Volume 5 | Issue 1 | Winter 2007

TSSA UPDATE
Fuels Safety Edition

New Code Requirement for Plastic Venting Certification

By Sandra Cooke, Fuels Safety Engineering Manager

TSSA, AS PART OF ITS CODE ADOPTION PROCESS, HAS HELD IMPORTANT INDUSTRY MEETINGS TO DISCUSS IMPLEMENTATION OF THE 2007 SUPPLEMENTS TO THE NATIONAL *NATURAL GAS AND PROPANE INSTALLATION CODE* (NGPIC). AN IMPORTANT AND MAJOR ISSUE OF DISCUSSION WAS THE NEW REQUIREMENT FOR CERTIFICATION OF PLASTIC VENTING MATERIALS. STEMMING FROM THE IN-FIELD PERFORMANCE ISSUES OF SOME PLASTIC VENT SYSTEMS, THE NATIONAL NGPIC HAS BEEN REVISED TO REQUIRE ALL PLASTIC VENTING MATERIALS BE CERTIFIED, SPECIFICALLY AS A GAS VENT, TO THE ULC S636 STANDARD. THIS CODE CHANGE WILL AFFECT ALL NEW NATURAL GAS OR PROPANE INSTALLATIONS INCLUDING REPLACEMENT APPLIANCES ONCE THE NGPIC IS ADOPTED IN ONTARIO.

Appliance manufacturers reference a variety of plastic venting materials in their installation instructions including ABS, cellular core ABS, SCH 40 PVC, DR21 and DR26 PVC, Cellular core PVC, and CPVC. Currently, these vent materials are not required to be certified to ULC S636 as part of the appliance certification. Recognizing the need for safety improvement, not addressed at the appliance standards level, TSSA, in collaboration with other provincial and territorial jurisdictions, addressed this matter at the national code level. Additionally, IPEX Inc., a leading plastic pipe manufacturer, does not support their product being used as a vent unless it is specifically certified for such an application.

All new appliance installations will comply with new code requirements, including replacement appliances.

All new appliance installations will comply with new code requirements, including replacement appliances. For example, if a water heater is replaced with a new water heater, it must comply with the code in effect when installed. Existing applications will not be affected as code changes are typically not retroactive unless there is an immediate safety issue. Since there have been no fatalities or injuries due to the use of plastic vents, the change will only effect installations going

continued on page 12

In this ISSUE

NEW LIQUID FUELS HANDLING CODE

By Ann-Marie Barker, Fuels Safety Engineer

The proposed *Liquid Fuels Handling Code* (LFHC) under the *Technical Standards and Safety Act* (the *Act*) regulates the storage and handling of gasoline and associated products at bulk plants, marinas, retail outlets and private outlets. The LFHC also contains requirements for environmental remediation, equipment installation and operating requirements for gasoline facilities.

Since the LFHC's last revision in 2001, TSSA's Fuels Safety Program received numerous comments from stakeholders regarding the interpretation of various sections as well as suggested additions and changes. As situations arose, TSSA issued appropriate advisories and Director's Orders in response to emerging issues.

The LFHC was developed in consultation with TSSA's Liquid Fuels Risk Reduction Group, including representatives from the Canadian Petroleum Products Institute, the Canadian Independent Petroleum Marketers Association, the Ontario Petroleum Contractors' Association, the Underwriters' Laboratories of Canada, the Office of the Ontario Fire Marshal, equipment manufacturers such as OPW Fuel Management Systems, the Construction Safety Association of Ontario, and the Ontario Trucking Association. In addition, a public consultation took place under the Environmental Bill of Rights process, making sure all comments relevant to the proposal were received and considered in the decision process. This was imperative as one major code change is in the revised environmental section.

In addition to safety improvements, revisions have been made to the environmental section of the LFHC to proactively identify, investigate and remediate environmental impacts. The proposed changes outline the responsibilities of affected parties, such as the owner or operator of the property, facility or storage tank system, to submit an environmental assessment report when removing or replacing underground or aboveground tanks over 5000 litres. For aboveground tanks of 5000 litres or less, only an assessment report is required if a leak is suspected. The responsibility lies with the owner or operator of the property, facility or tank system to submit the assessment report; the potential liability of not submitting the required report is that affected parties may face penalties under the *Act*.

THE PROPOSED CHANGES OUTLINE THE RESPONSIBILITIES OF AFFECTED PARTIES, SUCH AS THE OWNER OR OPERATOR OF THE PROPERTY, FACILITY OR STORAGE TANK SYSTEM, TO SUBMIT AN ENVIRONMENTAL ASSESSMENT REPORT WHEN REMOVING OR REPLACING UNDERGROUND OR ABOVEGROUND TANKS OVER 5000 LITRES.

