and the attendant;
- c) make the operating manual for the station available, on request, for examination by an inspector; and
- d) keep and maintain records at the facility signed by the employee confirming such training.

**4.7.12** The holder of an authorization to operate a retail outlet shall ensure that each attendant in control of the equipment is instructed to meet the following conditions:

- a) at a self-serve facility no individual self-serve attendant shall have more than 12 dispensers simultaneously activated;
- b) has a two-way communication system in operation to communicate with persons at a natural gas dispenser monitored by the console attendant;
- c) has an unobstructed view of each natural gas dispenser monitored by the attendant and of a person operating the dispenser;
- d) has been trained in the operation of an emergency shut-down switch that is within easy reach of the console and that can simultaneously shut off all dispensers at the station regardless of the product being dispensed; and
- e) is controlling the refuelling operation from a distance less than 18.5 metres (60.7 feet) from any dispenser.

**4.7.13** A holder of a licence to operate retail outlet is not required to comply with clause 4.7.12 (c) or (e) if the station is equipped with a system of video monitoring that,

- a) allows the attendant a constant view of the dispensing equipment; and
- b) automatically turns off all dispensers monitored by the system if the system fails.

**4.7.14** An attendant referred to in subsection 4.7.12 at a retail outlet where self-serve dispensing occurs shall,

- a) not activate a dispenser unless safe dispensing can start;
- b) be in constant attendance at the console while a dispenser is in use;
- c) if a fire, explosion, natural gas release, fuel spill or any other hazardous condition occurs at the station, activate an emergency shut-down switch to shut-off all dispensers at the station, regardless of the product being dispensed, until a safe condition has been restored; and
- d) operate the station in accordance with the operating manual for the station.

## **4.8 Maintenance of Stations**

**4.8.1** A written maintenance program shall be established for each fuelling facility. The details of the maintenance program shall reflect the equipment that is installed and the layout on the site and shall be designed to mitigate the possibility of any of the following:

- (a) A mechanical or electrical failure that could cause injury to persons.
- (b) A failure that could result in an unplanned release of gas.
- (c) A failure that could cause a safety system to malfunction.
- (d) A failure that could result in damage to property owned by other parties.

## **4.9 Maintenance Personnel**

Maintenance shall be undertaken by a certificate holder for the purpose, who is familiar with the requirements of this CAD and the manufacturers' instructions for the installed equipment. Manufacturers' instructions should be consulted for details on how to perform any specific maintenance operation.

## **4.10 Minimum Maintenance Requirements**

The following table lists mandatory maintenance items. Inspections that are to be undertaken by the facility operator and their frequency shall be specified in their operator's manual. Maintenance of a certified VRA shall be performed in accordance to the manufacturer's instructions. Manufacturers and suppliers may recommend additional maintenance tasks.

Area	Maintenance Requirement	Record Values	Monthly	Quarterly	Annually	Longer Term
General	Verify system pressures and temperatures are within the design values.	Yes	X			
Compressor Package	Verify that the pressures and levels of the compressor oil and any other liquid lubricated equipment is within specifications.	Yes	X			
Compressor Package	Visually inspect general condition of compressor package. Check condition of hoses, drive belts etc.		X			
General	Visually inspect valves, tubing and piping connections for leaks and abnormalities.		X			
Instrumentation & Controls	Verify all regulator, including temperature compensation systems settings are within specified ranges.	Yes	X (*)			
Compressor Package	Drain recovery tank and filter bowls. Record if unexpected volumes of liquid are present.		X			
Dispensing System	Verify fuelling hoses and nozzles are in good condition. Replace if they are on a pre-set schedule.		X			
Compressor Package	Verify compressor shuts down at the correct output pressure.		X			
General	Visually inspect all pressure relief devices ensuring all tags are in place			X		
Dispensing System	Inspect and lubricate dispenser breakaways.			X		
Dispensing System	Observe a fuelling process for each dispenser hose to ensure code compliance.			X		
General	Verify correct functioning of ESD system.			X		
Instrumentation & Controls	Check set points of all instrumentation (pressure and temperature switches, oil level switches, etc.)	Yes			X	
General	Soap test all piping and tubing and verify the absence of leaks.				X	
Gas Storage System	Visually inspect general condition of gas storage system and verify that re-testing is not required.				X	



Area	Maintenance Requirement	Record Values	Monthly	Quarterly	Annually	Longer Term
General	Visually inspect general site including all barriers, fences, walls, doors and other items to verify site compliance with code requirements.				X	
Gas Storage System	Re-test and/or re-qualify gas storage containers.					(**)
General	Re-certify all pressure relief device set points.	Yes				5 years

(\*) This shall be performed in accordance with clauses 4.7.1 to 4.7.5.

