



Update



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Message from the Director

By John Marshall, BA, CIGC, Director of Fuels Safety Program

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With the advent of baby boomers nearing retirement, the Technical Standards and Safety Authority (TSSA) is concerned that regulated fuels sectors could face a significant skills shortage to the point of impacting the safety mandate. The greatest impact, anticipated in the technical skills areas, will likely begin in 2011 and intensify in 2020; however, the impacts are already being felt.

While TSSA clearly cannot resolve the issue alone, it can play an important advocacy role. TSSA has had discussions with industry sectors and will continue to work as an advocate with both industry and government. TSSA additionally raised potential concerns regarding the availability of skilled workers within each of its Fuels Safety Advisory Councils. Responses varied significantly, but interest was demonstrated in coordinated actions to promote the training and availability of skilled resources.

As such, TSSA has been involved in the following actions in its advocacy role:

- monitoring the situation to determine if such shortages may begin to create public safety concerns or hamper the organization's ability to operate effectively;
- working with the advisory councils to quantify thresholds of labour shortage that may begin to create public safety risks;
- continuing to participate with industry partners

- such as the Heating Refrigeration and Air Conditioning Institute, Ontario Energy Association, and Skills Canada (Ontario) in formulating plans to mitigate such risks;
- considering unique applications for remote areas within training and certification with use of innovative processes such as the promotion of on-line training to ensure educational access is not a roadblock; and
- working with the Ministry of Training, Colleges and Universities (MTCU) to bring gaseous fuels certificate holders into an apprenticeship program in order to encourage more tradespeople into the field.

Improving technical resource availability within the broader industry is imperative to ensure safety standards are met in the industries which TSSA regulates. To that end, TSSA has begun working with MTCU and the Ministry of Consumer Services

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THE MOST COMMON NON-COMPLIANCES

By **Stu Seaton**, Fuels Safety Investigation and Enforcement



Always take the time to read the manufacturer's instructions, cover-to-cover, before the job commences. Doing so will be your best route to a compliant and safe installation.

As a Fuels Safety Investigator, I am often confronted with many common non-compliances within a particular fuel type. Looking at all the fuels combined, I conclude that the most common problems roll down to three fairly simple issues: keeping abreast of the current codes and regulations, adhering to manufacturers' certified instructions, and proper documentation.

Current Codes and Regulations

When asked to see what codebooks are carried in a service or installation vehicle, an inspector is often

handed a code that is well out of date. Codes change over time and being unaware of a code change can lead to non-compliant installations that may very well impact safety and your bottom-line. Technicians need to stay up to date, and if you are an employer, it is your responsibility to ensure they do.

Inspectors also commonly find that technicians are unaware of Ontario regulations. Too often, the explanation is: "I thought I only needed the codebook." Not so. Technicians and employers need to have an understanding of the regulation that impacts their type of operation. Consider the regulations as your overall rulebook. I sometimes get a surprised look when a technician finds out that he is responsible for his work. Would you play a game of hockey without knowing the rules? No. Why would you run your business, or carry out your responsibilities as a technician without understanding the rules that personally impact you?

Keep up-to-date codes available to your technicians and download the Ontario regulations from TSSA's web site at www.tssa.org. Understanding what your responsibilities are and discharging them in a diligent manner is the key to your own success and safe installations.

Manufacturer's Certified Instructions

The certified instructions that come with an appliance approved for sale in the province of Ontario are 'codified', which in short terms mean that the instructions are the same as code. The appliance must be installed as per the instructions. Do not take for granted that an appliance which you have been routinely installing has not changed. Always take the time to read the manufacturer's instructions, cover-to-cover, before the job commences. Doing so will be your best route to a compliant and safe installation.

Documentation

If there is anything that falls by the wayside in both service and installation, it is proper documentation.

Here is an example. You install an appliance and everything is compliant. Afterwards, the homeowner of the day decides to change something within the building envelope that impacts clearances or ventilation of your installation. Now something goes wrong and a TSSA inspector shows up to find out why there was an incident.

One of the first things the inspector will do is require the installing contractor to produce the job documentation. If the contractor's documentation is lacking, it now becomes a 'he said-she said' issue. Inspectors make decisions based on evidence and your documentation is a valuable part of that evidence. A lack of evidence can only allow the inspector to base a decision on what is left.

Every technician in the province should use the most powerful tool available – a pen and notebook. Write down the job particulars and if possible attach a picture. Digital cameras are inexpensive and a picture tells a thousand words. If you show an inspector what the job looked like at the time of installation, then the inspector has solid evidence to work with, and you, as a technician, have practiced your due diligence. Simple documentation can save the technician and the employer from being held responsible for a non-compliant job. How simple and inexpensive are some well-written notes and a snapshot? Compare that to defending yourself in Court.

There you have it, three simple practices that can allow you as a technician or employer to do the job right. Now the safety bar is raised with your due diligence, and we can all sleep a little easier.

Underground Fuel Oil Storage Tank Registration – Easy as 1-2-3...

By **Gwen Thong**, Fuels Engineer-in-Training

As of May 1, 2002, underground fuel oil storage tanks are required to be registered with TSSA under Ontario Regulation 213/01 (Fuel Oil Regulation).

“7. (4) No person shall supply fuel oil to an underground tank unless the underground tank is registered.”

As a condition of registration, new installations, replacements or modifications of existing installations require TSSA engineering design review, inspection of installations prior to backfilling, and inspection upon completion. These criteria are important to ensuring safety compliance throughout the whole registration process, and the following easy steps will help limit any hiccups along the way.

Step 1 - Submit

Submission of the application to register an underground fuel oil storage tank must include drawings of the installation (from the main storage tank to the appliance) and a list of components

(such as manufacturer, model and specifications) to be installed.