A new, more detailed section on leak detection has been incorporated into the LFHC. Most of this section is adopted from the *National Fire Code of Canada* with some additional changes. For example, if a manual method of leak detection is used, a precision leak test must be completed every two years. If there is a leak in single-walled piping, the owner may repair the leak in the interim, but must replace the pipe with double-walled pipe within 12 months. These and other proposed changes will assist in the early detection and prevention of leaks.

The proposed date for publication is spring 2007 with adoption shortly thereafter. Most of the work in developing the revisions is complete, and the document is currently under editorial review prior to its final submission for Ministry of Government Services' approval. TSSA will notify all stakeholders when the LFHC has been published through postings on its website, and various articles in trade publications and newsletters.

Fuel Oil Distributor Inspections

By Sandra Cooke, Fuels Safety Engineering Manager

Ontario Regulation 213/01, Fuel Oil, (the Regulation) was passed in June 2001, which requires fuel oil distributors be satisfied that all fuel oil related equipment to which they supply fuel oil is compliant with the requirements outlined in the Regulation. This new legal requirement was put in place to best assure safe operation and use of fuel oil equipment in Ontario.

Since the inception of the safety requirements in June 2001, an extensive communications strategy involving TSSA, fuel oil associations and distributors was undertaken to inform consumers and fuel oil distributors of the requirements detailed in the Regulation. The strategy involved initiatives such as direct mailings, notices in billing statements, telephone calls, advertisements in newspapers and fuel oil distributors issuing letters by registered mail to remind clientele of the Regulation. The Canadian Oil Heat Association (COHA) conducted additional communication initiatives, including a joint COHA/TSSA effort developing an effective notice to consumers, advertised in over 60 local newspapers.

Compliance requires that a comprehensive safety inspection of all fuel related equipment such as storage tanks, piping, oil-fired furnaces, stoves, water heaters, boilers, etc., be completed within an established five-year time frame by a certified technician acceptable to the distributor.

TSSA's January 1, 2006 status update from fuel oil distributors found the majority able to complete mandatory inspections by the accepted October 1, 2006 deadline. Subsequent audit inspections of fuel distributors in August 2006 determined that approximately 80-85% were complete, prior to the cut-off date.

After further discussions with key stakeholders regarding outstanding inspections, TSSA issued a Director's Order on October 27, 2006 allowing for fuel oil delivery in emergency situations until March 31, 2007 if certain criteria are met (see Director's Order FS-094-06 online at www.tssa.org/regulated/fuels).

Since implementing such proactive fuel safety measures, dating back to 2001, important safety improvements have been achieved with over 1,000 hazards proactively identified and addressed.

NEW FUEL OIL CODE FOR ONTARIO EFFECTIVE MARCH 1, 2007

By Sandra Cooke, Fuels Safety Engineering Manager

As part of our safety mandate and our continuous improvement process, TSSA's Fuel Safety Program adopts the most current applicable codes with specific amendments, governing fuel safety in Ontario.

When adopting codes, TSSA engages industry in effective consultation, often resulting in provincial amendments to national codes, which are then submitted to the national code committee for consideration at the national level. Such amendments typically reflect both national and provincial safety measures as well as issues of practical implementation. As TSSA's mandate goes beyond the scope of the national code for fuel oil-burning equipment, recent amendments were significant. Thus, TSSA has developed a stand-alone document for Ontario entitled *Ontario Installation Code for Oil-Burning Equipment, First Edition/2006.*

The major changes between the provincial and national CSA B139 installation codes include:

- increasing its scope to include larger aboveground tank systems over a capacity of 2500L and all underground tank systems;
- replacement of the section on "Installation of Field Installed Burners" with a new section specifically on Field Approvals;
- inclusion of requirements to address spills and leaks;
- removal of the requirements on "Central Oil Distribution Facilities";
- vehicle protection for indoor tanks;
- allowance for alternative arrangements for venting of auxiliary tanks; and
- installation of fuel oil line deaerators.

TSSA will be adopting the new Ontario code effective on March 1, 2007. Please note that the CSA *Ontario Installation Code for Oil-Burning Equipment* is not available from TSSA; it is available from the Canadian Standards Association. Order inquiries should be directed to CSA at 1-800-463-6727, or shop online at www.ShopCSA.ca.

The Ontario Chapter of the Canadian Oil Heat Association will be conducting training on the *Ontario Fuel Oil Code.* Inquiries regarding this training should be directed to COHA at 1-905-946-0264 or www.coha.ca. Registration information can be found under the Ontario Chapter link.

DANGER OF FUELING
IN ENCLOSED AREAS AND TRAILERS

By Ann-Marie Barker, Fuels Safety Engineer

People sometimes fill snowmobiles, all terrain vehicles (ATVs), construction equipment, portable generators or landscape equipment inside enclosed trailers or other enclosed vehicles, such as vans or pick-up trucks with canopies. The proposed *Liquid Fuels Handling Code* (LFHC), to be published in April 2007, will not allow this type of fuelling activity. Specifically, the new LFHC will state:

"A portable container, equipment or vehicle shall NOT be filled inside an enclosed vehicle or an enclosed trailer."

