

GAS SAFETY Bulletin



Message from the Editor

Dear Readers,

This issue of the Gas Safety Bulletin features two topics, which are "The Safety Requirements for Liquefied Petroleum Gas (LPG) Lighters" and "The Central LPG Supply System". Also included for reference of the trade are tips about legal knowledge on gas safety and the use of gas water heaters, as well as gas incident and prosecution statistics by type from January to October 2010.

We would like also to remind our readers that according to regulations 11 and 24 of the Gas Safety (Registration of Gas Installers and Gas Contractors) Regulations (Cap 51D), if a registered gas installer or registered gas contractor changes his name, or the registered address for service by post subsequent to his registration, he shall give written notification to the Gas Authority not later than 21 days after such change takes place, or risk committing an offence. For your convenience, the relevant form for updating information is available at EMSD's website for easy downloading. 

Safety Requirements for Lighters



In Issue No. 9 of the Gas Safety Bulletin, we talked about the safety regulations and proper use of lighters. In this issue, we will give an in-depth introduction of the safety requirements for LPG lighters.

The ISO9994 is a set of safety standards for lighters drawn up by the International Organisation for Standardisation (ISO). Some

countries also have their own safety standards for lighters, e.g., the ASTM F-400-04 established by the USA. The purpose of setting these national/international standards is to ensure a reasonable level of protection for normal use of lighters by consumers. For instance, the International Standard ISO9994 covers the following important safety requirements:

Flame Height

The flame height shall not exceed the limit specified below:

Flame Height Limit	Flame Height Adjuster		
	Available		Not Available
	Maximum	Minimum	
	Post-mixing lighters: 120mm	50mm	-
	Pre-mixing lighters: 75mm	50mm	50mm

Flame Generation

In order to avoid abnormal ignition or self-ignition, lighters shall require a deliberate manual operation to produce a flame. These operations shall conform to at least one of the following requirements:

- (a) A system such that positive action on the part of the user is required to generate and maintain a flame;
- (b) A system that requires two or more independent motions by the user to generate a flame;
- (c) A system that requires an actuating force equal to or greater than 15N (Newton) to generate a flame.

(3) Spitting, Sputtering and Flaring

When the gas lighter is set at the maximum flame height, there shall be no flaring (meaning the variation of flame height from the steady-state flame condition), or spitting/sputtering (meaning the flame phenomenon of a gas lighter wherein the escape of non-evaporated liquefied gas produces a shower of burning liquid droplets which is separate from the main flame).

(4) External Finish

No external sharp edges.

(5) Flame Extinction

After the lighter is on, a continuous intentional and positive action is required to maintain the flame, and the flame will be extinguished by the termination of such positive action.

In addition, safety information shall be provided on the lighter itself, or in the user instructions, or in the product packaging. The safety information shall contain the following statements:

- (a) The word "WARNING" shall be shown on the warning labels of all lighters.
- (b) "KEEP AWAY FROM CHILDREN" or "KEEP OUT OF REACH OF CHILDREN" or such like to that effect. (The statement used shall be emphasised and distinctive).
- (c) Ignite lighter away from face and clothing.
- (d) Contains flammable high pressure gas.
- (e) Never expose to heat at 50°C or to prolonged sunlight.
- (f) Never puncture or put in fire.
- (g) Be sure flame is out immediately after use.
- (h) Extreme heat is present above the visible flame. Extra care should be taken to prevent burn injury.
- (i) Do not keep lit for more than 10 seconds.


Although this set of safety standards cannot prevent all hazards from happening, it helps to reduce hidden hazards. Lighters should be used in a careful and proper manner. To learn more about the safety tips for using lighters, members of the public are welcome to visit the EMSD web page on "Safe Use of Cigarette Lighter" at (http://www.emsd.gov.hk/emsd/eng/pps/gas_use_lghtr.shtml). 



Figure 1: Vaporiser



Figure 2: Pressure Regulators



Figure 3: LPG Compound

Central Liquefied Petroleum Gas (LPG) Supply System

Currently, there are about 200,000 users who are using central piped LPG as gaseous fuel in Hong Kong. Most of them are domestic users.

LPG Storage Installations

The central LPG supply system provides uninterrupted supply of LPG to users. This is how the system works. LPG in liquid form is first transferred from the storage installation to a vaporiser (Figure 1) for heating. The LPG will convert to gas form and its pressure will be adjusted to a suitable level by the pressure regulator (Figure 2). It is then conveyed through the piping network to the users. LPG storage installations are classified into LPG compounds (Figure 3) and piped-cylinder stores (Figure 4) in accordance with the storage arrangements and scale. Most of the LPG compounds store LPG in underground bulk tanks. While for the piped-cylinder stores, LPG is stored in cylinders that are connected together by manifolds. According to the Gas Safety Ordinance (Cap 51), the owners of LPG storage installations are responsible for maintaining the installations to ensure their safety. They are also required to operate the installations in a safe manner. In addition, the owners of LPG installations should also employ competent persons to conduct annual inspections of the installations.

