

GAS SAFETY Bulletin



Message from the Editor

Hello, everyone! This issue of Gas Safety Bulletin features how to guard against carbon monoxide – the “invisible killer”, and contains information on the use and regulation of natural gas in Hong Kong, the development of emergency response plans, and the latest third phase of Mandatory Energy Efficiency Labelling Scheme. Readers can also find useful information and legal knowledge about gas safety in general, as well as gas-related incident and prosecution statistics by type in the first half of 2018 for reference.



Carbon Monoxide Guard Against the “Invisible Killer”

With abdominal breathing practised and his hip muscles tightened up, Chef Wong was preparing to make a feast using all sorts of tactics and was ready to demonstrate his unique skill of tossing food in the wok, but suddenly he felt dizzy and lost strength in his hips and limbs. What came next were symptoms of severe headache, nausea and shortness of breath – these happened not because Chef Wong did not have enough exercise or grew old which made him incapable of doing what he wanted to do, instead such symptoms were a result of **carbon monoxide** poisoning. Colourless and odourless, carbon monoxide is called the “invisible killer”, excessive inhalation of which will cause signs and symptoms of poisoning, including headache, dizziness, nausea, vomiting, increased breathing and pulse rates, reduced conscious level and flushed face, etc. If not treated in time, in severe cases it can be fatal.

Generally speaking, commercial gas installations have much higher heating capacity than conventional residential cooking appliances, and gas consumption by such installations can be several times that of typical domestic gas cooking appliances; if improperly adjusted, they may readily generate incompletely combusted products, such as carbon monoxide. On the other hand, as most of the cooking appliances in commercial kitchens rely on the exhaust system to discharge exhaust gas to the outside environment, they should be equipped with an interlock system to ensure that the gas appliances stop operating immediately in case of exhaust system failure. If the effectiveness of the exhaust system weakens or the system becomes inoperative due to improper maintenance, the combustion products will build up inside the kitchen. This will lead to a reduction in the oxygen to air ratio, and more carbon monoxide will be produced in the combustion process that lacks oxygen, thus creating a vicious cycle and eventually posing danger to the user.

If a gas installation is maladjusted or its exhaust system is poorly maintained which leads to poor ventilation, the



“invisible killer” will appear and take action when conditions are favourable (inadequate indoor ventilation). There was a case that the exhaust system did not operate properly when a cooking teacher was using a gas cooking appliance, then many students felt unwell due to inhalation of carbon monoxide and were sent to hospital for treatment. Such an incident happened because the user of the gas installation had neglected the importance of effective indoor ventilation. Moreover, the gas installation concerned also failed to comply with the burning performance standard of the Code of Practice GU 21 - Requirements for Town Gas Installations for Catering Purposes in Restaurants and Food Preparation Establishments, and was therefore required to display the dangerous gas installation notice and be banned from use. To guard against attacks from the “invisible killer”, the co-operation of various stakeholders is crucial, including:

Owners of gas installations and ventilation systems

✎ shall ensure that the gas appliances, installation pipes and flues installed in the kitchen under their supervision are used in a safe condition and will not constitute a danger to any person

or property under regulation 31 of the Gas Safety (Installation and Use) Regulations (Cap. 51C); they should also arrange for registered gas contractors to conduct regular inspection and maintenance for their gas installations once every 12 months to ensure that such installations are in a good condition and allow for safer use.

Registered gas contractors

☞ shall install and test the gas appliances in a safe manner according to regulations 23, 24, 25, 26 and 30 of the Gas Safety (Installation and Use) Regulations (Cap. 51C).

Chef Wong and other gas installation users

☞ should maintain good ventilation in the kitchen. Under regulations 31(b) and 31(e) of the Gas Safety (Installation and Use) Regulations (Cap. 51C), no person shall use a gas appliance if at any time he knows or has reason to suspect that the room or internal space in which such appliance is installed is not adequately ventilated (e.g. the internal space contains excessive carbon monoxide gas), or that such appliance or any part of it is so faulty or maladjusted that it cannot be



▲ Testing of carbon monoxide gas

used without constituting a danger to any person or property. Moreover, the condition of the gas installation should be inspected prior to commencement of work. The installation concerned should not be used if any signs of abnormality or insecurity are found, and maintenance should be arranged. The control valve and the main gas supply of the cooking appliance should also be turned off after work. 🔥