With the winter season here, many will be towing snowmobiles and ATVs in enclosed trailers or canopied pick-up trucks. Ensuring your safety and that of others, it is important to remember a few safety measures at gasoline facilities by recognizing the hazards when refilling this equipment in enclosed areas.

"A PORTABLE CONTAINER, EQUIPMENT OR VEHICLE SHALL NOT BE FILLED INSIDE AN ENCLOSED VEHICLE OR AN ENCLOSED TRAILER."

Gasoline vapours are highly flammable and, if trapped inside a vehicle or trailer, can be ignited by static or other ignition sources, trapping you inside a confined space with no easy escape. The liquid fuels industry has experienced incidents where gasoline vapours have accumulated and subsequently ignited with the release of a static charge when some customers have been filling portable containers in the back of enclosed pick-up trucks.

Inhaling gasoline vapours in an enclosed area is an additional health hazard that must be avoided.

As a requirement of the LFHC, the attendant at a self-serve fuelling station is required to observe all fuelling activity in order to ensure safe handling and to activate the emergency stop button if a problem such as a spill or fire occurs. Filling inside an enclosed trailer or vehicle does not allow the attendant to continuously monitor such fuelling activity.

TSSA's Fuels Safety Program reminds operators to be on the lookout for this dangerous activity — and to always keep safety, first and foremost, in mind.

TSSA'S FUELS SAFETY PROGRAM REMINDS OPERATORS TO BE ON THE LOOKOUT FOR THIS DANGEROUS ACTIVITY — AND TO ALWAYS KEEP SAFETY, FIRST AND FOREMOST, IN MIND.

Tank Truck-to-Truck Transfer

By Oscar Alonso, Propane, Pipelines, Vehicles and Natural Gas Engineer

There has been some industry concern and confusion regarding the practice of propane transfer from one tank truck to another. TSSA has worked with industry to develop requirements to reduce the risk that this activity presents if not performed within certain safety parameters.

Incidents in other jurisdictions triggered this Director's Order to change to the CSA B149.2-05. Currently, Clause 8.13.3 of the above referenced code allows this practice at filling plants or at loading and unloading facilities. The Director's Order further limits the transfer activity to "bulk plants" only, defined specifically for this purpose.

Other than in an emergency, propane transfer from one tank truck to another tank truck shall be performed in accordance with conditions that have been specifically approved by TSSA.

Clause 8.13.3 of the CSA B149.2-05 is revoked and the following substituted:

8.13.3 The contents of a tank on a tank truck or a cargo liner shall not be transferred to the cargo tank on another tank truck or cargo liner unless the operation is carried out at a bulk plant.

A bulk plant is defined for this specific clause as a facility where the primary function is to store LP-Gas prior to further distribution (where LP-Gas is received by cargo tank vehicle, railroad tank car or pipeline and then distributed by portable container (package) delivery, by cargo tank vehicle or through gas piping).

Note: "package delivery" means, in the above definition, the delivery of portable containers for bulk distribution, but excludes the delivery of containers brought for filling by the owner of the container.

The bulk plant to be used as a location to transfer propane from a cargo tank to another tank truck or cargo liner shall be approved by TSSA, except for an emergency such as a loss of power due to unexpected natural weather. This approval shall include:

- satisfying Branch Standard #9;
- having space to accommodate both tank trucks without blocking any emergency exits;
- satisfying municipal approvals;
- having a permanent licensed storage capacity at least equal to the largest tank truck or have the capacity of truck to truck transfer specifically approved by TSSA;
- satisfying clearances as stated in CSA B149.2-05;
- having a Propane Truck Operator (PTO) certificate holder perform the transfer; and
- satisfying clause 7.3 of CSA B149.2-05 (Note: both tank trucks, if compliant with CSA B620-03, are accepted as satisfying clause 7.3 of CSA B149.2-05).

SUPPLYING PROPANE AT CONSTRUCTION SITES

By Oscar Alonso, Propane, Pipelines, Vehicles and Natural Gas Engineer

TSSA's Fuel Safety Program developed a recent Advisory with the Ontario Propane Association, the Propane Gas Association of Canada and other industry stakeholders to remind the industry of key safety measures when supplying propane at construction sites. Specifically, where premises are connected to a supply of propane for the first time, no person shall put into use for the first time an appliance in the premises that is connected to a propane supply until the distributor has examined the installation of the appliance and is satisfied that the installation and use of the appliance are in compliance with the *Technical Standards and Safety Act, 2000* and Section 9(1) of *Ontario Regulation 211/01.*

When propane is supplied to tanks or provided in cylinders to fuel appliances not connected to the premises, the inspection referred under clause 9(1) is not required; however, when distributors provide fuel to tanks or cylinders not connected to the premises, the distributor shall ensure that the fuel storage is compliant with *Ontario Regulation 211/01.*

An example of this practice would be as follows: construction heaters installed for temporary use and not connected to the premise would not require an inspection.

