

GAS SAFETY Bulletin



Message from the Editor

Hello, everyone! This issue of Gas Safety Bulletin features the Identification Signage for LPG Vehicle Fuel System Maintenance Workshop, Code of Practice on Avoidance of Damage to Gas Pipes (2nd Edition), monitoring of LPG specifications and quality, cathodic protection systems of LPG tanks, regulation of the use of LPG as refrigerants, and reports on the 2019 Gas Safety Briefing. Readers can also find legal knowledge about gas safety, as well as gas-related incident and prosecution statistics by type in 2018 for reference.

Identification Signage for LPG Vehicle



Fuel System Maintenance Workshop

At present, there are more than 2 800 vehicle maintenance workshops of various types in Hong Kong, among which about 140 provide maintenance services for LPG vehicle fuel systems (i.e. "LPG vehicle fuel system maintenance workshops"). The Electrical and Mechanical Services Department (EMSD) has launched a number of measures since 2015 to further enhance the gas safety of LPG vehicles.

Identification Signage for LPG Vehicle Fuel System Maintenance Workshop

Starting from August 2015, the EMSD has issued red or blue identification signage to qualified workshops (generally known as red or blue signage workshops in the trade) so as to make it easier for LPG vehicle owners, drivers, members of the public and trade practitioners to identify LPG vehicle fuel system maintenance workshops. All the workshops issued with identification signage are equipped with (i) detectors for detection of LPG leakage, (ii) purging equipment for fuel pipe of LPG vehicles and (iii) adequate ventilation, and the repair and maintenance of LPG vehicle fuel systems should be conducted by an Competent Person (Class 6) (CP6) approved by the EMSD.



- ▲ The red identification signage represents that the vehicle maintenance workshop is equipped with approved notifiable gas installation and can store an aggregated nominal water capacity of more than 130 litres of LPG (i.e. in general, storing more than one LPG fuel tank); the blue one represents that the vehicle maintenance workshop cannot store an aggregated nominal water capacity of more than 130 litres of LPG (i.e. in general, storing one LPG fuel tank only). The identification signage should be exhibited in a conspicuous position at the vehicle maintenance workshop.

CP6 Certificate and Identification Card

Likewise, in order to help LPG vehicle owners, drivers, members of the public and trade practitioners identify whether CP6 are employed at an LPG vehicle fuel system maintenance workshop, the EMSD has issued three-year certificates and identification cards to all CP6 in Hong Kong since May 2015. In order to further differentiate whether CP6 certificate and card holders possess the qualification for repairing and maintaining LPG vehicle fuel tanks equipped with an internal fuel pump, the EMSD introduced "gold" and "silver" certificates and cards in May 2018 which are also valid for three years.

- ◀ CP6 with gold cards are qualified to maintain LPG vehicle fuel systems equipped with an internal fuel pump while those with silver cards are not allowed to do so.

Security Label System for LPG Vehicle Fuel Tanks

Apart from the aforementioned measures, the EMSD also introduced the Code of Practice on Security Label System for LPG Vehicle Fuel Tanks in January 2017. The security label system for LPG vehicle fuel tanks is applicable to LPG vehicle fuel tanks equipped with an internal fuel pump, with a view to ensuring that revalidation or replacement of internal or external components of a fuel tank is carried out by a Competent Person at the LPG fuel tank workshop of a registered gas supply company. At present, all LPG vehicles equipped with an internal fuel pump in Hong Kong are affixed with security labels.



- ▲ Red security labels are to be affixed by registered gas supply companies at LPG fuel tank workshops; blue ones are to be affixed by the EMSD or importers of LPG vehicles.

Inspection and Publicity

The EMSD will continue to conduct regular inspections and publicity work to ensure that vehicle maintenance workshops comply with the safety requirements for LPG vehicle maintenance for protection of public safety. We hope all stakeholders will continue to maintain gas safety in the workplace so as to attain the goal of "zero incident".

2019 Gas Safety Briefing

The 2019 Gas Safety Briefing was successfully held on 26 February 2019 at the lecture hall of the Hong Kong Science Museum in Tsim Sha Tsui. Engineers from the Gas Standards Office of the EMSD and guest speakers from the Hong Kong and China Gas Company Limited and the Pro-Act Training and Development Centre of the Vocational Training Council delivered in detail different topics on gas safety matters to the attendees. Topics included matters to note for registered gas installers and registered gas contractors, application for and issuance of LPG cylinder wagon permits, case analysis of gas appliance safety, introduction to continuous professional development courses, Code of Practice on Avoidance of Damage to Gas Pipes (2nd Edition), as well as new trends in the development of domestic gas meters and cooking appliances.



- ▲ The briefing was well received with over 160 attendees.



- ▲ The Q&A session was lively, where attending members of the gas trade shared their views enthusiastically.