Use and Regulation of Natural Gas

Natural gas

Natural gas is primarily methane obtained from natural strata. Compared with coal, natural gas is a relatively clean, environmentally friendly and low-emission quality energy source. At present, the Hong Kong and China Gas Company Limited, the Hongkong Electric Company Limited and CLP Power Hong Kong Limited import natural gas to Hong Kong via submarine pipelines from Guangdong Dapeng LNG

Receiving Terminal, Yacheng of Hainan and Dachan Island of Shenzhen (Second West-East Natural Gas Pipeline) for the production of town gas and electricity generation. Natural gas facilities such as the receiving terminals, pressure-regulating installations and high-pressure transmission pipelines are all regulated by the Gas Safety Ordinance (Cap. 51). Natural gas supply facilities are notifiable gas installations, the construction and use of which require approval from the Gas Authority. 🔥



▲ Natural gas facilities in Hong Kong

Biogas

Hong Kong's organic waste contains a treasure trove of valuable resources; not only can food waste recycling turn waste into energy, it can also reduce the need for dumping waste at landfills. To complement the development of food waste recycling in Hong Kong, the territory's first large-scale Organic Resources Recovery Centre (ORRC), located in Siu Ho Wan of Lantau Island, will commence operation at the end of 2018. The ORRC, which can process 200 tonnes of food waste generated from commercial and industrial sources every day, will adopt biological technologies – composting and anaerobic digestion to stabilise the organic waste and turn it into useful compost products and biogas. As a renewable energy source, biogas can be used as a fuel for electricity generation and exported to the power grid for use by 3 000 households. This can both reduce the use of fossil fuels to generate electricity and greenhouse gas emissions by approximately 25 000 tonnes per year.


Biogas is a type of synthetic natural gas. Related gas installations for the production, treatment and storage of biogas, including digesters, transmission pipelines, desulphurisation devices and gasholders, are all regulated by the Gas Safety Ordinance. The Electrical and Mechanical Services Department (EMSD) is responsible for assessing,



▲ Organic Resources Recovery Centre in Siu Ho Wan

approving and monitoring the construction and use of relevant gas installations in the ORRC to ensure their safety.

Safety requirements of natural gas facilities

According to the requirements under regulation 6B of the Gas Safety (Gas Supply) Regulations, the owner of a notifiable gas installation (including power companies, Towngas and ORRCs) shall inspect, maintain and operate the installation in a safe condition for the prevention of fire, explosion or other danger arising from the installation. Such inspection shall be carried out by trained and competent persons with substantial experience. 


Emergency Response Plans are Important

According to the requirements under regulation 6B of the Gas Safety (Gas Supply) Regulations, the owner of a notifiable gas installation (e.g. a liquefied petroleum gas (LPG) storage installation) shall maintain and operate the installation in a safe condition to reduce the risk of fire, explosion or other danger possibly arising from system failure. An effective emergency response plan is also one of the important elements of good maintenance of a notifiable gas installation. Owners should refer to the procedural guidelines of the Code of Practice for Hong Kong LPG Industry, Module 7 in the development and implementation of an emergency response plan (hereafter referred to as the “plan”) to deal with emergencies covering situations of LPG leakage, fire or explosion occurring at the LPG compound or cylinder store.

The plan shall cover the following logistics support areas: organisation and resources, communication, reporting, actions in emergency and administration. In addition, the plan shall be updated regularly and ensured practicable. The procedures, key personnel or their telephone numbers shall be updated as soon as possible in case of any changes. Besides, a regular review shall be carried out once a year to ensure that the plan covers the latest information. The owner shall distribute the plan to employees and external parties having responsibility in the plan. Copies of the plan should also be available at property management offices or office locations for easy access. Furthermore, the owner shall conduct testing and drills once a year in conjunction with all personnel involved in the plan to ensure it is feasible, comprehensive and effective.

The testing for the emergency response plan shall fulfil the following objectives:

- a) orientation of personnel to a new plan or to the revisions of an existing plan;
- b) introduction of newly appointed personnel;
- c) assessment of resources available;
- d) identification of potential problems and conflicts in emergency; and
- e) evaluation of risks to the public.