For additional information on propane safety and an opportunity to work proactively on fuel handling issues, contact Oscar Alonso, TSSA Propane, Pipelines, Vehicles and Natural Gas Engineer at (416) 734-3353.

...the distributor shall ensure that the fuel storage is compliant with *Ontario Regulation 211/01.*

B149.1 CODE AMENDMENTS
WILL CHANGE APPROACH TO PLASTIC VENTING

By Trevor Johnston, Business Development Manager, IPEX Inc.

For many years, ABS plastic pipe and fittings have been the most widely used venting material for gas and propane fired appliances throughout Canada. As a result of recent changes to the CSA B149.1 *Natural Gas and Propane Installation Code* (NGPIC), it will soon be mandatory in Ontario and other provinces for all plastic venting materials to be certified to ULC S636. At least one Canadian plastic pipe and fittings manufacturer has found that ABS is unable to meet the strict requirements of the ULC S636 standard, and thus will no longer be considered an approved vent system material. Conversely, PVC and CPVC have been successfully certified and will now be used in much greater quantities for venting gas-fired appliances. So how do the code change and the switch to PVC and CPVC impact installation of these appliances?

The "System" Certification

One very important change for industry will be the strict requirements of vent certification to ULC S636, which eliminate the mixing of plastic vent components from various manufacturers.

ULC S636 is a system standard that physically tests and verifies that the assembled plastic vent system meets appliance-venting requirements and is suitable for the application. Part of the certification process includes formal approval of all installation instructions, and special marking and labeling requirements for pipe, fittings and cement. If a different fitting, pipe or cement is substituted in the field than what was tested during the certification process, this new combination of components will be considered untested and not be classified as a certified vent.

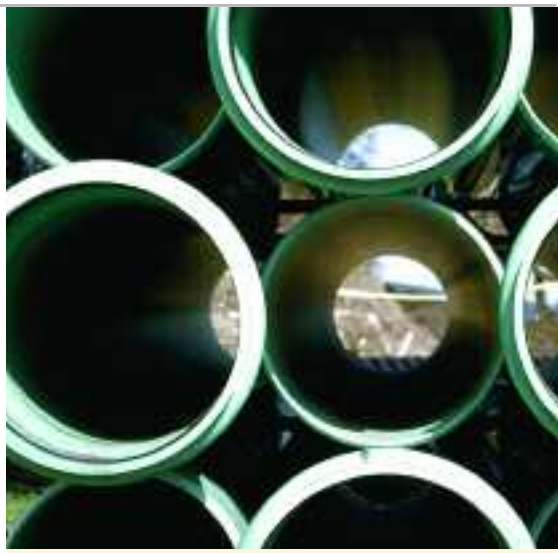
ONE VERY IMPORTANT CHANGE FOR INDUSTRY WILL BE THE STRICT REQUIREMENTS OF VENT CERTIFICATION TO ULC S636, WHICH ELIMINATE THE MIXING OF PLASTIC VENT COMPONENTS FROM VARIOUS MANUFACTURERS.

Solvent Cementing PVC and CPVC versus ABS

Overall, installation techniques for plastic venting materials remain largely unchanged. Most installers are familiar with proper solvent cementing techniques and many will have experience with solvent cementing PVC or CPVC. Still, it is important to remind users of the subtle differences between ABS and PVC or CPVC solvent cementing.

The key difference in solvent cementing ABS versus PVC has to do with the pipe and fitting material itself. Although classified as a rigid plastic, ABS is relatively soft and of lower tensile strength than PVC. As such, the solvent component of ABS cement can easily penetrate and liquefy the ABS surfaces being joined. Thus, the cementing process has always been a one-step procedure with relatively quick set and cure times.

For the majority of installations, it is acceptable to utilize a similar one-step solvent cementing approach with PVC. PVC solvent cements contain special solvents and resin that differ from the ABS cement and are specifically designed to create the fusion and bonding required for a permanent PVC pipe/fitting joint; however, since PVC is a relatively harder and denser plastic material than ABS, the use of a joint primer is recommended for installation temperatures at or below freezing. Primer is essentially concentrated solvent and it helps pre-soften the PVC joining surfaces in cold temperatures, ensuring the solvent cement can adequately penetrate the pipe and fittings to create proper bonding.



SINCE PVC IS A RELATIVELY HARDER AND DENSER PLASTIC MATERIAL THAN ABS, THE USE OF A JOINT PRIMER IS RECOMMENDED FOR INSTALLATION TEMPERATURES AT OR BELOW FREEZING.

