

Ontario Recreation Facilities Association (ORFA) member facilities often host community events which make use of propane powered equipment. This equipment is often used indoors and outside the perimeter of the building. The **Technical Standards and Safety Authority (TSSA)** is the governing agency for the safe use of propane in Ontario. It is advisable to contact TSSA for clarification and confirmation to the following guidelines when hosting such events.

## About Propane

Propane is a three-carbon alkane, normally a gas, but compressible to a liquid that is transportable. It is derived from other petroleum products during oil or natural gas processing. It is commonly used as a fuel for engines, barbecues, and home heating systems. Its name was derived from propionic acid.

When commonly sold as fuel, it is also known as liquefied petroleum gas (LPG or LP-gas) and can be a mixture of propane with smaller amounts of propylene, butane and butylenes. The odorant ethanethiol is also added so that people can easily smell the gas in case of a leak.

## Propane Safety

**Eye Contact:** Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. See a doctor for further treatment as soon as possible.

**Eye Protection:** Appropriate eye protection must be worn when working with this material or serious harm can result. Wear chemical goggles and a face shield at all times.

**NOTE:** *The wearing of contact lenses can be dangerous because chemicals can become trapped under a contact lens. Any delays caused by removing contact lenses in order to rinse eyes could result in injury. Training should include instruction in contact lens removal. Contact lenses are not PPE.*

**Skin Contact:** Avoid any contact with the liquid which may result in frostbite and burns. Soak contact area in tepid water to alleviate the

immediate effects and get medical attention. Inhalation: If any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

**Skin Protection:** Avoid any contact with skin and clothing. Wear protective clothing including gloves when handling propane.

**Ingestion:** Not expected to be an ingestion hazard. First aid procedures are not considered necessary for ingestion of propane.

**Respiratory Protection:** No special respiratory protection is normally required when using propane.

## By-Products of Propane - Carbon Monoxide (CO)

Propane appliances, like any other gas appliances, can produce carbon monoxide (CO) when they are not properly maintained or when they are starved for air. Carbon monoxide is a colourless and odourless gas which is very dangerous. It can cause sudden illness and death. Individuals can become poisoned by breathing CO. The most common symptoms of CO poisoning are:

- Headache
- Dizziness
- Weakness/fainting
- Nausea
- Vomiting
- Chest pain
- Confusion

It is often hard to tell if someone has CO poisoning, because the symptoms may be like those of other illnesses. A CO detector can warn if high-levels of CO are accumulating in your facility. "If CO Poisoning is suspected get fresh air immediately and seek medical attention"

## Portable Propane Equipment to Avoid Using Indoors

Portable barbecues are often used indoors at community special events. Portable construction

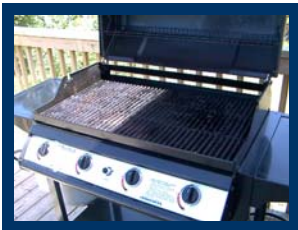
heaters and patio styled heaters are also used but due to the dampness inherent to the typical ice arena should be avoided. Although none of these examples are recommended for use indoors, exceptions may be made by following strict guidelines. But there are some variables that may allow use under strict guidelines. To be discussed later in this document.

## Installed Propane Equipment vs. Portable Propane Equipment

A question that may be asked is ***“why is propane equipment currently being used inside the recreation facility but you will not allow our group to use a propane powered unit”?*** Propane (or natural gas) is used for powering ice maintenance equipment, heating seating areas or cooking in a recreation facility. However, each piece of equipment must meet strict requirements when used indoors. This may include:

- fire suppression systems as setout in the **Fire Code**
- ventilation system as required under the **Building Code**
- Piping design to **Gas Codes**, permanently installed detection systems Fire and Building Code; as well as specific design requirements to reduce emissions.

Using a common outdoor appliance, such as a barbeque, indoors at public events will not meet any of the set legislative requirements for safe propane use.



[Figure 1: Barbeque]  
**Guiding Legislation**

When considering the use of portable propane powered equipment, facility management needs to be aware of the restrictions that apply for indoor use. Propane suppliers make it clear within their operational manuals, ***“Only use your gas barbecue outdoors in an open, well-***

***ventilated area, at least three metres (10-feet) away from windows or doors and far from anything that might obstruct the flow of air around the grill”.***

## CAN/CSA B149 1-05 Requirements for Operation of Appliances and Cylinders at Shows, Exhibitions, or Other Similar Events

Some propane appliances designed for outdoor use can be used indoors for display purposes only. They should not be used to grill foods for public consumption. For use as part of a trade show environment the equipment must meet specific requirements as setout in Annex J of the CAN/CSA B149.1-05 Natural Gas and Propane Installation Code.

