



UPDATE

Fuels Safety Edition

SAFETY NOTICE

UPCOMING DIRECTOR'S ORDER TO ADDRESS SAFETY ISSUE REGARDING NATURAL DRAFT GASEOUS FUELLED RESIDENTIAL BOILERS (UPDATE TO SUMMER 2005 UPDATE ARTICLE)

In Ontario, over the last 15 years, there has been an average of one fatality every three years involving a natural draft gaseous-fuelled boiler. In addition, last winter, there were a number of "close-calls" where high levels of carbon monoxide (CO) were found in the home and the occupants were found to be unconscious.

Two primary causes of incidents are a lack of maintenance of the boiler, and depressurization of the home from exhaust fans and wood fireplaces, causing flue gases to spill into the home.

A Technical Standards and Safety Authority (TSSA) industry advisory group was formed last January to consider

these concerns. This group has participated in the development of the Director's Order that is currently under review.

This **draft** Director's Order will require gas technicians performing service, maintenance and/or emergency response when entering a home where a boiler is installed to visually inspect the boiler's installation and measure the combustion products from the boiler.

If the products of combustion – primarily CO – are in excess of 100 PPM, the boiler condition shall be addressed or the equipment shut down. 100 PPM of CO was chosen as the limit of CO production

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ONTARIO ADOPTS 2005 NATURAL GAS /PROPANE (CSA B149 SERIES) INSTALLATION CODES

Effective January 1, 2006, TSSA adopts

- The National Standard of Canada CSA-B149.1-05 entitled "NATURAL GAS AND PROPANE INSTALLATION CODE" with Ontario Amendments
- The National Standard of Canada CSA-B149.2-05 entitled "PROPANE STORAGE AND HANDLING CODE" with Ontario Amendments
- The National Standard of Canada CSA-B149.5-05 entitled "INSTALLATION CODE FOR PROPANE FUEL SYSTEMS AND TANKS ON HIGHWAY VEHICLES" with Ontario Amendments
- TSSA Field Approval Code (adopts CSA B149.3-05 & NFPA 85-2004 both amended and parts of NFPA86-2003)

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UL971 STANDARD PUTS SECONDARY AND PRIMARY PIPING ON PAR

A revised piping standard, which came into effect July 1, 2005, is ready to make a big impact for TSSA customers in the Fuels Safety sector.

Developed by Underwriters' Laboratories (UL), the "Standard for Non-metallic Underground Piping For Flammable Liquids", UL971, will put secondary containment piping to the test.

Officially, the new UL971 requires that the secondary containment pipe be as capable as the primary to carry product indefinitely. The standard now has strict tolerances on elongation and strength retention after long-term exposure to product.

Normally there are 10 listees for this type of pipe. Currently only three listees (Smith Fibercast & Ameron fiberglass pipe and APT flex pipe) have passed the tests. UL has indicated that the other listees should complete the testing phase of the certification by the end of March 2006.

As of **May 1, 2006**, all new non-metallic piping installations in Ontario must meet the new standard. The Fuels Safety sector decided to extend the date for installation of the new pipe in Ontario until May 1 to ensure that there is adequate supply of the new pipe.

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PROPANE REFRIGERATOR CONCERNS

top latest safety and field compliance issues

Engineering Update

TSSA's risk reduction groups (RRGs) and technical advisory groups have been working on the following safety issues and field compliance challenges:

Unvented propane refrigerators (New Item)

The safety issue includes incidents of CO exposure (including three recent fatalities) caused by improper maintenance and operation of a refrigerator. The RRG met and helped determine that the issue is isolated to a specific make and manufacturer, and TSSA will be issuing a Director's Order requiring that this specific product be isolated from the living space. There is also an incentive program available in the United States for the removal of these specific appliances, and TSSA is in communication with the program's organizers regarding an extension of such incentives for the Ontario market.