A copy of this application, entitled *Ontario Registration to Operate/Install an Underground Fuel Oil Tank Form*, can be found on TSSA's website at: <http://www.tssa.org/regulated/fuels/fuelsForms.asp>

Step 2 – Review

A TSSA Fuels engineer will review the submitted information, provide comments where required, and work with the applicant to resolve any issues related to the installation. It is preferred that the review process is done right after the design phase of the installation so that any changes can be addressed with ease – saving the applicant time and money.

Step 3 - Inspect

Prior to backfilling, the applicant will contact a TSSA Fuels engineer to schedule a preliminary inspection of the site. Some of the things we look out for during

this inspection are:

- pressure testing of the piping;
- hydrostatic testing of the sumps;
- slope of piping;
- backfill material; and
- installation of cathodic protection (where required).

After backfilling is complete, the applicant will contact TSSA again to schedule a final inspection. During this inspection, TSSA will check the following:

- operational leak detection system;
- inside installation and connection to appliance(s);
- venting of the appliance(s); and
- testing of the day tank (where required).

When all the steps are completed and the installation is deemed to be compliant, TSSA will issue a registration number to the applicant. It really is as easy as 1-2-3.

CHANGE TO FUELS CONTRACTOR REGISTRATION

By **Ruud Berkel**, Technical Specialist, Fuels Safety Program

In an effort to further enhance public safety, TSSA has implemented a procedural change to contractor registration, effective July 10, 2009.

To obtain a registration, the contractor must meet with an inspector to ensure an understanding of fuels contractor responsibilities and all regulatory safety requirements. The local TSSA inspector will arrange an inspection visit after the application has been processed. Upon successful completion of the

inspection, the contractor will be issued a notice of contractor registration from TSSA, which will include a registration number.

As a result of this process change, TSSA can no longer provide contractor registrations to walk-in customers. Applications can be submitted in person at TSSA head office or sent in by fax or mail. TSSA has made this change to ensure contractors possess a clear understanding of responsibilities

and the necessary information to operate in a compliant manner.

The contractor will be charged an inspection fee for this visit in accordance with the applicable hourly rate.

If you have any questions about this or other contractor issues, feel free to contact TSSA toll-free at 1-877-682-8772.

SAFETY REQUIREMENTS FOR GAS-FIRED NATURAL DRAFT BOILERS

By Raphael Sumabat, Engineer Specialist, Fuels Safety Program

TSSA has determined that the use of natural gas and propane burning natural draft boilers equipped with a draft hood may result in a carbon monoxide (CO) safety hazard in the home that may cause personal injury or even death.

In previous years, TSSA has required that the technician entering a home equipped with a residential boiler, perform a visual inspection and a CO check in the flue and take appropriate action based on the result(s) found. TSSA continues to have incidents in Ontario and this year's orders will have increased requirements.

CO is a colourless gas produced when fuels such as natural gas and propane burn incompletely. CO itself is odourless and tasteless but it may be accompanied by an abnormal odour of incomplete fuel combustion. Symptoms of CO poisoning include nausea and vomiting, dizziness, burning eyes, difficulty breathing, confusion and loss of consciousness.

Incidents investigated to date have shown that the key contributing causes are that:

- Many boilers are not being maintained in accordance with the boiler manufacturer's instructions; it is imperative that boilers are cleaned properly on a regular basis to reduce the likelihood of CO production.
- Chimneys intended to evacuate CO and smoke from the boilers to the outdoors are not properly operating due to other exhaust systems (such as wood fireplaces, dryer exhausts, new kitchen

exhausts, etc.) and the installation of new, more energy efficient windows and doors. These systems and home upgrades limit the outside air infiltration into the home and cause the house to depressurize.

To address this situation, TSSA is requiring that all heating contractors perform a CO safety check when a technician enters a home with this type of boiler. The technician is obligated to take action when an unsafe condition is identified. These checks will be required when a technician enters a home with this type of boiler, regardless of whether the homeowner/user has requested service on that boiler. This check is only required once during the heating season. The gas technician is also required to visually examine the boiler and, if there are signs of poor operation, additional steps may be required including a home depressurization test or non-compliances corrected by adding combustion air, make-up air, installing a water bypass, etc.. TSSA is requiring that CO alarm(s) be located in the vicinity

TSSA is requiring that all heating contractors perform a CO safety check when a technician enters a home with this type of boiler. The technician is obligated to take action when an unsafe condition is identified. These checks will be required when a technician enters a home with this type of boiler, regardless of whether the homeowner/user has requested service on that boiler.



or within the sleeping quarters of the home. The technician is required to ensure that the alarms are present or issue a directive that they be installed.

Additionally, for new or replacement installations, TSSA will require that Category I, Natural Draft Boilers with a Draft Hood be installed in an isolated room with specific combustion air and a CO alarm.

To assist contractors and technicians in explaining the new requirements to the homeowner, a homeowner fact sheet on TSSA letterhead will be provided with the director's order.

For more information, please contact TSSA toll-free at 1-877-682-8772 or via the Customer Contact Centre at customerservices@tssa.org.

NEW PROPANE REQUIREMENTS

By **Sandra Cooke**, Engineering Manager, Fuels Safety Program

Ontario Regulation 440/08, which amends Ontario's Propane Storage and Handling Regulation, was filed on December 11, 2008. The new requirements come into effect at different timelines depending on the specific amendment. TSSA has hosted meetings with impacted stakeholders, starting in January of last year, regarding the implementation of the new regulatory requirements. The result is an advisory for implementing the new requirements and a guideline for preparing a Risk and Safety Management Plan (RSMP). These documents have been mailed directly to propane facility operators as well as posted on TSSA's website.