(\*\*) The frequency of inspection for storage containers may vary with the standard to which they are registered.

#### 4.11 Records

A permanent, bound maintenance logbook shall be kept for each refuelling station available for inspection. On a fully automated refuelling station some maintenance items may be fulfilled remotely. If this is done, the notification and record-keeping systems should be agreed with the director.

#### 4.12 Software

Any control system software shall be stored in a non-volatile medium and shall only be accessible to authorized personnel.

### 5. Standard for Compressed Hydrogen Refuelling Station

The National Standard of Canada CAN/BNQ 1784-000/2007 entitled “Canadian Hydrogen Installation Code”, prepared by the Bureau de normalization du Quebec is adopted for the installation of hydrogen fuelled appliances and equipment. The adoption will be effective on August 1, 2007, with the following amendment:

5.1 Clause 7.4.1.2 is revoked and the following substituted for it:

7.4.1.2 Hydrogen piping, tubing and fittings shall be designed and installed in accordance with the appropriate requirements of ASME Standard B31.3 and shall be approved by the Director.

### 6. Additional Requirements for Compressed Hydrogen Refuelling Stations

#### 6.1 Operation Procedures for Hydrogen Refuelling Facilities

6.1.1 Where the dispensing pressure is controlled by a dome-load type system, the licensee shall ensure the dispensing pressure is checked at least once every two weeks by means approved for the purpose and shall,

a) record the date of the check, the ambient temperature, the dispensing pressure and the temperature-compensated dispensing pressure;

b) maintain the record at the site for at least two years after it is made; and

c) produce the record, upon request, for examination by an inspector.

**6.1.2** If the check reveals that the dispensing pressure is more than the approved allowable pressure, the licensee shall immediately,

a) have the temperature-compensating pressure-limiting device of the system checked and serviced; and

b) cease all hydrogen dispensing operations at the refuelling station until the device is operating in accordance with the requirements of this Document.

**6.1.3** The person performing these checks referred to in 6.1.1 and 6.1.2 for the licensee shall have a certificate for the purpose.

**6.1.4** Where the dispensing pressure is controlled by an electronic temperature-compensating pressure-limiting device, the licensee shall ensure the system is checked at least once every six months and shall,

a) record the date of the check, the ambient temperature, the dispensing pressure and the temperature-compensated dispensing pressure;

b) maintain the record at the site for at least two years after it is made; and

c) produce the record, upon request, for examination by an inspector.

**6.1.5** If the check reveals that the dispenser pressure is more than the approved allowable pressure, the licensee shall immediately,

a) have the temperature-compensating pressure-limiting device of the system checked and serviced; and

b) cease all hydrogen dispensing operations at the refuelling station until the device is operating in accordance with the requirements of this Document.

**6.1.6** The person performing these checks referred to in 6.1.4 and 6.1.5 for the licensee shall have a certificate for the purpose.

**6.1.7** The operator of a hydrogen vehicle shall turn off the engine of the vehicle before refuelling the vehicle at a refuelling station.

**6.1.8** No person at a refuelling station shall have in possession lighted smoking materials or any other source of ignition within three metres (10 feet) of the dispensing point of hydrogen, a vehicle refuelling receptacle or a container being refueled.

**6.1.9** No person shall refuel a hydrogen vehicle at a refuelling station unless,

a) the engine ignition of the vehicle has been turned off; and

b) the main burner and pilot light, if any, of an appliance on board the vehicle has been turned off

**6.1.10** The holder of a licence to operate a fast fill hydrogen refuelling station shall prepare or cause to be prepared an operating manual for the station that sets out the general operating procedures of the station, including procedures for the station regarding security, safety requirements, emergency procedures and routine maintenance.