Five per cent ethanol in Ontario's gasoline pool by January 1, 2007 (Update to the Summer 2005 Update article)

Ontario's government passed the Ethanol Mandate in October 2005 requiring an average of five per cent ethanol in Ontario's gasoline pool by January 1, 2007. TSSA held an industry meeting to address the challenges of this mandate in regards to gasoline storage and handling. There are continued compatibility issues with fibre reinforced plastic (FRP) tanks manufactured prior to December 31, 1978

and certain FRP tanks manufactured between 1979 and 1986 where their structural strength will be reduced when exposed to ethanol enriched gasoline. Preliminary analysis indicates that these tank issues will have a minor impact with respect to TSSA's jurisdiction; that is, the number of remaining tanks in service may be small. This information is being confirmed. TSSA will be working with industry and the Ontario government to provide a comprehensive communications program to stakeholders largely consisting of preparation guidelines and compliance issues.

Gas appliance venting: advisory posted on website (Update to the Summer 2005 Update article)

The compliance issues include providing practical guidance for application of the code for existing interior vent sizing and common chimney flues. There has been much confusion in industry regarding venting issues and TSSA, with the RRG input, has developed and issued advisories intended to provide a common clear understanding aimed at achieving consistency in the field. Please see the posted advisories on TSSA's website.

Fuel Oil - extension of 90-day time limit for unacceptable conditions that do not pose an immediate hazard: advisory posted on website (Update to the Summer 2005 Update article)

TSSA and industry recognize that due to limited available oil burner technicians

and the high number of unacceptable conditions being found, there are challenges in correcting unacceptable conditions within the 90-day allowable time period. TSSA will consider application for variance by individual distributors to extend the 90-day time period to 365 days, provided the following conditions are satisfied:

- distributor makes application for variance;
- distributor addresses all critical hazards immediately and keeps records;
- distributor keeps records of all unacceptable conditions which do not pose an immediate hazard with timelines for their correction based on safety issue identified;
- distributor can demonstrate that the timelines for corrective action are being met; and
- distributor makes these records available for the TSSA inspector during a possible variance compliance inspection.

The variance is intended to address the backlog created by identifying non-compliances, which do not pose an immediate hazard in existing equipment installations.

Please see TSSA's website – www.tssa.org – for the posted advisory outlining this variance option.

Check TSSA's website regularly for the latest fuels news.

ONTARIO ADOPTS 2005 NATURAL GAS /PROPANE (CSA B149 SERIES) INSTALLATION CODES *continued from page 1*

When adopting codes, TSSA engages industry in a consultation process that results in Ontario Amendments to the national codes. Normally, these amendments are made to reflect practical implementation issues and are based on equivalent safety. Amendments are then

submitted to the national code committee for consideration at the national level. The Canadian Standards Association publishes the national B149 Codes and is developing a package for Ontario that includes the applicable Act, Regulations and Code Adoption Documents for use with

the CSA-B149-05 Code Series.

This Ontario package is targeted for release by CSA late in December 2005. Order inquiries should be directed to CSA at 1-800-463-6727 or shop online at www.ShopCSA.ca.

Levelling the playing field

By **Stu Seaton**, Team Leader, Fuels Safety

INDUSTRY TELLS US IN VERY SUCCINCT TERMS THAT ONE OF THE BIGGEST STUMBLING BLOCKS TO A SUCCESSFUL HEATING BUSINESS IS TRYING TO COMPETE AGAINST UNLICENSED AND UNCERTIFIED "CONTRACTORS".

There are clear disadvantages for any business competing against those that might try to avoid the costs normally associated with doing business legally and ethically.

Two of the biggest reasons for this situation are human nature, and the consumer's interest in taking advantage of a perceived "deal". If a licensed, certified contractor quotes a job at \$100 and another one lacking proper licensing and certification quotes \$50, the odds are that the cheaper price will prevail. The question of what the average consumer knows about the trade and the safety aspects of it, beg to be answered.