This article provides highlights of what is contained in the implementation advisory. If you are a propane facility license holder, please carefully read and examine the implementation advisory and RSMP guideline that you received in the mail or obtain them directly from TSSA's website as these documents contain critical details for implementing the new requirements.

Records of Training (ROT) referred to in this article are only those listed in Ontario Regulation 215/01, and referred in Ontario Regulations 211/01 and 440/08.

1) Effective January 1, 2009, the requirement for persons to produce a certificate or ROT on demand.

2) Effective January 1, 2009, the requirement for submitted application drawings to identify tanker truck parking.

3) Effective February 9, 2009, the requirement for all facility employees and agents to be trained in emergency management procedures at least annually.

4) Effective December 31, 2009, the requirement for site specific facility training for ROT holders and documented service and maintenance of fire protection devices.



5) Effective December 31, 2009, the requirement for company officer to hold a certificate or ROT of the highest level in accordance to the functions being performed at the facility.

6) Effective December 31, 2009 (for new or modified facilities with transfer operations), the requirement for increased municipal interaction by allowance of their comment on the application for new or modified facilities.

7) Effective December 31, 2009 (for new or modified facilities with transfer operations), the requirement for increased fire service awareness by providing an opportunity for the local fire service to attend the site.

8) Effective January 1, 2010 (for new or modified facilities with transfer operations, and for existing facilities, effective upon the renewal of facility's license in 2011), the requirement for a RSMP. The RSMP includes the following:

- hazard analysis;
- risk assessment;
- risk mitigation and control plan; and
- emergency response and preparedness plan.

9) Effective January 1, 2010 (for new or modified facilities with transfer operations, and for existing facilities, effective upon the renewal of facility's license in 2011), the requirement for fire service approval of the RSMP that address fire safety, fire protection and emergency preparedness.

For facilities with a total capacity of 30,000 USWG or greater, the RSMP shall be prepared by a professional engineer, and for facilities with a capacity less than 30,000 USWG, the RSMP shall be prepared by a person with specialized knowledge in risk management. As there is no consensus or professional designation on who is qualified to prepare a RSMP, TSSA will require that the plan be prepared by a professional engineer regardless of the facility's capacity.

The Professional Engineers Ontario (PEO), the regulatory body of professional engineers, has designated the preparation of RSMPs as engineering work. Thus RSMPs shall be prepared by a P.Eng regardless of capacity.

Additionally, TSSA shall inspect facilities with transfer operation at least annually, and the implementation and continued adherence to the new requirements shall be checked at that time.

NEW PROCESS FOR ACCREDITED TRAINING PROVIDERS

By Ruud Berkel, Technical Specialist, Fuels Safety Program



The provincial government amended Ontario Regulation 215/01 effective December 31, 2008 with the following additions:

Accreditation of Certain Training Providers

- 4.1 (1) Training providers who are accredited by the director to provide training for a certificate or record of training required by Ontario Regulation 211/01 (Propane Storage and Handling), made under the Act, are deemed to have their accreditation expire on December 31, 2009.
- (2) The director shall not approve or renew the accreditation of a training provider to provide training for a certificate or record of training required by Ontario Regulation 211/01, made under the Act, unless the training provider provides evidence acceptable to the director that the persons who will provide the training have subject matter and practical experience in the matters on which they will be providing training.

- (3) The accreditation of a training provider to whom this section applies shall be valid for no more than three years.

Due to these regulatory changes, TSSA has produced a policy and procedures document, entitled *Policies and Procedures Accreditation and Program Approvals of Training Providers/ Organizations for Record of Training (ROT) Programs*. Please review this document on TSSA's website prior to your submission to become a training provider.

The regulation states that all accreditations expired on December 31, 2009; therefore, all interested parties, including existing training providers, are required to apply for approval to become an accredited training provider by completing the following process:

1. Submit Application for Program Approval – Accredited Training Provider including a deposit of \$126.00 (includes GST).

2. Submit ROT Instructor Practical Experience Sign-Off documents for all instructors.
3. Please be advised that in addition to your application and approval by TSSA, there is a requirement from the Ministry of Training, Colleges and Universities (MTCU) under the Private Career Colleges Act. Please see MTCU's Memorandum of Understanding on TSSA's website or at www.edu.gov.on.ca/eng/tcu. Contact the Private Career Colleges' office to register under their regulatory requirements. You must also provide proof of this application to TSSA.

The training material must reflect any change in regulation and codes. Special attention must be paid to the Propane Truck Operator (PTO) material since the ROT holder can, as of 2008, reactivate an existing customer's equipment in accordance with the manufacturer's lighting instructions in the event of loss of fuel supply.

Both the *Training Provider Application* and the *ROT Instructor – Practical Experience Sign-Off Document* can be found on TSSA's website – under Fuels Related Technician Certification/Records of Training.

If you have any questions regarding this or any other fuels-related issue, please direct inquiries to customerservices@tssa.org or call TSSA toll-free at 1.877.682.8772.

DIGESTER PLANTS, LANDFILL SITES AND BIO GAS FACILITIES

By **Marvin Evans**, Engineer, Fuels Safety Program



TSSA assumed jurisdiction for Digester Plants, Landfill Sites and Bio Gas Production Sites in November 2007. Bio Gas Sites includes any gas being produced by an anaerobic process other than that from Waste Water Treatment Plants. These would include industrial farms and food processing facilities. TSSA's involvement deals with the portion of the plant that involves the production, transmission and handling of gas. The treatment of the waste water and the emissions discharged into the atmosphere are under the jurisdiction of the Ministry of Environment. The gas generated from these plants has a typical composition of 50 to 70 per cent methane and 29 to 49 per cent carbon dioxide.