Regular Inspection of Gas Pipes

The LPG in gas form is conveyed from the storage installation to the gas appliances of users via a piping network. The latter include the vertical service pipes on the external walls of buildings (Figure 5) and the installation pipes inside the houses. To ensure gas safety, the LPG supply company or its agent should arrange for a registered gas installer to carry out safety checks once every 18 months on the gas appliances and gas pipes of users, including basic inspections of the service pipes and the installation pipes. The gas supply company will carry out further inspections, testing and maintenance if necessary.

Replacement of Flexible Gas Tubing

Flexible gas tubing (Figure 6) is commonly used to connect a domestic cooking appliance to the gas supply point. There are currently 3 types of flexible gas tubing:

- Type 1 – rubber tubing;
- Type 2 – rubber tubing with stainless steel braiding or armouring; and
- Type 3 – stainless steel tubing.



Figure 6: Flexible Gas Tubing



Figure 4: Piped-cylinder Store

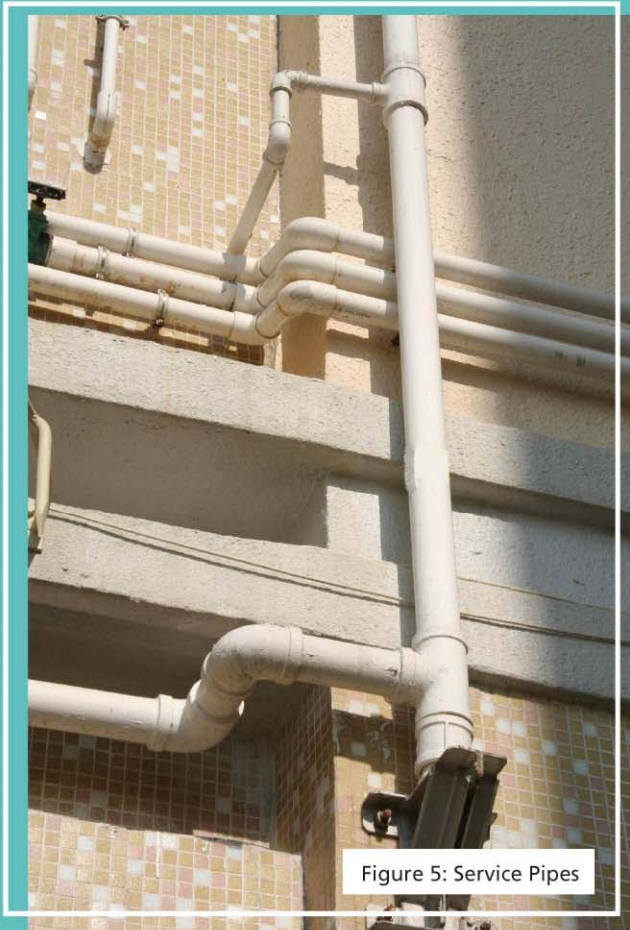


Figure 5: Service Pipes

With the exception of stainless steel tubing, all other tubing normally have a service life of 3 to 10 years. Users should arrange for a registered gas installer employed by a registered gas contractor to replace the tubing before the expiry of its service life. If it is found that the tubing is approaching the end of its service life during a safety check, the registered gas contractor will remind the user to replace the tubing.

Suspected Gas Leak

In the event of a suspected gas leak, extinguish all naked flames and open all windows and doors wide immediately to disperse the gas. Do not use the telephone or operate any electrical switches when still indoors. Promptly call the gas supply company or its agent to come and handle the gas leak. ⚠

Illegal Installation of Non-compliant Gas Water Heaters

A person was alleged to have caused the carbon monoxide poisoning of someone who took a shower as a result of using a non-compliant gas water heater illegally installed by that person. Investigation at the scene found that the non-compliant water heater, which was a non room-sealed heater, was installed in a shower cubicle with no ventilation opening, and the only exhaust fan inside the cubicle was not turned on. Since it was a rather cold night when the incident occurred, it was suspected that inadequate oxygen inside the shower cubicle while the victim was taking a shower had resulted in incomplete combustion of gas, thus producing a large amount of carbon monoxide that contributed to the carbon monoxide poisoning of the victim.

Case Sharing

It is important to note that the use of non-compliant gas water heaters involves a high safety risk. For instance, when a flueless gas water heater is used in a room with inadequate ventilation, a large amount of carbon monoxide may be built up within a short time. Colourless and odourless, carbon monoxide can cause coma, even death, instantly and unnoticeably. According to regulation 35 of Gas Safety (Installation and Use) Regulations (Cap 51 sub. leg. C), flueless gas water heaters are not allowed to be installed to serve a bathroom or shower in Hong Kong. Any person who contravenes this regulation is subject to a maximum fine of \$10,000 upon conviction.