To find out more about the briefing and replies to the questions raised therein, please browse the EMSD website at https://www.emsd.gov.hk/en/gas_safety/information_for_the_gas_trade/index.html

Code of Practice on Avoidance of Damage to Gas Pipes

(2nd Edition)



Underground gas pipes may be damaged by persons who carry out works (such as water works, drainage works, fire services works, telecommunications cabling works, landscape works, or road resurfacing works, etc. by works contractors) involving excavation or any other means of penetrating the ground at or below surface level near the underground gas pipes if safety precautions have not been taken. This may lead to gas leaks, fires or explosions, etc., posing risks to the safety of workers and members of the public. Moreover, damage to gas pipes may also seriously disrupt gas supply to the surrounding area, causing great inconvenience to the general public.

Therefore, the Gas Authority issued the Code of Practice on Avoiding Danger from Gas Pipes in 1997 in accordance with the provisions of section 9 of the Gas Safety Ordinance (Cap. 51), with a view to providing practical guidance in respect of the requirements of the Ordinance and regulation 23A of the Gas Safety (Gas Supply) Regulations (Cap. 51B) concerning the avoidance of damage to gas pipes.

In view of the latest developments of the trade, the EMSD has, taking into account past gas incidents, works standards and good practices of the trade, reviewed and revised the above Code of Practice. The revised Code of Practice on Avoidance of Damage to Gas Pipes (2nd Edition) (CoP) was gazetted and came into effect on 31 August 2018 so as to fully enhance the requirements on safe system of work and protect the safety of the trade and the public.

The newly revised CoP details four major steps of safe system of work, which include obtaining underground utility plans from gas pipe owners/operators, using pipe locating devices to survey the alignment and depth of underground utilities, digging trial holes to confirm the positions of gas pipes, and adopting safe excavation practices.

Before commencement of works, take all reasonable steps including:

1. Obtain plans and information of the underground gas pipes in the vicinity from the gas pipe owners/operators ;

2. Use pipe locating devices to identify the alignment and depth of gas pipes (to be carried out by trained and experienced persons);
3. Dig trial holes to confirm the positions of gas pipes;
4. After locating the pipes, mark their alignment and depth on the road surface clearly; and
5. Ensure that persons who carry out the works can access the information on the positions of gas pipes and understand clearly the safety precautions required.

In the course of works, take all reasonable measures including:

1. Maintain adequate safety clearance from underground gas pipes during excavation;
2. Provide sufficient support to exposed underground gas pipes and provide proper protection where appropriate; and
3. If you are not sure what type of pipe it is, always assume that it is in use and that it may be hazardous.

In addition to the above CoP, the EMSD has also prepared a leaflet on Avoidance of Damage to Underground Gas Pipes and Electricity Cables. The CoP and the leaflet can be downloaded at the following websites or by scanning the QR codes below:

Code of Practice on Avoidance of Damage to Gas Pipes (2nd Edition)
[https://www.emsd.gov.hk/filemanager/en/content_286/CoP_gas_pipes_2nd_\(Eng\).pdf](https://www.emsd.gov.hk/filemanager/en/content_286/CoP_gas_pipes_2nd_(Eng).pdf)



Leaflet on Avoidance of Damage to Underground Gas Pipes and Electricity Cables
https://www.emsd.gov.hk/filemanager/en/content_284/avoid_damage_pipe_cable.pdf





Monitoring of LPG Specifications and Quality

According to the Gas Safety Ordinance (Cap. 51), LPG must meet the requirements of the Gas Safety (Gas Quality) Regulations, i.e., the proportion of sulphur should not exceed 0.02% by mass and the gas shall possess a distinctive smell for identification. In addition to the above Regulations, the composition of LPG which is used as a fuel for vehicles must comply with Hong Kong's auto-LPG specifications in order to meet the operational requirements and emission caps of LPG vehicles.

Monitoring of LPG Quality


The EMSD monitors LPG quality in various aspects, which include vetting independent third-party test reports submitted by LPG supply companies and carrying out sampling checks on LPG quality, so as to ensure that LPG quality meets the requirements.

Vetting Independent Third-Party Test Reports

To ensure that the quality of LPG complies with the statutory requirements, the EMSD has put in place a stringent monitoring mechanism. LPG supply companies are required to engage independent laboratories to collect LPG samples for testing from LPG terminals and oil refineries outside Hong Kong or LPG carriers entering Hong Kong, and submit a certificate of quality issued by the third party to the EMSD after receiving the consignment. The composition of the LPG and the testing standards adopted should be listed in the certificate for review.



LPG Sampling Scheme

To further enhance the monitoring of LPG quality, the EMSD launched in early 2010 the LPG sampling scheme by taking random LPG samples at one to two LPG filling stations every week and two LPG Terminals every month for testing. The test results are published on the EMSD website and updated on a weekly basis. 



▲ The EMSD has put in place a stringent monitoring mechanism on LPG quality to ensure that it complies with the statutory requirements and auto-LPG specifications.



Regulation of the Use of LPG as Refrigerants


Hydrofluorocarbon (HFC) refrigerants are now commonly used in Hong Kong. They are non-flammable and also comply with the relevant safety and environmental statutory requirements. In recent years, however, flammable refrigerants have been used in some chiller plants (including air-conditioning and refrigeration systems) in some parts of the world. In view of this, the EMSD considers it necessary to remind the trade of the regulation and safe use regarding flammable refrigerants.