If a new facility is being built, or an existing facility is subjected to any re-design, modification, expansion, or the digester tank is cleaned and/or repaired, an application is required to be submitted to TSSA. This application can be found on TSSA's website under the Fuels Safety Program – Forms and Fees section: <http://www.tssa.org/regulated/fuels/fuelsForms.asp>

If a new facility is being built, or an existing facility is subjected to any re-design, modification, expansion, or the digester tank is cleaned and/or repaired, an application is required to be submitted to TSSA.



The primary code being used is the CAN/CGA-B105-M93 – *Code for Digester Gas and Landfill Gas Installations*.

During recent audits at various Digester Plants, TSSA has found the majority of the boilers and flares (waste gas burners) are not approved. Since

there is currently no certification standard covering flares or boilers utilizing gas other than natural gas, propane or fuel oil, these appliances need to be field approved by TSSA. Further information can be found on TSSA's website under the Fuels Safety Program – Field Approvals section:

<http://www.tssa.org/regulated/fuels/fuelsField.asp>

If you require further clarification or have any questions, please contact TSSA toll-free at 1-877-682-8772.

CAMPGROUNDS AND TRAILER PARKS: THE PROPANE CONNECTION

By Stu Seaton, Fuels Safety Investigation and Enforcement



The 2009 season of 'kicking back' at a seasonal trailer park or campground is all but a memory and vacation plans for this year are being made. One of the key components for a vacation 'get-away' is propane... for that perfect barbecue or warmth on a chilly night.

Depending on the campground or trailer park, propane utilization could come in many forms, from single-use cylinders, standard 20 and 30 pound cylinders, right up to 420 pound cylinders or tanks, which supply some of the larger permanent sites. At most sites, 20 and 30 pound cylinders are in the majority and the need for refilling is always present.

During the 2008 and 2009 season, TSSA inspectors found that many cylinders, less than 100 pounds, were being filled directly from propane bulk trucks. Trucks would enter a site and make their way through the narrow winding park paths, stopping for customers along the way. This practice was found to be common in several campgrounds and trailer parks. Although assumed as

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'convenient', it is neither a safe nor compliant method of propane dispensation.

Look at how simple it is to create a potentially fatal incident with the 'convenient' method...

- Are all ignition sources around the cylinder fill

area identified and controlled? **No.**

- Is the cylinder fill-area free of curious children? **No.**
- Are scales required for mass filling accurate on uneven ground or after being bounced around on the back of a truck? **No.**
- Is there room to quickly get fire suppression apparatus to the cylinder fill site should something go wrong? **No.**
- Is the local Fire Department aware of and prepared for propane transfer suppression anywhere within the park? **No.**

Five simple questions that are all answered with the word 'No'. Does that mean that safety just took the day off in favour of convenience? In short, yes. Many end-users will argue that this 'convenient' method of propane distribution is much safer than cylinder owners transporting cylinders to and from a cylinder refill centre in the family vehicle. I have also heard complaints that some seniors have a difficult time handling cylinders and the propane distributor is doing them a great service by filling the cylinder right at the site. I would be the first to agree that transporting cylinders in a closed and often overheated vehicle is extremely unsafe and, yes, some seniors, or persons with disabilities may find cylinders difficult to handle.

So is there a safe, compliant and convenient way to supply the need for propane in cylinders less than 100 pounds within campgrounds and trailer parks? Yes, there certainly is.

Below is an excerpt of a recent TSSA advisory that specifies the requirements for propane refill at campgrounds and trailer parks. Although the advisory is new, the regulation referred to was published in 2001, thus this is no 'new' law which, surprisingly enough, is often assumed by both distributors and end-users.

The following is required for filling propane



cylinders under 100 lbs from a bulk truck:

- Propane facilities are required to be licensed.

“No person shall operate a retail outlet, a filling plant, a vehicle conversion centre, a cylinder handling facility or a container refill centre without the appropriate licence” Ontario Regulation 211/01, s. 13 (1).

- For filling propane cylinders under 100 lbs from bulk truck, a “Licence to Operate a Propane Container Refill Centre” is required.
- Ontario Regulation 211/01, Section 27 describes requirements for Refill Centres.

An applicant for a “Licence to Operate a Propane Container Refill Centre”, intended for filling cylinders from a bulk truck, shall submit the following to TSSA:

1. **COMPLETED FORM:** “Application for an Ontario Licence to Operate a Propane Cylinder Handling Facility, Container Refill Centre or a Filling Plant”;
2. **APPLICATION FEE;**
3. **LETTER FROM THE MUNICIPALITY** where the container refill centre is located indicating that the use of it for its intended purpose does not contravene the zoning by-laws of the municipality;
4. **LEGIBLE PLAN** in triplicate that shows:
 - i. the location of a propane bulk truck(s) and cylinder storage within the container refill centre;
 - ii. the distance from a propane bulk truck(s) and cylinder storage to the property lines;
 - iii. each building or structure located within 50 feet of a propane bulk truck;
 - iv. the location of each site where flammable or combustible substances are stored;
 - v. the capacity in USWG of a propane bulk truck(s);

vi. **any other relevant information requested by TSSA that is necessary to ensure that the installation is safe;**

5. **COMPLETED FORM:** “Pre-Installation Site Check-Sheet for Propane Filling Plant or Container Refill Centre”;
6. **CALCULATIONS CONFIRMING COMPLIANCE WITH BRANCH STANDARD NO.9;**
7. **PROCEDURE FOR REFILLING CYLINDERS FROM A BULK TRUCK;**
8. **CONFIRMATION THE CYLINDERS ARE SECURED when being filled; and**
9. **CONFIRMATION THE HOSES USED FOR FILLING CYLINDERS ARE APPROVED (the same type as in standard Container Refill Centre).**

Note: These facilities are subject to the new regulatory requirements, including the requirement for a Risk and Safety Management Plan.