The procedure for solvent cementing CPVC vent materials is identical to PVC vent. CPVC is a modified form of PVC that has enhanced high temperature ability. This is why CPVC vent is rated for flue gases up to and including 90°C while PVC is rated to 65°C. CPVC has its own solvent cement and will also require the use of primer below freezing temperatures.

continued on page 10

Contractor Compliance Audit

By Frank Bailey, Fuels Safety Team Leader

CONTRACTOR COMPLIANCE AUDITS PLAY A KEY ROLE IN TSSA'S FUELS SAFETY PROGRAM'S RISK-BASED SAFETY INITIATIVES. ALL PROVINCIAL CONTRACTORS MUST HAVE A COMPLIANCE AUDIT WITHIN A THREE-YEAR CYCLE TO CONFIRM COMPLIANCE WITH THE *TECHNICAL STANDARDS AND SAFETY ACT, 2000* (THE ACT) AND ALL APPLICABLE CODES. WITH AN EDUCATIONAL COMPONENT THAT ALLOWS CONTRACTORS AND BUSINESS MANAGERS TO UNDERSTAND PROVINCIAL REQUIREMENTS AND THE MINIMUM STANDARDS OF OPERATION, TSSA'S COMPLIANCE AUDITS ARE AN ESSENTIAL PART OF ITS PREVENTION-BASED PUBLIC SAFETY SERVICES. TSSA ADDITIONALLY FOLLOWS UP WITH COMPLIANCE AUDITS IF A COMPLAINT AND/OR INCIDENT OCCURS.

A RECENT SURVEY CONDUCTED BY TSSA'S FUEL SAFETY INSPECTORS FOUND A PATTERN OF COMMON AREAS WHERE SOME CONTRACTORS AND TECHNICIANS FELL SHORT OF REGULATORY COMPLIANCE. THE INFORMATION BELOW IS A HELPFUL OVERVIEW OF THOSE NON-COMPLIANCE AND OPERATIONAL ISSUES THAT TSSA HOPES YOU KEEP IN MIND WITH REGARD TO CONTRACTOR WORK.

Piping Leak Tests

Leak test tags for natural gas/propane are not attached to the piping or appliances and/or do not contain the required information. A leak test tag must be fully completed and attached to an appliance or piping after any leak/pressure test has been conducted including soap/meter dial tests. Test tags are available from TSSA by calling 1-877-682-8772.

Fuel Oil Installer Information

Most fuel oil tank and appliance installers do not record the installer's information on equipment. All fuel oil installations must have the installer's information recorded on the appliance or system including contractor registration and technician certificate number.

Incorrect Pressure Test Gauges

Smaller than acceptable pressure test gauges are commonly used to conduct pressure tests on new piping installations or additions over 20 feet (6.1 metres). The code requires a pressure test gauge to be a minimum diameter of three inches (75 mm) and the maximum range shall exceed the test pressure by at least 15% but not more than 300%. The pressure gauge shall be calibrated to read in increments of not more than either two psig (14 kPa) or two percent of the maximum dial reading of the pressure gauge, whichever is less.

Manufacturer's Certified Installation Instructions

TSSA's inspectors strongly urge installing technicians to read the manufacturer's certified installation instructions. Most common non-compliances are: incorrect installation of appliances, special venting systems (ABS, CPVC and PVC) namely vent support, use of too many elbows, vent under sizing, vent too long and incorrect vent terminations. Many technicians do not start up the appliance as per manufacturer's requirements, which in most cases require a check of the gas pressure, appliance input and heat rise, etc.

Piping and Tubing Identification

Identification of copper tubing in residential installations is haphazard at best. The tubing must be identified every six feet (1.82 metres) by yellow markings or marked gas/propane. A very low compliance rate was noted for the identification gas lines in care or detention occupancy, commercial, industrial and assembly buildings. The requirement is every 20 feet (6.1 metres) by painting or banding.

continued on page 8

All provincial contractors must have a compliance audit within a three-year cycle to confirm compliance with the *Technical Standards and Safety Act, 2000* (the Act) and all applicable codes.

Contractor Compliance Audit

continued from page 7

Roof Top Piping

The lack of adequate support on horizontal runs, at threaded fitting and no expansion loop on horizontal runs in excess of 100 feet (30.5 metres), was noted on a large percentage of roof piping installations. Piping systems on rooftops must be painted or coated to protect the steel from corrosion. If the piping is pre-coated or painted before installation, the exposed threaded sections and fitting must be protected.

Purging Tools

A significant number of technicians do not have an approved purge tool and many who have such tools do not use the equipment. Every year there are incidents involving the incorrect purging of gas lines, which result in property damage or the technician suffering injury. Purge tools must be available for inspection during audit.

Fuel Oil Chimney Base Tees

Base tees are required on all chimney liners and chimney installations. Base tees must be of significant depth to ensure debris will not block chimney. The base tee must be accessible.

Flared Fitting

Inspectors continue to find milled flared fittings on copper gas line installations. Only forged fittings can be used as per the current gas code.

Combustion and Ventilation Air

Combustion air requirements for appliances installed in enclosures are generally not addressed by the installing technicians. The required openings ensure safe combustion and they must be sized correctly. Leaving the door open is not acceptable in lieu of the openings. Ventilation air for appliances over 400,000 BTUH is ignored or undersized on regular occasions.