The owner shall record all drills, conduct critical review to identify areas for improvement and revise the plan accordingly as appropriate. 



Case Sharing

Safety Requirements of LPG Filling Stations

An LPG filling station is classified as a notifiable gas installation under the Gas Safety Ordinance (Cap. 51). According to regulations 3 to 6 of the Gas Safety (Gas Supply) Regulations (Cap. 51B) (hereafter referred to as the Regulations), construction approval and approval of use by the Gas Authority (i.e. The Director of Electrical and Mechanical Services) are required for LPG filling stations.



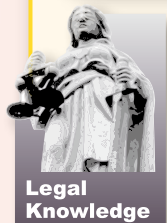
approval by the Gas Authority shall also be obtained for LPG storage tanks of filling stations prior to use.

Activities such as construction, repair, maintenance, inspection, testing and revalidation of the LPG installations of LPG filling stations shall be undertaken by competent persons. The owner of an LPG installation shall have a duty to maintain and operate the installation in a safe condition and to establish a systematic routine maintenance plan.

The EMSD is responsible for examining the design, installation, operation and maintenance procedures of LPG filling stations, including quantitative risk assessment reports for LPG filling stations; specifications for the LPG pumps, dispensers, gas detectors and breakaway couplings; gas installation fittings; lightning protection system; cathodic protection system; fire fighting equipment; testing and commissioning procedures of LPG installations; and test reports/certificates for various systems, to ensure compliance with all safety regulations, standards and codes of practice. According to regulation 7 of the Regulations,

After an LPG installation is put into operation, the owner shall, in accordance with the requirements under regulation 6C of the Regulations, employ a competent person to inspect the LPG filling station and prepare an annual inspection report for submission to the EMSD for review. Besides, each LPG storage tank shall be revalidated once by a competent person within the first ten years and then every five years thereafter in accordance with the requirements under regulation 8(4) of the Regulations, and its test certificate shall also be submitted to the EMSD for review.

Approval for Camping Gas Cylinders



According to regulation 7 of the Gas Safety (Gas Supply) Regulations (Cap. 51B), "only approved containers may be used to contain liquefied petroleum gas". The owner of a container who contravenes the said regulation commits an offence and is liable on conviction to a fine of \$10,000 and, in the case of a continuing offence, to a daily penalty of \$1,000.

Recently, the EMSD has received reports from the public that there were shops being suspected of contravening the relevant regulation by displaying and selling disposable LPG cylinders (including camping gas cylinders) which had not been approved by the Gas Authority. Therefore, shops are reminded to pay more attention to the requirement that only approved camping gas cylinders are allowed to be sold.

All the labels on camping gas cylinders bear the wording "Approved by EMSD" for easy identification. For the list of approved camping gas cylinders, please visit our website at:


https://www.emsd.gov.hk/filemanager/en/content_261/LPG_Container_Approved_List.pdf

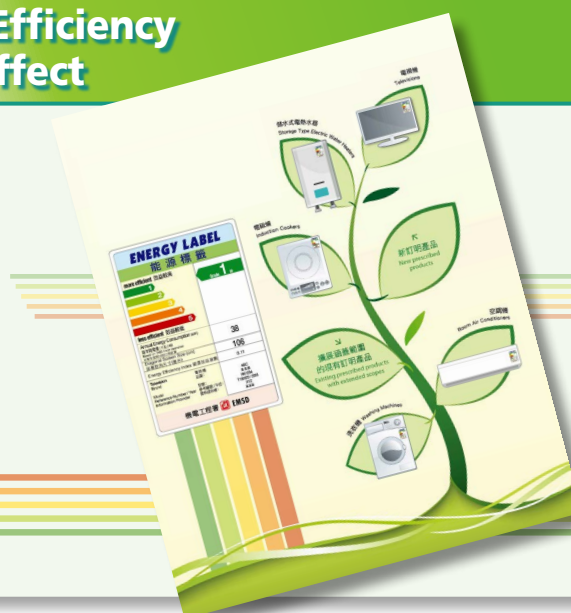
Besides, you may also refer to the leaflet on "Safe Use of Camping Gas Appliances" produced by the EMSD at:

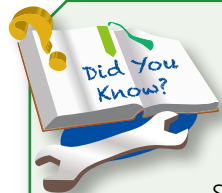
https://www.emsd.gov.hk/filemanager/en/content_284/camping_leaflet.pdf



Third Phase of Mandatory Energy Efficiency Labelling Scheme Has Come into Effect

The third phase of Mandatory Energy Efficiency Labelling Scheme (MEELS) introduced by the Government through amendments to the Energy Efficiency (Labelling of Products) Ordinance took effect on 1 June 2018. This phase covers five types of electrical appliances, namely televisions, storage type electric water heaters, induction cookers, room air conditioners for cooling and heating (with coverage extended to include heating function), and washing machines (with a rated washing capacity exceeding 7 kg but not exceeding 10 kg). To enable the trade to make necessary preparation, there is a grace period of 18 months for the third phase of MEELS. That means from 1 December 2019 onwards, manufacturers or importers are required to attach energy labels in the specified format on the above-mentioned products before supplying them in Hong Kong. For details, please visit the website of "Energy Label Net" (<https://www.emsd.gov.hk/energylabel>). 





Correct Steps to Replace LPG Cylinders with Prest-O-Lite (POL) Valve

Since LPG is a flammable substance, special attention to safety must be paid to prevent gas leakage when replacing LPG cylinders, otherwise serious consequences may be resulted.

LPG cylinders with a POL valve are supplied for commercial and industrial uses, and cylinder replacement should be carried out by LPG distributors whenever possible. LPG distributors should remind users from time to time that they should understand the correct steps if they need to replace LPG cylinders by themselves. If necessary, LPG distributors should also demonstrate to users the following correct steps to replace LPG cylinders:

1. Before replacing a LPG cylinder, you must switch off the gas appliance, extinguish sources of ignition in the vicinity and maintain good ventilation.



2. Ensure that the valve at the top of the cylinder is closed completely (turn it clockwise) before disconnecting the regulator.



3. Check that the rubber ring of the regulator is not cracked or damaged.



4. When replacing the LPG cylinder, check that the inner thread of the cylinder valve and the outer thread of the regulator connection are not damaged.



5. After the regulator is connected firmly, you must check whether the cylinder valve and the regulator is connected tightly and ensure that there is no clearance.



6. Then open the valve at the top of the cylinder and test the connection with soapy water immediately. If the connection is sound, there should be no soap bubbles at the joint.



7. The gas appliance can only be switched on again after ensuring that there is no smell or sound of gas leaking from the cylinder connection.



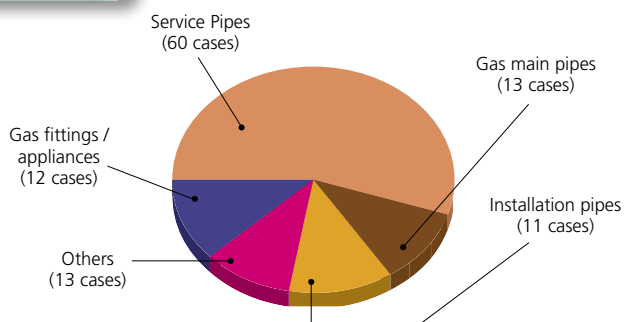
For details of replacement of LPG cylinders with a POL valve, please refer to our website at:

https://www.emsd.gov.hk/filemanager/en/content_284/catering_leaflet.pdf

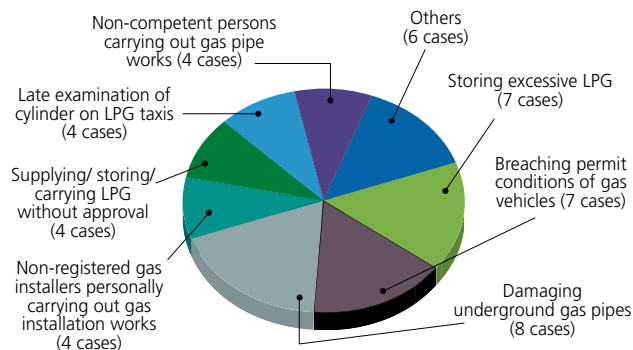


Gas-related Incident and Prosecution Statistics by Type

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



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



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