This advisory highlights the fact that campgrounds and trailer parks need to be licensed as a ‘facility’, which includes specific points. The simple reasons for this are:

- TSSA must know where the facility is so cyclical inspections can be carried out, thus ensuring public safety.
- The Municipality is aware of the refueling process and that the process falls within the zoning requirements.
- The Municipality can distribute the locations and accepted practices to their fire services in order to have a workable fire suppression plan in place.
- Ignition sources and other factors detrimental to safe refueling procedures have been eliminated.
- Equipment used to refuel and the vessels being refueled are compliant and safe.
- Operators conducting the refueling procedures are qualified to conduct the process.

Distributors also have a requirement to diligently discharge “Distributor’s Responsibilities” as per Ontario Regulation 211/01. If a distributor disconnects, refills and then re-connects the cylinder(s) from an appliance supply system, a comprehensive inspection of the appliances being fuelled, including the supply and venting systems, must be conducted upon the initial fill, and once every ten years thereafter. The appliances, and associated supply and venting equipment must be compliant prior to the introduction of fuel. This comprehensive inspection report must be kept on file by the distributor. In short, a 20 pound cylinder carries the same distributor’s responsibilities – as if it were a 420 pound tank – **if the distributor disconnects, fills and re-connects it.**

Aside from normal cylinder inspection, distributor’s responsibilities do not apply if an end-user presents a cylinder for refill only. It is the end-user’s responsibility to ensure that the system he or she is supplying fuel to is compliant.

Propane distributors can provide a valuable and convenient service to campgrounds and trailer parks, one which is compliant and safe. It will require the appropriate documentation, proper processes and the cooperation of the campground and/or trailer park owner, but once the initial set up is complete, the safe and convenient supply of propane can commence on a routine basis.

Adhering to the *Technical Standards and Safety Act, 2000*, Ontario regulations and the appropriate code, following all best practices, and maintaining a solid safety culture, propane distributors can offer safe, efficient and convenient propane supply.

Now everyone can plan for a ‘great-n-safe’ 2010 get-away!

ROOFTOP CLEARANCES

By Richard Huggins, Engineer, Fuels Safety Program

Building owners often find that their appliances do not meet code requirements. One common case is when they find that heaters installed on building roofs are too close to the roof's edge. This discovery creates a dilemma: on the one hand, it is unsafe for tradesmen to work near a drop; on the other hand, it can be expensive to move such an appliance. Opening up a new hole in a roof under the appliance and sealing the old one is a very costly procedure – well beyond the capital resources of most owners.

The code in question is the current Ontario version of the B149.1 *Natural Gas and Propane Installation Code*. The clause is 4.14.6 (b), which states:

“When an appliance is installed on a roof...
(b) the clearance between the appliance and the edge of the roof or other hazard shall be at least 2 m (6 ft)...”

TSSA is mindful of the financial burden of retrofitting a rooftop appliance, and so the Fuels Safety Program has created 'Advisory: Six Foot Clearance Between Roof Edge and Gas Fired Appliance' (FS-151-09) to guide your variance application. While every variance application will always be considered on its own merit, following the advisory is the best way to proceed.

The principle item of the advisory is the addition of a guard rail. A guard rail can create the two-meter (six-foot) clearance requirement as shown in the following sketch.



As per FS-151-09, a variance application must include drawings of the roof, the appliance on the roof, and the location of the guard rail. An application must also include a letter confirming that the guard rail will be:

- made of metal;
- designed, built, and installed as per section 14 of the *Occupational Health and Safety Act*; and
- adequately fastened.

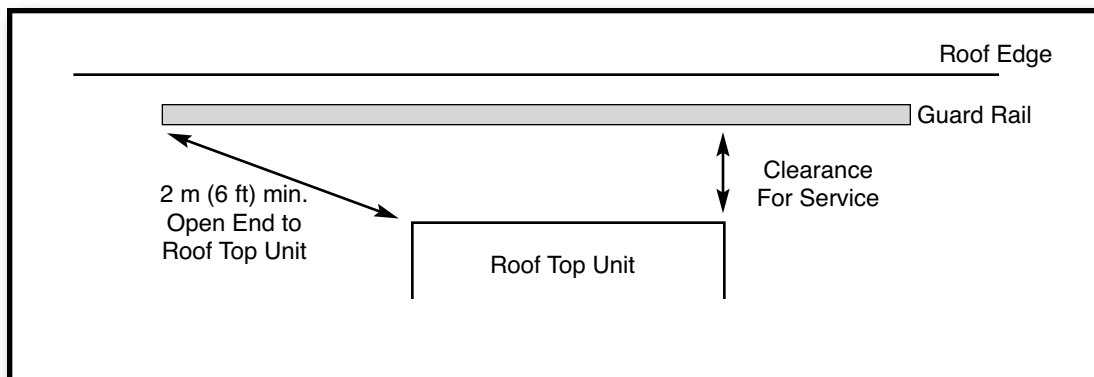
This letter must be signed by either a professional engineer or an architect.

There may be issues other than proximity to the roof's edge. There may be concerns regarding the

clearances required for maintenance, or with venting; however, the best way to proceed is to first read the advisory.

FS-151-09 can be found on TSSA's website within the View Archives Page (under Latest News), under Document Search or under Safety Legislation and Regulatory Information, Advisories and Director's Orders for Regulations, Gaseous Fuels Regulation (Ontario Regulation 212/01).