Lack of awareness

Most people will look at a service vehicle and if it says "heating" on it, that seems good enough. Sometimes even a business card and a convincing story will sell the job. As a TSSA Fuels Safety inspector, I have been on numerous incident investigations that have one common theme: Somewhere along the line the consumer tells me, "I didn't know they had to be licensed."

As a regulator, TSSA shares some of the responsibility. Are we doing enough to educate the public? The short answer is that we have a great deal yet to do but a real solution is more difficult for two

basic reasons - the consumer's interest in the bottom line and the fact that a small segment of society remains unaware of the safety value of choosing only licensed, certified contractors.

The situation is made more complicated by lowly image of the home heating system as a commodity. Take a look at the things people buy. Consumers will spend vast amounts of time comparing, testing and evaluating things like a car, or a big-screen TV. How many of your customers are equally vigilant when replacing or even maintaining a furnace? My guess is not many.

We say the furnace is the heart of a house. To the average consumer however, it is just a big appliance that you crank up in the late fall, and hope it operates trouble-free until Victoria Day. A replacement appliance becomes a necessary evil and the least amount of money spent on is something to be desired.

Under these circumstances, it becomes even more difficult for safety regulators, inspectors and front-line contractors to move popular opinion and bottom line thinking in the direction of improved safety.

Selling safety

Nonetheless, there are a few things contractors can do to help. And first

among these is to educate your customers. Take the time to sell them safety. Show them that you operate your business with safety interests first and foremost. Your customers will appreciate such an approach. What's more, good word of mouth is invaluable. The next thing contractors can do is to keep their eyes open for the unlicensed, uncertified operators. TSSA often hears about "those guys" from good reputable contractors. TSSA has an enforcement function, yet while the regulator often hears about unlicensed operator, it rarely gets the full story as to who they are or where they are working.

To assist in its regulatory and enforcement functions, TSSA benefits from the experience of legitimate home heating contractors. Advise TSSA when you have concerns about unlicensed and unregistered operators. TSSA will ensure the information is held absolutely confidential and that the matter will be fully investigated. TSSA is fully committed to increasing its efforts towards a level playing field in the home heating sector. Your help can play an important role in this effort. To report a concern, telephone 1-877-682-8772.

SAFETY NOTICE

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because it recognizes the requirements of the boiler certification standard, the accuracy of some CO measuring instruments and the methods being used to measure CO in the vent system. This Director's Order will have the direct effect of increasing homeowners' awareness of the need for properly maintaining the boiler and of making inspected boilers safe for this heating season.

TSSA and industry recognize that there will be concerns, including:

- increasing homeowner perception of

boilers as being unsafe;

- if the boilers are operating beyond an acceptable level, homeowners might object to the inconvenience and extra cost of having their boilers shut-off or serviced/cleaned;
- contractors being "put in the middle" and being the communicators of this new requirement; and
- costs associated with infracting and/or servicing the equipment.

However, because of the continued safety risks associated with natural draft gaseous-fuelled boilers, TSSA is

moving forward with mandatory safety inspections as described above.

To address the concerns raised and facilitate both industry and homeowner understanding, the Director's Order will include explanatory letters on TSSA letterhead for both contractors/certificate holders and homeowners.

It is also important to note that TSSA is no longer recommending that the vent damper be locked in the open position. There has been much discussion among industry experts, and whether the damper operation helps or hinders the situation is unresolved.

ATTENDANT TRAINING ENSURES PUBLIC SAFETY AT FUELS FACILITIES

By Frank Bailey, Inspector, Fuels Safety Program

IN THE EARLY MORNING OF SEPTEMBER 17, 2005, TSSA'S FUELS SAFETY PROGRAM INVESTIGATED AN INCIDENT AT A MISSISSAUGA SELF-SERVE GAS STATION. THE INCIDENT IS CLASSED AS A PUBLIC SAFETY **NEAR MISS**.