Fuel Oil Combustion Tests

Combustion tests and observations are not consistently completed when required by code. After any change, alteration, addition and/or service of combustion-related components on any fuel oil appliance, tests and observations required by sections 5.1 and 5.2 of *The B139-00 Fuel Oil Code* must be conducted including analysis of flue gases. Keeping a record of the combustion tests and observations is a good business practice.

Fuel Oil Chimney Base Temperatures

Chimney deterioration is occurring due to low chimney base temperatures. On completion of the installation of a new appliance, burner or chimney, a technician must ensure the chimney base temperature meets the requirements of CSA *B139 Code* (Table 1 or 2 or per calculation in Appendix C2).

Notices of Unacceptable Conditions

Some technicians do not issue a notice of unacceptable condition when finding code non-compliances and safety issues. All fuel regulations require a technician, upon finding an unacceptable condition, immediate hazard or not, to address the matter by taking clearly defined steps. In all cases, a written notice of unacceptable condition must be issued to the user and a copy sent to the fuel distributor within 14 days. The fuel oil regulation additionally requires a copy to be sent to TSSA. It is important for the technician and/or the contractor to keep a record of such notices as good business practice.

Fuel Oil Side Wall Vent Terminations

Side wall vent terminations are regularly found too close to building openings, including roof soffits, without clearance to grade, in window wells/below ground and too close to adjacent structures. *B139-00 Fuel Oil Code Section 4.3.2.2* needs to be checked before installing a side wall vent and the required clearance achieved.

Mid-efficiency furnace vented into masonry chimney

Water heater vent installed through a 'B' vent

Reporting of Incidents / Occurrences

Non-reporting of occurrences and incidents by technicians and contractors is a continuing issue. Contractors, fuel distributors and technicians must report dangerous occurrences involving carbon monoxide poisoning, fire, explosion, fuel spills and leaks. Reporting can be made to the Ministry of Environment Spills Action Center 1-800-268-6060 24 hours a day.

continued on page 11

GAS FIRED NATURAL DRAFT RESIDENTIAL BOILERS

By Raphael Sumabat, Fuels Safety Engineer

OVER THE LAST 15 YEARS IN ONTARIO, THERE HAS BEEN AN AVERAGE OF ONE FATALITY EVERY THREE YEARS INVOLVING A NATURAL DRAFT GASEOUS-FUELLED BOILER, PRIMARILY DUE TO BLOCKED BOILER FLUES, IN TURN, CREATING HIGH LEVELS OF CARBON MONOXIDE (CO) — OTHERWISE KNOWN AS THE SILENT KILLER.

CO is a colourless gas produced when fuels such as natural gas and propane burn incompletely. CO itself is odourless and tasteless but it can be accompanied by an abnormal odour of incomplete fuel combustion. Symptoms of CO poisoning are similar to those of the flu and can include: headache, nausea, dizziness, weakness, disorientation and/or confusion. It can even knock you unconscious or worse — lead to death.

TSSA brought concerns with boiler operation to the harmonized Canadian Standards Association and American National Standards Institute (CSA/ANSI) Technical Advisory Group, and a national working group was formed to specifically address residential boiler issues. After intensive discussion and analysis, the national working group concluded that the technology was not available to protect home occupants from CO produced by boilers, and other means to ensure safety would need to be developed.

CO alarms are excellent warning mechanisms and are strongly recommended as a second line of defence.

TSSA formed a Boiler Risk Reduction Group to develop an immediate short-term solution and long-term strategies possibly involving revision to installation, operational and design requirements. The subsequent short-term solution involved the re-issuance of a Director's Order that was effective last heating season.

TSSA legally requires that all heating contractors perform a CO safety check on residential boilers and take action when an unsafe condition is identified. The check will be required when a technician enters a home with this type of boiler to perform service work on the boiler or other appliances in the home, regardless of whether the homeowner or user has requested the CO safety check. The gas technician is additionally required to visually examine the boiler and take action if there are signs of poor operation.

TSSA and industry remind equipment owners and users of their responsibility to properly maintain their boilers and all other fuel burning equipment. Annual maintenance, as a minimum, by a qualified contractor is the best method to fulfil this requirement. Additionally, CO alarms are excellent warning mechanisms and are strongly recommended as a second line of defence.

If owners or users do not allow the inspection, the boiler will be identified as requiring an inspection within a specified time. If that time elapses and the inspection is not complete, fuel supply to the boiler will be shut-off.

Data gathered during last heating season found 15% of boilers operating with unacceptable levels of CO. One of the key contributing causes is lack of maintenance. Boilers are not being maintained in accordance with the boiler manufacturer's instructions. To best ensure safe operation of these boilers, it is imperative they are properly, regularly cleaned to reduce the likelihood of CO production.

TSSA legally requires that all heating contractors perform a CO safety check on residential boilers and take action when an unsafe condition is identified.