If you are planning to have a gas water heater installed, you should choose a balanced-flue type heater. Moreover, you shall engage registered gas contractors or registered gas installers employed by these contractors for the installation work, and should arrange for the inspection and maintenance of your gas appliances by registered gas contractors and registered gas installers once every 18 months to ensure gas safety. ⚠

Service of Notices


"Service" is a legal term in procedure legislation. Many proceedings take effect upon the service of documents. Service of documents may seem trivial, but it has a significant impact on the rights of a litigant in the proceedings. Therefore, the requirements on service are defined in the procedure legislation. No service is legitimate unless it is completed in compliance with the requirements. Various ways of service are stipulated in the Gas Safety Ordinance, including by hand or by post.

According to section 35 of the Gas Safety Ordinance, a notice is deemed to be served to an "individual" if it is delivered to him, left at his last known address for service or sent by post to him at such address.

In the case of a "company", a notice is deemed to be served if it is given to or served on a senior officer of the company, left at the company's last known address for service or sent by post to the company at such address. In the case of a "partnership", a notice is

served if it is given to or served on any of its partners.

Take section 14 of the Gas Safety Ordinance as an example. For the purposes of obtaining any information which he considers necessary for the performance of his functions under the Gas Safety Ordinance, the Gas Authority may "serve" on the registered person (e.g. a gas installer or gas contractor), owner of a gas installation or owner of a gas vehicle a notice requiring such person or owner to furnish to him such information about matters as are specified in the notice, and to do so in such a form and manner and within such a period of time as are specified in that notice. Offenders are liable to a fine of \$10,000 on conviction.

Therefore, do not ignore notices sent by post. If the notice is sent by post in an appropriate way, the service has legal force. 



Legal Knowledge



Do You Know?


Most of us are aware of the risks caused by the use of flueless gas water heaters, but does it mean that a gas water heater is safe when connected to a flue?

Installation of open-flued (natural draught) gas water heaters is prohibited under regulation 36 of the Gas Safety (Installation and Use) Regulations (Cap 51 sub. leg. C), which has been in force in Hong Kong since 1991. This type of gas water heater is designed to supply hot water to the kitchen or bath/shower. It is connected to a flue for discharging combustion products outside the building. Since the mid-1980s, this type of gas water heater has been gradually phased out due to the following reasons:

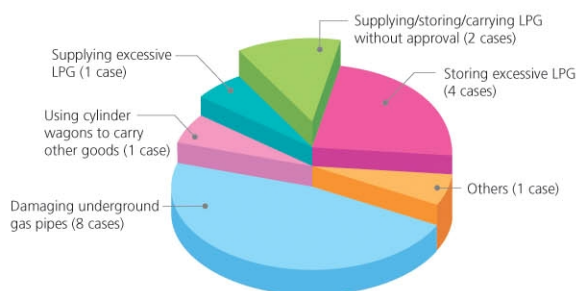
- (1) The living density in Hong Kong is high and bathrooms are usually small. It is practically difficult to install a vertical flue that is in compliance with the requirements.
- (2) When the water heater is in use, indoor air will be consumed for combustion. If ventilation in the kitchen, bathroom or shower is inadequate, or the exhaust is not properly released, the combustion products cannot be safely discharged outdoors. The

accumulation of toxic gas (i.e. carbon monoxide) inside the room can cause danger to gas water heater users.

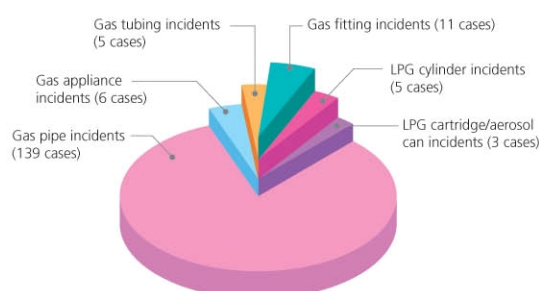
When purchasing gas water heaters, room-sealed (or balanced-flue) type water heaters should be chosen. Room-sealed type water heaters can be of different models, including the fanned draught or natural draught type. The air intake and flue terminal of this type of water heater are on the exterior wall of the flat, so fresh air for combustion is drawn from outside and combustion products are discharged outside the building as well. The heater does not consume or contaminate the air in the room. Nowadays, flats are usually provided with flue apertures suitable for the installation of room-sealed type water heaters to serve their bathrooms. According to the Gas Safety Ordinance, residents of such buildings must use room-sealed water heaters.

If any registered gas contractor or registered gas installer finds that a gas user is using an open-flued (natural draught) gas water heater, he should explain to the user the potential risk of doing so and advise him to replace it with a safer water heater as soon as possible. 

Prosecutions by Type for LPG-related Cases in 2010 (from January to October)



Reportable Gas Incidents by Type in 2010 (from January to October)



Gas Statistics

Gas Authority  EMSD

3 Kai Shing Street, Kowloon, Hong Kong
Tel: 1823 (Hotline) Fax: 2576 5945
Homepage: www.emsd.gov.hk
E-mail: info@emsd.gov.hk