A gas station customer was refueling a vehicle when the dispensing nozzle stuck in the open position. The vehicle tank overfilled and the customer placed the dispensing nozzle on the ground. The customer went into the gas station store and made the attendant aware of the gasoline pouring from the nozzle. The attendant was unable to stop the gasoline flow and contacted the station operator at home for assistance. At first, the station operator attempted to instruct the attendant to shut down only the affected dispenser. After approximately 10 minutes, the operator finally managed to instruct the attendant to shut down all dispensers. A member of the public called 911 after noticing the attendant's inability to shut down the dispenser. Fire and police services attended the location and controlled the movement of gasoline along the ground. The facility was closed for eight hours to allow for environmental clean-up, flushing of the sewers and the TSSA investigation.

TSSA IS WORKING WITH THE FACILITY LICENCE HOLDER TO ENSURE A HIGHER LEVEL OF OPERATOR AND ATTENDANT TRAINING...

The investigation determined the following:

- 200 L of gasoline were lost to sewer/catch basin/environment resulting from the delay in dispenser deactivation;
- the gasoline-dispensing nozzle failed to shut off when the vehicle fuel tank reached capacity;
- the facility operator, who holds a certificate of qualification as Site Operator, installed the refurbished dispensing nozzle three weeks earlier;
- the attendant was not trained in the site operation and emergency procedures;
- the attendant was a new employee who was working his third shift without supervision;
- the emergency procedures, required by the Liquid Fuels Handling Code, were not available to the attendant or posted in the store;
- a lottery machine and other saleable items obscured the dispenser's emergency shut-off switch, reducing the attendant's ability to stop the gasoline flow quickly;
- the licence holder, operator and attendant did not notify TSSA/Spills Action Centre; notification came from Peel Regional environmental staff four hours after the incident; and
- the video monitor was divided into 12 screens and its position did not allow the attendant to effectively view activity at the dispensers.

The dispensing nozzle failure is under review by TSSA staff, the nozzle manufacturer and the approval agency. TSSA is working with the facility licence holder to ensure a higher level of operator and attendant training in the requirements of the Liquid Fuels Handling



Attendant station at a Mississauga self-serve gas facility.

Code and Ontario Regulation 217/01.



Clutter and lack of visibility can be problems for attendants.



The spill incident was made worse because the emergency shut-off switch was partially hidden.

TSSA-ORCGA alliance makes headway

TSSA IS CONTINUING ITS INVOLVEMENT WITH THE ONTARIO REGIONAL COMMON GROUND ALLIANCE (ORCGA) TO PROMOTE "BURIED INFRASTRUCTURE" SAFETY AND TO REDUCE THE NUMBER OF PIPELINE INCIDENTS THROUGHOUT THE PROVINCE.

ORCGA is a non-profit organization that unites more than 110 utilities, excavators, municipalities and public safety agencies behind one vision: to be recognized as leading Ontario to be the safest jurisdiction with the most reliable infrastructure in North America. Its mission is to enhance public safety and utility infrastructure reliability through a unified approach to effective and efficient damage prevention.

TSSA considers its ongoing involvement with ORCGA as a major incident prevention activity for 2005-06. TSSA, in fact offers input and advice to ORCGA and a number of TSSA employees serve on various ORCGA committees.

In addition to finding ways to decrease pipeline hits throughout the province, a top priority for TSSA and ORCGA is to work with the Ontario government to establish what has been termed One Call legislation. Such legislation would greatly assist in overcoming pipeline hits as the result of a failure on the part of excavation contractors to obtain the proper location of buried pipelines. Such legislation would impact gas, cable, hydro and telecommunications activities.

ORCGA is taking an active role in lobbying the Ontario government to increase its standards in terms of infrastructure locates and to establish a mandatory partnership in the use of one comprehensive telephone number system.

TSSA's support of ORCGA is especially timely, following reports that the failure to call for locates in Ontario results in costs to industry of more than \$33 million each year. These costs are borne by utilities, excavators and all levels of government. Ontario lags behind many U.S. jurisdictions in this area.