Most of the refrigerants are, by their compositions, regulated by the Dangerous Goods Ordinance. If the compositions of refrigerants fall within the definition of LPG under the Gas Safety Ordinance, then the importation, production, storage, transport, supply and use of these refrigerants shall comply with the requirements of the Gas

Safety Ordinance.

According to the interpretation of the Gas Safety Ordinance, LPG means any gas which is a mixture of:

- (a) hydrocarbons primarily consisting of butanes, butylenes, propane or propylene; or
- (b) all or any of the hydrocarbons referred to in paragraph (a).

When choosing chiller plants and their refrigerants, we should ensure that their design, manufacture and installation meet the relevant standards and statutory requirements. For existing chiller plants, we should adopt the prescribed refrigerants according to the manuals provided by manufacturers instead of switching to flammable refrigerants. Members of the trade should convey the above message to owners and users of the plants. 

Cathodic Protection Systems of LPG Tanks

Cathodic protection is a way to prevent corrosion of metals using electrochemistry. According to the requirements of regulation 12(1) of the Gas Safety (Gas Supply) Regulations (Cap. 51B), the owner of an LPG tank shall not use the tank to contain LPG unless the tank is fitted with a cathodic protection system together with a test point for such system. To this end, the owner of an LPG tank must install a cathodic protection system for the tank, and cause such system to be tested not less than once in every six months and the results of such test to be recorded in writing and retained until the tank ceases to be used to contain LPG under the requirements of regulation 12(2) of the Gas Safety (Gas Supply) Regulations.

The cathodic protection systems of LPG tanks in Hong Kong generally employ a sacrificial anode design, under which sacrificial metals (such as zinc, aluminium or magnesium, etc.) with higher oxygen activity are used as anodes to protect the steel structure (cathode) of the LPG tank. The size and quantity of sacrificial anodes shall be designed by experienced corrosion specialists such that the anodes are capable for corrosion protection of the tank

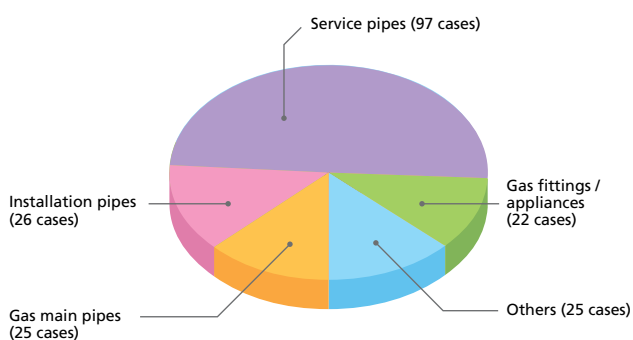
before its next validation date. The choice of anodes shall be based on the surface area of the tank and the test results on the conditions (pH scale, resistivity, etc.) of the washed sand. Besides, the system shall be equipped with reference electrodes and terminals for testing, while the end of the test wires shall be installed in a weatherproof test box at ground level. As-built drawings and records of the cathodic protection system shall be prepared after installation and shall include the quantity, type, size and location of anodes, date of installation, type of backfill material and resistivity measurement of electrolyte. The above records and subsequent periodic testing results shall be properly maintained for the service life of the LPG tank. For details, please refer to the Code of Practice for Hong Kong LPG Industry - Module 1 (LPG Compounds and Cylinder Stores) published by the Gas Standards Office. The Code of Practice can be downloaded for free at the EMSD website (https://www.emsd.gov.hk/en/gas_safety/publications/codes_of_practice/index.html).



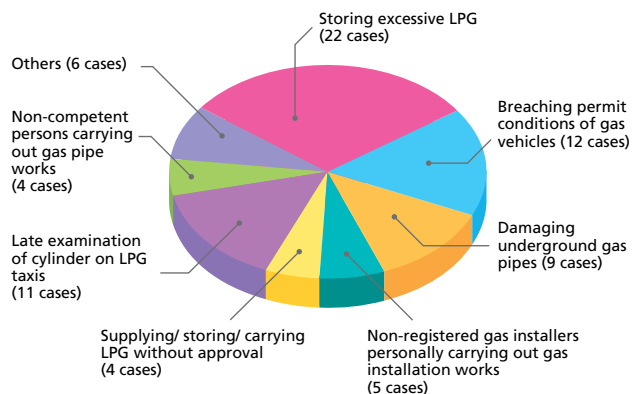
Legal Knowledge

Gas-related Incident and Prosecution Statistics by Type

**Gas-related Incidents by Type in 2018
(January to December)**



**Prosecutions by Type for Gas-related Cases in 2018
(January to December)**



Gas Authority



EMSD

3 Kai Shing Street, Kowloon, Hong Kong

Tel. : 1823 (Hotline)

Website : www.emsd.gov.hk

Fax. : 2576 5945

E-mail : gasso@emsd.gov.hk