Any further questions, please contact TSSA's Customer Contact Centre via email at customerservices@tssa.org or toll-free at 1-877-682-8772.



NOT WITHOUT A VARIANCE: Upgrade of Fuel Appliances with Linkageless Fuel/Air Ratio Controllers

By Fedja Drndarevic, Engineer, Fuels Safety Program

TSSA Fuels inspectors are finding fuel appliances that have been upgraded with the linkageless fuel/air ratio controller. As these appliances were typically not previously approved – with this sub-system being their integral part – a facility owner or a service contractor must apply for a variance.



Variance-approved modification to a boiler.

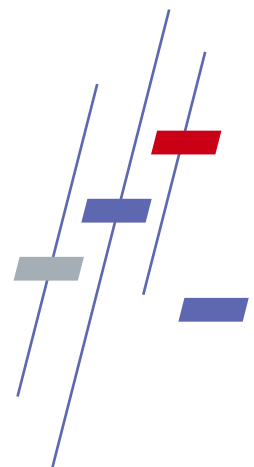
As energy efficiency improvement trends are stepping up, a significant number of gas and oil fired appliances in Ontario are being retrofitted by replacing a traditional linkage type fuel/air ratio control system with a linkageless type system having separate actuators that control the air and the fuel flow rates. This upgrade, typically performed on boilers and process ovens, falls outside of the scope of regular maintenance work as the replaced components do not have “like-for-like” features.

When an appliance is upgraded as described above, a record of modification must be maintained onsite and forwarded to TSSA in the form of a variance application. This allows the equipment to be upgraded without upgrading the entire system to meet present field approval code requirements. Only the upgraded feature – fuel/air ratio control system – is reviewed. As this upgrade includes a substantial modification of an appliance’s electrical system, the required field approval under the Electrical Code must be obtained as well, this being a condition of a TSSA variance approval.

Section 4.2.1 of the CAN/CSA-B149.1-05 *Natural Gas and Propane Installation Code* requires a component to be of a type and rating approved for the specific purpose for which it is employed. Currently there are no certified fuel/air ratio controllers available on the market.

The CAN/CSA-B149.3-05 *Code for the Field Approval of Fuel-Related Components on Appliances and Equipment* is being updated to address this shortcoming. A new set of requirements for fuel/air ratio control systems will be added to the Code and is already being used for the purpose of TSSA variance reviews. The application of a variance shall be subject to an inspection by a TSSA inspector.

TSSA staff work to help ensure that appliances, when upgraded, continue to operate reliably and safely.



NATURAL GAS UTILIZATION BY GAS WELL OWNERS

By Oscar Alonso, Engineering Specialist, Fuels Safety Program



When vessels are part of the natural gas system, the vessels need specific approval. The requirements for approval of vessels are stated in Ontario Regulation 220/01 (Boilers and Pressure Vessels). Vessels, typically known as tanks, require a Canadian Registration Number whenever the vessel is larger than 4.25 litres (1.5 cubic feet) in water capacity and/or the design pressure is over 103 kPa (15 psig).

In south-western Ontario, there are thousands of wells producing natural gas. Gas wells are under the jurisdiction of the Petroleum Resources Branch, Ministry of Natural Resources. Some of these gas wells produce sour gas (gas having contaminants making it unsuitable for use as fuel gas, unless treated) and some produce sweet gas, able to be used as fuel gas under certain conditions. Most active natural gas wells in Ontario are connected to a gathering system, treated and sold to natural gas distributors, such as Union Gas, Enbridge Gas Distribution and other utilities.

Once the natural gas has been conditioned (treated

to eliminate contaminants, excessive water and heavier hydrocarbons like propane, butane, and light gasoline) and odorized (adding of mercaptan to provide the gas with a distinctive odour), natural gas is typically transported and distributed to residential, commercial or industrial consumers under the requirements of Ontario Regulation 210/01 (Oil and Gas Pipeline Systems), issued under the *Technical Standards and Safety Act, 2000* administered by TSSA. By regulation, TSSA adopts the CSA Z662-07 Standard which outlines the requirements for natural gas transmission and distribution systems.

The CSA Z662 scope is for piping systems from the

gas well connection flange (known as a 'Christmas tree') and includes gathering lines, transmission lines, distribution lines, service lines and facilities. The downstream boundary is the outlet of the customer meter. Downstream of the customer meter, a different regulation applies — Ontario Regulation 212/01 (Gaseous Fuels) — and the applicable code is the CSA B149.1. Any piping system downstream of the meter is owned by the property owner. The installation of piping downstream of the meter, and appliances or venting systems, shall be performed by trained personnel, and being the holder of a Gas Technician 1 (G1) or Gas Technician 2 (G2) certificate. The training scope for G1 and G2 (as stated in Ontario Regulation 215/01 (Industry Certificates)) is complementary with the scope of CSA B149.1 Code. G1 and G2 are certified by TSSA.

Natural gas suppliers and operators of distribution systems are licensed by TSSA, and their systems and safety procedures are audited by TSSA. Among other duties, natural gas suppliers are responsible for an inspection of the user's/customer's installation prior to connecting natural gas for first time. It is also mandatory for gas suppliers to conduct an inspection every 10 years of the customer installation, including piping, appliances and venting. If there are non-compliances, the gas supplier shall shut of the gas supply to any installation that presents an immediate hazard, or provide up to 90 days to bring the installation compliant to code when there is no immediate hazard.