Every U.S. state has some form of mandatory one call system, which is essentially a single number to call to get infrastructure locates. There is no such law in Ontario at present. Residents and excavators must call up to 13 separate agencies in order to coordinate their work.

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Ontario One Call was established in 1996; however, it remains optional, limiting its effectiveness. Many groups remain outside of a One Call system, which weakens Ontario's ability to protect infrastructure and public safety. For more information on ORCGA visit its website at www.orcga.com



GUILTY PLEA IN NOVEMBER, 2004 CALEDON PROPANE INCIDENT

On November 9, 2004, an explosion and fire at Caledon Propane forced a temporary closing of the east and westbound lanes of Highway 401, and led to the evacuation of 500 local residents in the Bowmanville area. There were no fatalities or injuries from the incident.

TSSA investigated the incident and in March, 2005, charged Caledon Propane with five counts under the *Technical Standards and Safety Act, 2000*.

TSSA's Fuels Safety program believes that the recent prosecution of a propane refilling centre for fuel handling safety violations will lead to greater safety awareness and incident reduction throughout the industry.

Cengel Investments Inc., carrying on business as Caledon Propane, was found guilty of a safety violation under the *Technical Standards and Safety Act, 2000*, stemming from an explosion and fire at the Caledon Propane facility in Bowmanville.

At an October 20th appearance at the Ontario Provincial Offenses Court in Whitby, Caledon Propane pleaded guilty to improper handling of propane fuel

under Section 37 of the province's safety act.

TSSA believes the guilty plea and the three-part penalty reinforce the importance of public safety and adhering to provincial regulations in the storage and handling of propane fuels. The incident also underscores the need for greater awareness within the industry for all elements of propane fuel safety.

THREE-PART PENALTY

In bringing the charges, TSSA argued for a three-part penalty against the operator. "TSSA believes these measures are an important part of a comprehensive program that promotes public safety awareness and education," said Roland Hadaller, Statutory Director of TSSA's Fuels Safety program. "It is our hope that through a combination of public education and awareness, the number of propane-related incidents in Ontario will decline."

Caledon Propane is required to pay \$30,000 to TSSA's Safety Education Fund. The fund supports safety-related

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research and education in the sectors regulated by TSSA. Caledon Propane is also required to provide a series of fuel handling training seminars to members of the Ontario Propane Association, and to officials with the local fire department.

Caledon Propane was also placed on two years' probation by the Ontario Court.

In addition to the penalties imposed, Caledon Propane now operates under a restricted fuel handling licence. Its operation is limited to filling propane cylinders, where previously it provided both refilling and cylinder reclamation services.

FUELS SAFETY RESTRUCTURING AIMED AT Service Enhancements

Officials with TSSA's Fuels Safety program believe a recent series of organizational changes will lead to improved customer service and more effective delivery of certain inspection operations.

The changes, which took effect August 1, 2005, impact the transportation and utilization fuel sectors.

Inspectors in the transportation fuel area were brought together to form their own

team, enabling them to focus exclusively on customers in this key program sector. Previously, inspectors were responsible for more than one fuel safety area.

The move allows better use of time at internal meetings and training sessions and ensures more consistent application of Fuels Safety sector procedures and codes.

An additional change includes creation of a Petroleum Team Leader position, which is designed to provide a more

responsive point of contact for customers in the transportation fuel area.

The addition of the new team leader position will also reduce the number of direct reports for the utilization fuel team leaders to allow them to reduce their administrative workload and focus on utilization fuel issues.

Utilization fuel inspectors will continue to report to their existing team leaders.

ODOUR

not the only hazard in some barns

By Paddy O'Connor, Inspector, Fuels Safety Program

Livestock manure pits produce more than just an unpleasant odour. The gases found in these pits are potentially dangerous. There are four main gases, H₂S (Hydrogen Sulfide), CO₂ (Carbon Dioxide), NH₃ (Ammonia) and CH₄ (Methane). Methane is one inspectors are familiar with in industry, so it is important to discuss it specifically as it relates to installed fuel-fired appliances.