**6.1.11** The holder of a licence to operate a hydrogen fast fill refuelling station shall,

a) ensure that each station operator and station attendant has read and understands the operating manual for the station;

b) keep the operating manual at the station for use by the operator and the attendant;

c) make the operating manual for the station available, on request, for examination by an inspector; and

d) keep and maintain records at the facility signed by the employee confirming such training.

**6.1.12** The holder of an authorization to operate a hydrogen retail outlet shall ensure that each attendant in control of the refuelling equipment, is instructed to meet the following conditions:

a) at a self-serve facility no individual self-serve attendant shall have more than 12 dispensers simultaneously activated;

b) has a two-way communication system in operation to communicate with persons at a hydrogen gas dispenser monitored by the console attendant;

c) has an unobstructed view of each hydrogen dispenser monitored by the attendant and of a person operating the dispenser;

d) has been trained in the operation of an emergency shut-down switch that is within easy reach of the console and that can simultaneously shut off all dispensers at the station regardless of the product being dispensed; and

e) is controlling the refuelling operation from a distance less than 18.5 metres (60.7 feet) from any dispenser.

**6.1.13** A holder of a licence to operate a hydrogen retail outlet is not required to comply with clause 6.1.12 (c) or (e) if the station is equipped with a system of video monitoring that,

a) allows the attendant a constant view of the dispensing equipment; and

b) automatically turns off all dispensers monitored by the system if the system fails.

**6.1.14** An attendant referred to in subsection 6.1.12 at a retail outlet where self-serve dispensing occurs shall,

a) not activate a dispenser unless safe dispensing can start;

- b) be in constant attendance at the console while a dispenser is in use;
- c) if a fire, explosion, hydrogen gas release, fuel spill or any other hazardous condition occurs at the station, activate an emergency shut-down switch to shut-off all dispensers at the station, regardless of the product being dispensed, until a safe condition has been restored; and
- d) operate the station in accordance with the operating manual for the station.

## **7. Bulk Containers and Manifolded Portable Containers Used as a Temporary Source of Compressed Gas**

**7.1** Bulk containers and manifolded portable containers used as a temporary source of compressed gas,

- a) shall be connected to a fixed pressure piping system by means of either,
  - i) tubing, using compression fitting connections, or
  - ii) piping or hoses that allow for ground movement;
- b) shall be equipped with fast closing manual shut-off valve located on the outlet from the bulk container or on the outlet of the manifolded portable containers; and
- c) shall be connected to the fixed pressure piping system upstream of the fixed pressure piping system's manually operated shut-off valve. The manually operated shut-off valve shall be as close to the connection as possible.

**7.2** If the containers referred to in subsection 7.1 have a total water capacity of more than 454 litres (100 gallons), the container or container system shall be equipped with an emergency shut down (ESD) system which will activate an automatic self-closing valve located at the outlet of the container or container system that will close when,

- a) the emergency shut down (ESD) switch is activated, or
- b) the power supply to the self-closing valve is interrupted; or
- c) the emergency shut-down (ESD) switch is activated.

**7.3** The emergency shut-down (ESD) switch shall be installed in a location where,

- a) the switch is readily accessible and visible; and
- b) the switch is within 10 m (33 feet) of the nearest container used as a temporary source of compressed gas.

## **8. Standard for Converting Vehicles to Compressed Natural Gas**

The standard CSA B109-01 entitled "Natural Gas for Vehicles Installation Code" as published by the Canadian Gas Association is adopted as amended by the following:

**8.1** Clause 1.2 is amended by adding:

f) the installation of NGV fuel systems and containers installed during the manufacture of motor vehicles originally manufactured in compliance with the Canadian Motor Vehicle Safety Standards for Compressed Natural Gas Fuelled Vehicles.

**8.2** Clause 3.1.4 is amended by adding:

OEM vehicles requiring repairs or parts, the repairs or parts shall meet the specifications of the OEM.