### Annex J of the CAN/CSA B149.1-05 Natural Gas and Propane installation Code (excerpt)

- The equipment must have a system installed that will ensure that emissions are vented to the outside **Section (1) (a)**
- The appliance shall be used for the purpose of demonstration only but shall not be used for space or water heating or any other purpose **Section (3)**
- The appliance must be clearly marked by a sign that reads “for outdoor use only” adjacent to the appliance in lettering no less than 1-inch in height – **Danger – the use of this type of appliance is prohibited for indoor use. For the safety the unit you are viewing in this display is constantly monitored for the presence of Carbon Monoxide to protect you and your family never use (name the appliance) indoors including a garage. Section (4)**
- The appliance must be installed by a person holding appropriate valid certificates from TSSA **Section (5)**
- A person who has knowledge of the manufacturers operating instructions for the appliance must be in constant and immediate control of the appliance – a copy of the manufacturers operating manual must be left with the appliance **Section (6)**

- A specific measuring criteria for CO must be met every 3-hours **Section (8) (1)** inspection results must be recorded and displayed for the entire time the unit is set-up **Section (8) (2)** CO levels that exceed 25ppm must have the equipment shutdown **(9)**
- A physical protection must be in place to ensure persons can not come in contact with any hot surface **Section (10)**
- A ULC Standard CAN4-5508 of not less than 10-B,C rating is to be at the booth **(11)**
- Specific requirements for the type of propane cylinder that can be used is defined under **Section (12)**
  - Tank labeling requirements
  - Maximum of 20lbs
  - 50ft from any exit
  - Secured to ensure it cannot tip over
  - Any cylinder not being used must be stored outdoors
  - Properly trained in the connection and disconnection of the cylinder

**Note:** TSSA adopts the 2007 supplement to the Propane Storage and Handling Code <http://www.tssa.org/CorpLibrary/ArticleFile.asp?Instance=136&ID=EA82ECD8056242D9BD1C8A45D5239C87> \*Amendments come into affect June 30, 2007. [TSSA Directors Order FS-103-07]

### 6.5.3.2 Cylinders shall be:

- (a) Stored in an area that provides protection from tampering;
- (b) Stored in an area free from vehicular or mobile equipment travel, or protected by barriers or the equivalent;
- (c) Placed such that the relief valve on any cylinder is not less than 3 ft (1 m) horizontally from any building opening that is below the level of the relief valve discharge;
- (d) Placed such that the relief valve discharge is not less than 10 ft (3 m) on the horizontal plane from the air intake of any appliance or air-moving equipment; and

- (e) Stored in an area where "NO SMOKING" signs are prominently displayed. These signs shall be in accordance with clause 7.12.3.



[Figure 2: Portable Propane Cylinders]

### Can Portable Heating Equipment Be Used Indoors?

Portable heating equipment can be used indoors only when specific conditions have been met. Construction styled heaters can be used indoors when the general public is not present. **These heaters are not designed nor are they permitted to be used to warm the general public under any circumstances.** These types of units are used primarily to warm or dry buildings during construction.. These heaters must be installed and maintained by persons holding valid TSSA certification.



[Figure 3: Portable Propane Heater industrial use]

### Propane Appliances: Outdoor Use

At times communities will host or partner with groups using propane. This relationship would be defined under the Occupiers Liability Act as well as the Health Promotion Act [if food is being served]. Under the Occupational Liability Act, the municipality as the owner must ensure that the propane appliance is safe for the intended purpose.



[Figure 4: Table Top Heaters (Outdoor Use)]

## Establish Rules and Conditions

- Provide a printed layout of the area in which the appliance is to be used. Identify exit routes, any potential hazard or combustible materials and the time that the equipment will be in use.
- **No appliance should be used 50ft from any exit of a public building or a minimum of 20ft from the building**
- Appliance is never to be used near any facility air intake area
- Appliance is never to be used under any overhang or near any pressure relief valve situated outside of a facility
- Fire protection equipment that is to be on site
- Set up and securing of area around the equipment to ensure no person may contact any hot area
- Securing of propane tanks to ensure they will not tip over – storage of additional tanks in a secure cool area – transportation of tank strategy, and connection and disconnection qualifications (See O. Reg. 211/01)

As the “owner” of a public premise facility managers are reminded that **anytime food is to be prepared and served to the general public a “permit” is required. This permit can be obtained from the local health department.** Although this requirement may be transferred to the user group, it is the facility manager’s responsibility to ensure the task has been carried out.

## Community Groups Requesting Indoor Use of Propane Appliances

Just because we have always done it one way does not make it right. Facility managers often

inherit the patterns of use by groups with regards to indoor use of propane appliances. A review of this practice is recommended. Be sure to include individuals such as Joint Health and Safety Committee representatives, local Building Officials, Fire Prevention Officer and the building’s Insurance Broker or Risk Assessor.

**For more information on this issue, please contact the TSSA (Technical Standards and Safety Authority) at 1-877-682-8772 or visit [www.tssa.org](http://www.tssa.org)**

*Review also the TSSA Directors Order: FS-104-07 Propane Cylinder Relief Valves: Paint Contamination*  
<http://www.tssa.org/CorpLibrary/ArticleFile.asp?Instance=136&ID=42FF8596342645F3A851F2D418634107>

### Disclaimer 2008

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