A newer pig barn is used as an example. The barn is constructed with under-floor manure pit(s) and floor grates that allow the collection of waste. Exhaust air systems are connected to the pit(s) and move the manure gases to the outdoors. Insulated sidewall "curtains" regulate the makeup air to the barn and are controlled (opened & closed) by a thermostat to maintain a set temperature in the barn. In general, the curtains remain closed with a small fixed air opening during the coldest winter months. Heating equipment may be remotely located or inside the pig barn itself and is interlocked with the exhaust system.

Methane still present

During normal winter operations, the pig

barn is exhausting the manure gases with the sidewall curtains and fuel-fired heaters maintaining a set temperature. A very small percentage of methane from the manure gas may be found in the barn atmosphere. With a change of product (livestock), the normal operation is stopped. The pigs are sent to market and the barn remains empty for up to three weeks. The barn is washed down. The manure pit(s) are pumped and this agitation increases the amount of methane produced. There is no need to heat the barn without livestock present. As a result, the exhaust system is shut down, which in turn shuts down the heating system (and saves in the range of \$500 per week in fuel costs). It is minus 15 degrees c on a calm, windless day. The methane in the pit(s), being lighter than air, rises and because there is no air movement, it collects at the ceiling.

A few days later the owner/operator enters the pig barn to prepare for new livestock arriving later in the week. The exhaust system is activated, as well as the heaters inside the barn. This air movement mixes the methane collected at the ceiling with air, creating a flammable mixture. If the heaters are suspended inside and use the barn atmosphere for



As a fuel certificate holder, installing and servicing equipment, you must consider the environmental conditions in which the appliance is located.

combustion air, the flammable mixture may be pulled into the burner compartment, thereby igniting it. Ignition could be immediate or delayed, as the methane and air mix and move within the barn. The resulting fire may be a quick flash consuming the flammable mixture with minimal damage, or it may cause extensive damage, injury or even death.

As a fuel certificate holder, installing and servicing equipment, you must consider the environmental conditions in which the appliance is located. With the correct appliance installed, designed and certified for the conditions, the hazard discussed above is controlled. Now...if only that unpleasant odour could be eliminated...

Question:

Is an appliance that uses the pig barn's atmosphere for combustion air safe to install?

Answer:

Natural Gas and Propane Installation Code B149.1-00 section 3.9.2.

An appliance, unless certified for installation in a hazardous location, shall not be installed in any location where a flammable vapour, combustible dust or fibres, or an explosive mixture is present.



New and improved liquid fuels handling code

By **Ann-Marie Barker**, Fuels Safety Engineer

The Liquid Fuels Risk Reduction Group (RRG) has been working on revising the Liquid Fuels Handling Code for the past year. Fuels Safety anticipates publishing the revised Code by the end of 2006.

Some of the revisions to the Code include:

- updated criteria for manual inventory reconciliation;
- more stringent requirements for the submission of environmental reports; and
- a section for unattended retail sites.

It is not too late to submit comments to the RRG.

If you wish to do so, please send an email to abarker@tssa.org

Website enhancement lists registered home heating contractors

The Technical Standards and Safety Authority's Fuels Safety department has implemented a new feature on the corporate website allowing members of the public to check if local home heating or fuel handling contractors are officially registered with TSSA.

Starting with the TSSA homepage at www.tssa.org, members of the public can use the Fuels or Consumer Information/Homeowner links to find their way to the home heating contractor listings. Registered contractors can be searched by name, address and local municipality.

Home heating contractors now on the listing should consider informing their sales staff of the website feature so that staff can in turn advise existing and potential customers and the public to make sure their heating contractor is qualified for the job.

The directory is updated periodically. As a result, status changes in the preceding period will not be reflected online until the directory is updated. For the most up-to-date registered contractor information, it is advisable to contact the TSSA Customer Contact Centre at 1-877-682-8772 or (416) 734-3300.



We welcome your comments and story ideas for future editions of this newsletter. Please contact:

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