**8.3** Clause 3.2.1 is amended by adding:

OEM vehicles requiring repairs or parts, the repairs or parts shall meet the specifications of the OEM.

**8.4** Clause 5.4.1 and 5.4.2 are revoked and the following is substituted for it:

5.4.1 A natural gas vehicle shall bear a numbered label provided by the Director specifying,

- a) the contractor registration number of the vehicle conversion centre that converted the vehicle to a natural gas vehicle; and
- b) the date of the conversion.

5.4.2 The label required by 5.4.1 shall be affixed to a natural gas vehicle by the contractor who operates the vehicle conversion centre where the vehicle was converted to a natural gas vehicle,

- a) on the driver's side door latch post; or
- b) on an inside, vertical surface above and to the right of the windshield of a bus or any other vehicle not having a driver's side door.

**8.5** The following subclauses are added to clause 5.4:

5.4.4 If the label locations specified in 5.4.2 are not readily visible or otherwise inappropriate, the contractor shall,

- a) apply the label to the vehicle container in an area which is readily visible; or
- b) if the vehicle container is exposed to weather, enclose the label in a weather proof wallet and secure the wallet to the vehicle container valve.

5.4.5 A natural gas vehicle shall also be identified by a label supplied by the Director identifying the vehicle as a natural gas vehicle which shall be affixed to the vehicle by the contractor who operates the vehicle conversion centre where the vehicle was converted to a natural gas vehicle.

5.4.6 The label required by 5.4.5 shall be affixed to an exterior vertical, or near vertical, lower right rear surface of the natural gas vehicle so that it is readily visible on approaching the rear of the vehicle, but shall not be affixed on the bumper of the vehicle.

## **9. Additional Requirements for Vehicle Conversion to Compressed Natural Gas**

The following requirements are in addition to those applicable under the CSA B109-01:

- a) Subject to the Authority having jurisdiction, alternate fittings can be used if there is equivalency to clause 4.7.2 of CSA B109-01.
- b) If a container installed on the exterior of a vehicle is subsequently enclosed, the requirements of clause 5.3 of CSA B109-01 shall be complied with.

## 10. Vehicle Conversion Centres

A premise where a vehicle is converted or repaired shall be equipped with,

- a) two fire extinguishers of not less than 20 B, C rating, approved under the CAN/ULC-S508-M90 standard; and
- b) a permanently installed and grounded vent pipe not less than nominal pipe size, (NPS) 1/2, which is
  - i) designed to withstand the highest pressure to which it will be subjected,
  - ii) designed for venting to the outdoors, compressed gas from the fuel system of a compressed gas vehicle parked inside the vehicle conversion centre, and
  - iii) installed so that the vent pipe terminates above the roof of the vehicle conversion centre and is at least 3.0 m (10 feet) from any property line, building opening or source of ignition.
  - iv) fitted with a bi-directional detonation flame arrester at the connection fitting of the vent tubing and the compressed gas cylinder.
- c) The requirements of (b) may be waived, if, in all cases, venting shall occur,
  - i) at a safe outdoor location,
  - ii) with the cylinder electrically grounded, and
  - iii) not closer than 3 m (10 feet) measured horizontally from any of the following,
    - the air intake of any appliance;
    - any source of ignition;
    - any building opening
    - property line.

## 11. Portable Containers

**11.1** If portable containers are to be filled at a refuelling station, a designated area at the refuelling station shall be set aside specifically for that purpose, and a sign shall be prominently displayed, where readily visible, at each of the following locations:

- a) within 1.5 m (5 feet) of the point of transfer of the dispenser in the designated area; and
- b) within 1.5 m (5 feet) of the designated area where portable cylinders are to be filled.

**11.2** The signs referred to in 11.1 shall bear the words "DURING TRANSPORT, SECURE PORTABLE CONTAINERS IN A VENTILATED SPACE" in red letters at least 25 mm (1.0 inch) high on a white background.