For additional information on boiler safety and an opportunity to work proactively on fuel handling issues, contact Raphael Sumabat, TSSA Fuels Safety Engineer at (416) 734-3357.

B149.1 CODE AMENDMENTS

continued from page 6

It is important for installers to note as well that ABS cement cannot be used on PVC or CPVC. It is colour coded yellow to distinguish it as being different than the traditional gray for PVC cement or orange for CPVC cement. When PVC or CPVC must be attached to ABS, as is the case for some ABS appliance connectors, special transition cements should be used. Consult with the certified vent manufacturer for a list of approved flue gas vent solvent cements. To make consistently good PVC or CPVC solvent cement joints, remember the following guidelines:

1. Pipe ends must be cut squarely and be free of burrs to ensure the cement is not scraped or plowed out of the joint during joint assembly. Best results can be obtained by using a beveling tool to prepare the pipe end prior to solvent cementing.
2. Use only the proper ULC certified PVC and CPVC cements as supplied by the vent system manufacturer.
3. The joining surfaces must be softened and made semi-fluid. For installation temperatures at freezing or below, use a joint primer on the mating surfaces immediately before applying cement as recommended.
4. Sufficient cement must be applied to fill the gap between pipe and fitting.
5. Assembly of pipe and fitting must be made while the surfaces are still wet and the cement is still fluid.
6. Excess cement that comes out of the joint after assembly should be wiped away with a clean rag.
7. Always read and follow the certified vent installation instructions provided by the vent manufacturer, including those for solvent cementing.

To help industry prepare for the impending changes in 2007, certified plastic vent manufacturer IPEX Inc. offers technical information on its System 636™ PVC and CPVC flue gas vent system as well as a solvent cement refresher course, both online at www.ipexinc.com/product/system636.

Trevor Johnston is the Plumbing and Mechanical Business Development Manager at IPEX Inc. For more information on certified vent materials contact IPEX at (866) 473-9462.

TO HELP INDUSTRY PREPARE FOR THE IMPENDING CHANGES IN 2007, CERTIFIED PLASTIC VENT MANUFACTURER IPEX INC. OFFERS TECHNICAL INFORMATION ON ITS SYSTEM 636™ PVC AND CPVC FLUE GAS VENT SYSTEM AS WELL AS A SOLVENT CEMENT REFRESHER COURSE.

PROPANE CYLINDER ALERT

By Stu Seaton, Team Leader, Fuel Safety Program

Crystal methamphetamine is an illicit drug becoming popular among youth. Its effects are extreme and deadly. Dozens of recipes are used in illegal 'crystal meth' labs, and one such method uses anhydrous ammonia (a chemical fertilizer), often stolen from farms and agricultural supply businesses using portable propane cylinders.

Quite recently, a large propane refill centre alerted TSSA that twenty-pound portable cylinders, those typically used with barbeques, were turning up in exchange cages showing definite signs of anhydrous ammonia exposure. The affected cylinder is easy to identify as all brass valve parts corrode from exposure and carry a bright green colour.

Anhydrous ammonia when improperly handled can cause severe instantaneous chemical burns and can be fatal. If you should spot a propane cylinder valve covered or partially covered with bright green corrosion, segregate it immediately so it will not be reintegrated with functional cylinders.

DO NOT attempt to open or handle the valve or fill the cylinder. Ensure proper disposal as per local by-laws and provincial and federal regulations. If necessary, contact your local Fire Department or Hazardous Material authority for assistance or guidance. You may choose to advise the RCMP or local police of suspected drug activity.

For further information on anhydrous ammonia safety, visit the Propane Gas Association of Canada's site at https://secure.propanegas.ca/FileArea/PGAC/C3Alert_0605_18%20PropaneCylinders_CrystalMethAlert.pdf.

Material Safety Data Sheets are also available at http://www.tannerind.com/anhydrous-msds.html and other anhydrous ammonia websites.

Contractor Compliance Audit

continued from page 8

Contractors and fuel distributors must have a procedure in place to ensure reporting of occurrences. The TSSA Guideline for Reporting of Incidents is available at www.tssa.org or call 1-877-682-8772 to request a faxed/mailed copy.

Service Vehicles Marking

Unmarked service vehicles are found regularly during audits. All fuel regulations require service vehicles to be marked with the contractor name and registration number. The vehicle marking allows both industry and TSSA to easily identify those contractors that are registered and those that are not, thus creating a level playing field. The marking also lets the public know that a given contractor is registered to perform work.

Unqualified Technicians

Inspectors continue to find unqualified technicians performing work. Many technicians have lost their certificate due to renewal failure. Contractors are required to ensure their employees and their sub-contractors comply with the Act and regulations. Technicians without valid certificates cannot perform work on fuel-related equipment, appliances and components. When a certificate has expired and/or is cancelled for failure to renew, a technician cannot work until the certificate is re-instated. OBT3s and G3s are found working beyond the scope of their certificate and/or signed document on a regular basis. Contactors need to ensure their technicians only work with their scope. It is good business practice for contractors to annually check technicians' and sub-contractors' certificates, similar to the check of valid driver licenses.