When vessels are part of the natural gas system, the vessels need specific approval. The requirements for approval of vessels are stated in Ontario Regulation 220/01 (Boilers and Pressure Vessels). Vessels, typically known as tanks, require a Canadian Registration Number whenever the vessel is larger than 4.25 litres (1.5 cubic feet) in water capacity and/or the design pressure is over

103 kPa (15 psig). The periodic inspections, conducted every three years, shall be made by the operator, and records for the last two inspections shall be also kept by the operator.

The object of this paper is to clarify the situation of sweet natural gas producers possessing wells for their own utilization, which ostensibly means that a natural gas piping system does not go beyond the boundaries of their own piece of land, and no gas is being supplied to anyone other than themselves. These types of installations, although not excluded from TSSA regulations, have been considered a special case where the owner of a gas well and user (all-in-one) is the 'king of his own castle', and then responsible for the installation, operation, and safe use of the natural gas system.

It is noted that there are a number of differences between a distribution system licensed by TSSA and a system operated by a gas producer having wells for their own utilization at his/her private residence or buildings located within their property. Some of the items to be aware are:

- a) In general, there is no customer meter downstream of the service regulator; the service regulator reduces the pressure from 860-138 kPa (125-20 psig) to 1.75 kPa (7 in or 1/4 psig) of water column. In this case (upstream of the service regulator), any part of the system shall meet Ontario Regulation 210/01 and CSA Z662 Code. Downstream of the service regulator, the natural installation shall meet Ontario Regulation 212/01 and CSA B149.1 Code.
- b) Natural gas produced will be saturated with water at the conditions found in the underground formation in the field. Contaminants, such as excessive water and heavier hydrocarbons like propane, butanes, and light gasoline, would be present. Condensation of liquid will be required to be removed in order to avoid reduction or obstruction of gas flow.

- c) Typically gas is not odourized by using mercaptan. A natural odour may be present due to the presence of gasoline type products, but leak detection by smell may be more difficult to note.
- d) As the gas supplier and the user is the same person, there is no third-party responsible for an inspection of the user's/customer's installation, prior to connecting natural gas for first time or for the inspection every 10 years of the installation downstream of the service regulator, including piping, appliances and venting.

Natural gas suppliers and operators of distribution systems are licensed by TSSA, and their systems and safety procedures are audited by TSSA. Among other duties, natural gas suppliers are responsible for an inspection of the user's/customer's installation prior to connecting natural gas for first time. It is also mandatory for gas suppliers to conduct an inspection every 10 years of the customer installation, including piping, appliances and venting. If there are non-compliances, the gas supplier shall shut of the gas supply to any installation that presents an immediate hazard, or provide up to 90 days to bring the installation compliant to code when there is no immediate hazard.

- e) Not being licensed, these systems are not known to TSSA. The actual number of systems in operation or the conditions under which they are operated are not under any supervision. Owners of these systems should meet the safety requirements (stated in CSA Z662) for the system upstream of the service regulator, and ensure that the installation downstream of the service regulator meets the requirements of CSA B149.1 Code.
- f) If owners of these systems are hiring G1 or G2 certificate holders, they should be aware that the training of these certificate holders is limited to installations downstream of the service regulator, and that they are experienced and trained to deal with natural gas that has been conditioned for distribution (such as meeting specification on contaminants, water contents, odourization, etc.). Inspections on the system upstream of the service regulator must be performed by a person that is the holder of a Gas Pipeline Inspector certification issued under Ontario Regulation 215/01.

In summary, natural gas producers having wells for their own utilization are responsible for their own safety. This situation is similar to a person that uses propane cylinders, that he or she brings from a refuelling station, or buys an already filled cylinder and connects it to an appliance. The gas supplier is not aware of what is done, once the cylinder is taken away from the premises.

PROPANE USE AT OUTDOOR EVENTS, FAIRS AND EXHIBITIONS

By Stu Seaton, Fuels Safety Investigation and Enforcement



Spring has sprung and the grass is beginning to show its true colour – what a great time for a party!

Okay, I never said I was a poet; however, there is some truth to those mangled words. Now is the time that the start-switch for fairs, service club barbecues, outdoor festivals and many more will be flipped 'on'. Weekends across this province will be full of events and, with these events, you can be assured there will be propane usage... and lots of it.

Let's get the propane utilization part done right, so the fun stays fun.

Here are some tips to keep things safe:

- Work with your propane supplier so that you have both the storage of full cylinders and empty cylinders set up according to the *Propane Storage and Handling Code*. It's not just 'good enough' to have six full and six empty cylinders 'stashed' behind your chip truck or concession tent as you prepare food for hordes of hungry folks. If you're busy with crowds out front, who's

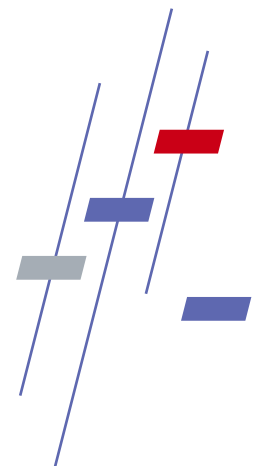
watching the curious kid turn open a full cylinder out back? It may be far too late by the time you smell the fuel.

- Unless a cylinder is of the horizontal style, they are used in the upright position. What's keeping those cylinders upright? Are they solidly staked into the ground or secured to an existing upright? Rain has the tendency to turn solid ground into muck and if the cylinders you're using aren't secured properly, you can be sure that at some point they'll end up lying on their side – a very dangerous, potentially explosive position. Stake or secure those cylinders – and make sure food is the only thing that gets burned by the barbie.
- Are the appliances and piping or hoses you're using certified and inspected? Inspection of appliances by a licensed gas fitter must be carried out annually. The last thing you want is an inspector shutting your concession down because your system and appliances aren't certified or inspected.