**11.3** A person who transfers compressed gas to a portable container shall ensure that,

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Further information may be obtained by contacting: Director – Fuels Safety Division, Technical Standards and Safety Authority,  
14<sup>th</sup> Floor – Centre Tower, 3300 Bloor St. West, Etobicoke ON., M8X 2X4 Ph:416 734 3300 Fx:416 231 7525

- a) the container is not filled to a pressure that exceeds the equivalent of its service pressure rating using a temperature compensating dispensing system;
- b) the container valve is protected by a shroud or cap; and
- c) the container is approved under the regulations made under the Transportation of Dangerous Goods Act (Canada), and
- d) the container bears a current inspection date in accordance with the Transportation of Dangerous Goods Act (Canada).

**11.4** No person shall transport a portable container unless,

- a) the container valve is protected by a shroud or cap;
- b) the container is secured to prevent movement during transport; and
- c) the container is in a ventilated space.

**11.5** No person shall fill a portable container indoors.

**11.6** No person shall fill a portable container within 3 m (10 feet) measured horizontally from,

- a) the air intake of any appliance;
- b) any source of ignition; or
- c) any building opening; or
- d) property line.

**11.7** No person shall fill a portable container, which shows evidence of denting, bulging, damage or is leaking.

*11.8 A portable container shall be stored in accordance with the applicable requirements of the Ontario Fire Code made under the Fire Protection and Prevention Act and this CAD.*

**11.9** If the requirements of the Ontario Fire Code and this Document conflict, the requirements of this Document shall prevail.

**11.10** Portable containers shall not be stored in a residential building.

**11.11** Portable containers stored outdoors shall be located at least,

- a) 1.5 m (5 feet) from a property line, if the aggregate capacity of expanded gas is not more than 170,000 L (6,000 cubic feet);

- b) 7.5 m (25 feet) from a property line, if the aggregate capacity of expanded gas is more than 170,000 L (6,000 cubic feet) but less than 500,000 L (18,000 cubic feet); and
- c) 15 m (50 feet) from a property line, if the aggregate capacity of expanded gas is 500,000 L (18,000 cubic feet) or more.

**11.12** Each side of the portable container storage area exposed to vehicle traffic, shall be protected by barriers, posts or guardrails.

**11.13** Except as permitted by this Document, no person shall install or use a portable container inside a building.

**11.14** Portable containers may be connected to an appliance and used in an industrial building or industrial shop which is,

- a) a non-sprinklered building of combustible construction, if the aggregate capacity of the expanded gas of the portable containers is not more than 56,600 L (2,000 cubic feet); or
- b) a sprinklered building of combustible construction or a building of noncombustible construction, if the aggregate capacity of the expanded gas of the portable containers is not more than 170,000 L (6,000 cubic feet).

**11.15** Portable containers may be connected to an appliance and used indoors at exhibitions, shows or other similar events only if,

- a) the water capacity of every portable container is not more than 50 L;
- b) the total capacity of all portable containers is not more than 0.1 kg/m<sup>2</sup> of floor area (0.2 lb./10 square feet);
- c) all portable containers are at least 15 m (50 feet) from any exit or stairway;
- d) an approved pressure regulator is installed on a portable container and is compatible for use with the appliance connected to the portable container;
- e) a certified portable fire extinguisher of at least 5-B.C rating, approved under the CAN/ULC-S508-M90 standard, is located within 10 m (33 feet) of a portable container; and
- f) the installation meets the requirements of the Gaseous Fuels Code Adoption Document (Annex J).

**11.16** A portable container used at an exhibition, show, or other similar event shall,

- a) have its valve closed when the appliance connected to the portable container is not in use;
- b) be secured or located in a place to prevent accidental tip-over, if the portable container is connected to an appliance; and
- c) be stored outdoors in a place to which public access is restricted when not connected to an appliance for use.



**11.17** Portable containers shall be approved under the regulations made under the Transportation of Dangerous Goods Act (Canada).

**12.** The terms in this document have the same meaning as in the Act and Regulation unless otherwise specified.

**13.** In the event of conflict between a provision of this Document and any code or standard referred to in this Document, this Document shall prevail.

Dated at Toronto this 18th day of February, 2009

ORDERED BY:

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John R. Marshall  
Director, Compressed Gas Regulation,  
*Technical Standards and Safety Act, 2000*