Code Books

Although there is no regulatory requirement for contractors and technicians to have an up-to-date code book, not having the current code book reduces the ability to meet provincial compliance requirements. Newly adopted codes have a number of significant changes and technicians need to be aware of the changes. [See 'CSA Code Books' below].

Records

Inspectors request information, such as documentation on employees, work performed and equipment installed, to determine if the business is operating within regulatory compliance. Some contractors do not keep good records, which results in the audit taking longer as the inspector must determine compliance through other methods. There is no fuel-related regulatory requirement for contractors or technicians to keep records of their activities. The maintaining of such information as employee records, copies of technicians' certificate information, records for installations and service activities including appliance start-up sheets, service check sheets and notices of unacceptable conditions (to a name a few) assist the TSSA inspector in confirming the level of compliance. Keeping records is a good business practice.

Audit Preparations

Inspectors continue to find contractors who have not prepared requested information prior to meeting with the inspector. Preparation reduces the time taken to conduct the compliance audit and keeps inspection costs down.

I would like to acknowledge Inspectors Paul Pimek, Terry Maher, Guy Castagne and Adam Wells for their contributions to this article.

CSA CODE BOOKS

For a comprehensive list of the Canadian Standards Association's (CSA's) code books on fuel-related topics, from atomizing oil burner nozzles to liquid fuelled catalytic appliances, go to ShopCSA, the CSA's online store: http://www.csa-intl.org/onlinestore. For a definitive resource on the gas industry, check out CSA's Natural Gas and Propane Code Series Smart CD-ROM, an interactive, multimedia approach to understanding the standards at: http://www.csa.ca/products/gas.

New Code Requirement for Plastic Venting Certification

continued from page 1

forward; however, this code change will have the effect of mandated removal of the existing plastic vent at the end of an appliance's or water heater's life – estimated to be 10 to 15 years.

The main concern of industry was smooth implementation of this requirement for plastic vent certification, primarily: the effective date and if flexibility or allowances would be permitted regarding replacement appliances.

The proposed effective date is July 1, 2007 to coincide with appliance certification listing updates, vent product availability and proper communication to field. There was general agreement to apply the requirement to all new appliance installations in new buildings, and for replacement furnaces and boilers in existing buildings.

Some industry concern with the code change, primarily from water heater rental companies and gas utilities, was voiced with specific reference to the following:

- cost to homeowners and service providers;
- household disruptions;
- potential switch to alternative energy source;
- potential increase in homeowners performing installations; and
- most of the reported problems occur in the vent portion closest to the appliance and, as such, only this portion of the pipe (for example the first five feet) should be replaced to reduce cost impact of this change.

The following safety concerns were identified with the continued use of uncertified plastic vent and in particular with Acrylonitrile-Butadiene Styrene (ABS) vent materials, most commonly used as gas vent in Ontario:

- unknown effect of ageing on ABS vent/pipe;
- ABS has known failures in Ontario, although there have been no injuries or fatalities associated with these failures;
- the national code requires full replacement and all other jurisdictions in Canada will require full replacements for new appliances including replacement appliances;
- certification listing (installation instructions) of the appliance will be updated to require full replacement;
- appliance listing specifies vent configuration for safe use – partial replacements may have difficulty meeting this requirement; and
- if the allowance were given, the existing vent would never be replaced, surviving multiple appliance replacements and be present for the life of the house.

While TSSA will consider any new information brought forward regarding the effects of ageing and compatibility of existing venting, the adoption of the code will not be delayed in waiting for the development of this information. TSSA will work with industry on the type of testing needed for consideration, and has established a task group with industry participation to develop proposed variance conditions for installations that may impose challenges specific to the site itself, such as condominiums.

A proactive communications strategy and plan has been developed and will be implemented to ensure effective and targeted communications to relevant stakeholders. Communication initiatives will include a TSSA direct mail-out to natural gas and propane certificate holders and contractors advising them of the new requirements 90 days in advance of the new requirement taking effect.

In addition to posting information on its website and issuing an e-notification to relevant fuels subscribers, TSSA will investigate further potential communication options with major industry stakeholders.

EDITOR'S NOTE:
The cover photograph has been changed since publication of TSSA's Fuels Update Winter 2007 newsletter. TSSA regrets any inadvertent misrepresentation of imagery and will make every effort to ensure that such misrepresentation does not occur in the future.

TSSA UPDATE
Fuels Safety Edition

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

TSSA UPDATE (Fuel Safety Edition)
3300 Bloor St. West, 14th Floor, Centre Tower
Toronto ON M8X 2X4
Email: contactus@tssa.org **Fax:** (416) 231-1626

CANADA POST POSTES CANADA
41187514