- Stand-Alone Barbeques: Are the cylinders feeding them a minimum of ten feet away? What about the hoses? Are they approved and not laying in an uncontrolled walkway? Do the folks that are flipping burgers know how to operate the barbeques?
- If you're under a tent, make sure the fabric is flame retardant. Open the tent from at least two sides and make sure 'A-B-C' fire extinguishers are present.

There is more to running a successful concession at an outdoor event than just firing up the barbecues. Think of the crowds filling the area where you have little or no control. Cut your worry time and be prepared. Use certified and inspected equipment. Get your piping correctly installed by a licensed gas fitter. And ensure your staff is trained to handle the worst possible scenario. This will allow you to concentrate on doing the job right and safely enjoy a good return. Remember that even one 'cut corner' could cost you everything you have, including your own, or someone else's life. Make your concession stand, chip truck or outdoor cooking facility a place that you'd feel safe visiting with your child.

The 2010 outdoor event season is ready to go! Let's make it safe and fun. For more information on outdoor cooking requirements, visit www.tssa.org.



NEW VP OF OPERATIONS – MICHAEL BEARD



TSSA recently made a few organizational changes, seeking to improve operational efficiency – with the

ultimate goal of further enhancing safety performance. To that end, a new role of Vice President of Operations has been created to provide strategic direction for all program areas, and assist in the development, assessment and implementation of TSSA's corporate strategies.

Not only will this role provide more strategic decisions at the corporate level, it will enable the program directors and managers to focus more fully on operational matters – a shift that will enable TSSA to enhance its overall safety performance and organizational effectiveness.

It is in this context that TSSA is pleased to announce Michael Beard as the new Vice President of Operations.

With a considerable background in operations and general management, spanning Canada, the US and South Africa, Mr. Beard brings a wealth of strategic and operational experience, including senior positions within several companies, such as Chubb Security Canada and Bell ExpressVu. He additionally has a Bachelor's Degree in Electrical Engineering and a Masters Degree in Business Leadership.

Michael brings valuable executive and strategic leadership skills to TSSA, and is becoming a strong member of TSSA's senior management team.

UNCERTIFIED COMPONENTS

By Gwen Thong, Fuels Engineer-in-Training

CHECK FOR THE LABEL

In recent inspections, TSSA inspectors have discovered unapproved equipment such as leak detection systems, spill containers, and transition sumps that are being installed or used on underground tank systems.

In Ontario Regulation 213/01 (Fuel Oil Regulation), the 'approved' definition calls for equipment to bear the label of an acceptable certification organization from installation and throughout its use.

What it means...

Approved means, "with respect to an appliance, equipment, a component or an accessory, that it bears the label of symbol of a designated testing organization or a label or a symbol authorized by the director, certifying that it complies with an approved standard or laboratory test report."

Who approves components?

The Regulation also requires that the label be from "Organizations accredited by the Standards Council of Canada are designated as organizations to test appliances, equipment, components and accessories to the applicable approved standards or laboratory test reports."

To the right are examples of recognized agencies.

Why is it important?

The certification of equipment is essential in

ensuring that a specific product has undergone the proper testing to standards, and to show that quality control measures are in place and completed by third party certification agencies recognized by the Standards Council of Canada.

It is important that contractors installing equipment ensure that the appropriate approval label is on the equipment. This will assist inspectors in providing evidence of approval.



Message from the Director

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Improving technical resource availability within the broader industry is imperative to ensure safety standards are met in the industries which TSSA regulates.

with regard to a recent national commitment to labour mobility through the Agreement on Internal Trade (AIT). What is AIT?

AIT or labour mobility allows an individual certified for a specific occupation in one province or territory to be recognized for the same or matched certification in another province or territory – without additional material training, experience, examinations or assessments. Encouraging recognition of matched certification across Canada benefits both workers and employers alike.

If certification from another jurisdiction is deemed a match in the province of Ontario, TSSA will request that candidates fill out an application for certification as well as submit to non-material examinations.

AIT does allow TSSA to maintain additional certification requirements for workers certified elsewhere in Canada, if the requirements are deemed necessary to ensure the public is

protected. Exceptions will be posted on the MTCU website at www.edu.gov.on.ca/eng/tcu.

If a province has concerns regarding standards in another jurisdiction, the government may support an exception to full labour mobility; however, exceptions may be challenged. Challenge procedures may be found on the MTCU website as well.

For further details on matched certificates between Ontario and other provinces, visit TSSA's website under 'Labour Mobility' at www.tssa.org.

TSSA's Fuels Safety Program

ensures the safe use of fuels for residential, industrial and commercial use through a combination of safety awareness and education, partnering with industry and stakeholders, risk-informed decision-making and regulation/code enforcement.

ENGINEERING: TSSA's Fuels Engineering team provides participation in the development of national and international safety standards and codes, development of provincial safety orders and advisories, review of licensed facility designs, review of high pressure piping systems, and review of fuels safety designs for custom (unapproved) fuels equipment.

INSPECTION: Inspectors perform approvals for the safe operation of fuels in the regulated cycle of handling, storage, dispensing and utilization. If a non-compliance issue occurs, TSSA implements steps to prevent recurrence with appropriate action, such as safety bulletins, advisories and guidelines for safe operation of equipment. TSSA may, in the interest of public safety, order a device or facility to stop operating until compliance and safe operation is achieved.



Update

FUELS EDITION

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

TSSA UPDATE (Fuels Edition)

3300 Bloor St. West, 14th Floor, Centre Tower,
Toronto ON M8X 2X4

Email customerservices@tssa.org

Fax 416.231.1626

MAIL TO:

