





主題內容



- 1. 氣體喉管類別
- 2. 避免破壞氣體喉管及裝置
- 3. 法例要求
- 4. 個案分享
- 5. 總結



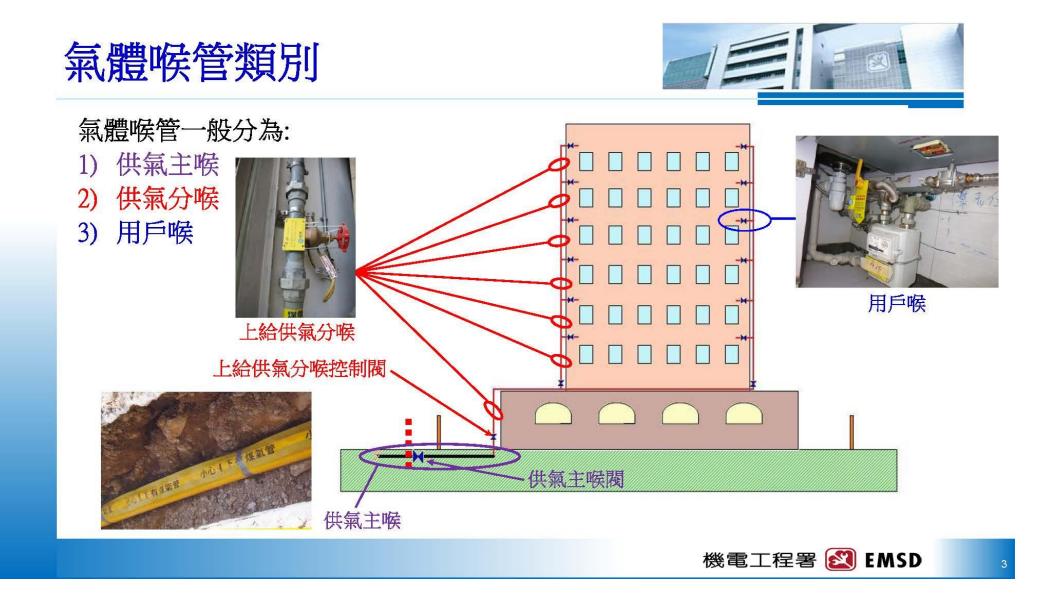


氣體裝置工程和 註冊氣體工程承辦商

Gas Installation Work and Registered Gas Contractors











- 氟體裝置工程是指裝配、
 接駁、截離、試驗、投入
 運作、解除運作、維修、
 修理或更換氣體裝置。
- 所有氣體裝置工程,衹可
 由受僱於<u>註冊氣體工程承</u>
 <u>辦商的</u>註冊氣體裝置技工
 進行。



	氣體裝置工程的類別
住宅類	第1類 安裝及測試接駁於一個石油氣瓶的平頭爐(即 座檯爐)。
	第2類 在住宅房產內安裝氣體喉管(不包括測試)。
	第3類 在住宅房產內安裝及測試氣體喉管及住宅式氣 體用具。
	第4類 安裝、測試及維修住宅式氣體用具。
商業類	第5類 在非住宅房產內安裝氣體喉管(不包括測試)。
	第6類 在非住宅房產內安裝及測試氣體喉管及非住宅 式氣體用具。
	第7類 安裝、測試及維修非住宅式氣體用具。
工業類	第8類 安裝、測試及維修工業用的氣體用具。

機電工程署 🛃 EMSD



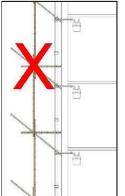
工程承辦商及施工人員應注意事項

進行樓宇工程時,有關承辦商及施工人員應:

- 在施工前了解大厦/施工範圍內的喉管類別
- 核實大廈圖則,清楚了解管轄範圍內的氣體喉管分佈
- 應督促分判工程承辦商及施工人員避免破壞氣體喉管
- 使用合適喉管探測器和工具,避免破壞埋藏於牆壁內 的氣體喉管。如有需要,可考慮向氣體供應公司申請 截氣
- 不可用氣體喉管作支點或負載點
- 不可損毀或覆蓋氣體熱水爐的煙道
- 注意大廈的氣體緊急控制閥位置,以便在緊急情況下
 ,立即截斷氣體的供應









機電工程署 🛃 EMSD

發生氣體泄漏事故怎麼辦?





方致電氣體供應公司或999

氣體外洩

《氣體安全(裝置及使用)規例》(第51C章)第34條

- 房產的負責人,如知道或有理由懷疑氣體正外洩,須採取一切合理步驟切斷氣體供應
- 除非已採取一切必要步驟以防止氣體再度外洩,否則不得恢復氣體供應





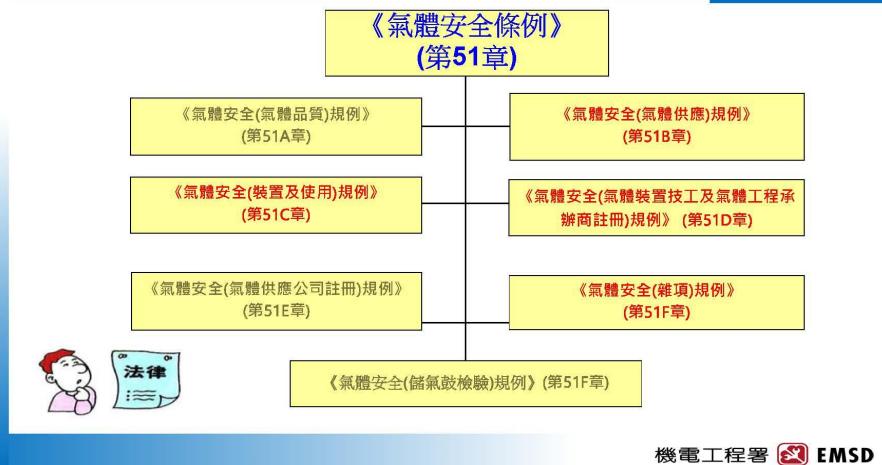


















聘用註冊氣體裝置技工

《氣體安全(氣體裝置技工及氣體工程承辦商註冊)規例》(第51D章) 第3條

- 只有同時是
 - 1) 註冊氣體工程承辦商的僱員/ 註冊氣體工程承辦商,及
 - 2) 領有合適的註冊級別
 - 才可親自進行氣體裝置工程。

(如屬違反,最高可處\$25,000罰款及監禁6個月)

	KONG REGISTERED GA 冊氣體裝置技工卡	S INSTALLER CARD
	ATION NO. 12345678	
NAME 姓名	CHAN TAI MAN 陳大文	20
CLASS 類別	*1*2*3*4****** *5*6*7*8******	Sil
	FETY ORDINANCE 1990 【糖安全條例	ISSUED 簽録日期 23-06-2014

氣體裝置工程的類別		
	第1類 安裝及測試接駁於一個石油氣瓶的平頭爐(即 座檯爐)。	
住宅類	第2類 在住宅房產內安裝氣體喉管(不包括測試)。	
L-Dat	第3類 在住宅房產內安裝及測試氣體喉管及住宅式氣 體用具。	
	第4類 安裝、測試及准修住宅式氣體用具。	
	第5類 在非住宅房產內安裝氣體喉管(不包括測試)。	
商業類	第6類 在非住宅房產內安裝及測試氣體喉管及非住宅 式氣體用具。	
	第7類 安裝、測試及維修非住宅式氣體用具。	
工業類	第8類 安裝、測試及維修工業用的氣體用具。	

機電工程署 🛃 EMSD 🚽





聘用註冊氣體工程承辦商 《氣體安全(氣體裝置技工及氣體工程承辦商註冊)規例》(第51D章)

第12(1)條

 除註冊氣體工程承辦商外,任何人均不得經 營氣體工程承辦商的業務。

(如屬違反,最高可處\$25,000罰款及監禁6個月)

第12(2)條

 任何人不得僱用註冊氣體工程承辦商以外的 人進行氣體裝置工程。

(如屬違反,最高可處\$10,000罰款)

11-2 1	
	en gas contractor number 再复费工程录算器 號碼
	XXX-XX
≒ xxxxx	X XXXX XXX
XXXXXXX XXXXXXX XXXXXXX	XXXX
to represent as a last constraint Carl count of constraint	ctos.
	REPORT (1999)







個案1: 割破屋苑單位內的氣體喉管



13

物業管理公司僱用承辦商更換單位食水喉時,工人誤認氣體
 喉管為食水喉,並將該氣體喉管割破,導致氣體洩漏。









在氣體喉管附近地方進行工程

《氣體安全(氣體供應)規例》(第51B章) 第23A條 The second

承建商被裁定罪名成立



(2) 在氣體喉管附近地方進行或准許在氣體喉管附近地方進行任何工程 的人,須確保採取一切合理措施,以保護該氣體喉管不受因該工程 所引起的相當可能會危及安全的損害。 (如屬違反第23A(2)條,最高可處\$200,000罰款及監禁12個月)

機電工程署 🛃 EMSD





- 承辦商負責人/工程監督須預先確定附近氣體喉管/裝置的所在位置及路徑,並提醒工人避免破壞氣體喉管。
- 在已識別的氣體喉管加上臨時標示/記號,避免施工時 誤認氣體喉管為廢喉。
- 在氣體喉管附近進行工程時,須採取措施保護有關氣 體喉管,例如用擋版分隔,避免手提割機誤損氣體喉 管。
 - ▶ 如有需要,可向註冊氣體供應公司查詢或申請截氣。





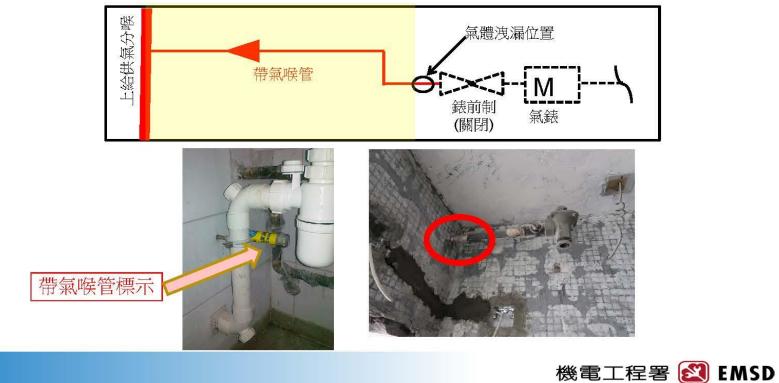


個案 2: 誤認帶氣喉管為廢喉



16

 裝修工人誤認煤氣錶前帶氣喉管為廢喉,使用切割機截喉時引致 氣體洩漏。



個案 3: 大廈工程干擾氣體用具運作



 大廈外牆搭掤維修,工人用膠布覆蓋氣體熱水爐煙囱,導致用戶使用氣體 熱水爐時,發生爐具爆炸事故。



• 氣體熱水爐煙囱被大廈外牆的掤架壓到,導致氣體熱水爐及喉管移位。











避免影響氣體裝置的運作 《氣體安全(裝置及使用)規例》(第51C章) 第7(2)條

現有的氣體配件

- 任何人不得做任何事影響氣體配件; 或
- 影響與該配件連同使用的煙道或通風設備



以致其後使用該配件時,對任何人或財產構成危險。 (如屬違反,最高可處\$5,000罰款)







機電工程署 🛃 EMSD

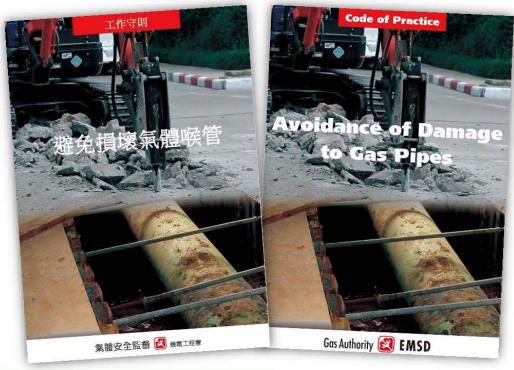
✔ 在進行大廈維修或裝修工程時

- ▶ 督促有關承辦商及施工人員避免破壞氣體喉管及裝置;
- ▶ 可向註冊氣體供應公司查詢,核實大廈圖則,清楚了解管轄/施工 範圍內的氣體喉管分佈;
- ➤ 在氣體喉管附近進行工程時,須確保採取一切合理措施,以保護 該氣體喉管;
- ▶ 損毀氣體喉管或裝置者可能須付上相關的法律責任;
- ▶ 不可損毀或覆蓋氣體熱水爐的煙道。











避免損壞氣體喉管

《氣體安全(氣體供應)規例》

第23A條 在氣體喉管附近地方進行工程

- (1) 任何人不得在氣體喉管附近地方進行或准許在氣體喉管附近地方進行任何工程,除非他或進行工程的人已於工程展開前採取一切合理步驟以確定該氣體 喉管的所在地點及位置。
- (2) 在氣體喉管附近地方進行或准許在氣體喉管附近地方進行任何工程的人,須 確保採取一切合理措施,以保護該氣體喉管不受因該工程所引起的相當可能 會危及安全的損害。





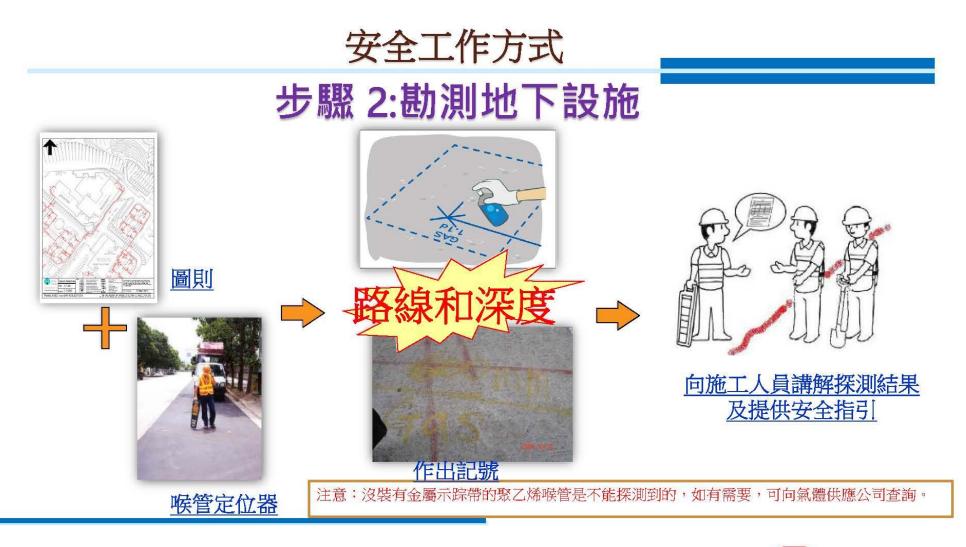


安全工作方式

步驟 1:取得圖則









安全工作方式

步驟 3:挖掘試孔

- 用**手工具**開挖試孔並<mark>露出</mark>氣體喉管
- 如必須使用手提電動工具鑿開已鋪築的地面,需注意深度限制:
 行人路: 150毫米深
 道路: 300毫米深
- 如有需要,可要求氣體供應公司協助辨認試孔內的喉管

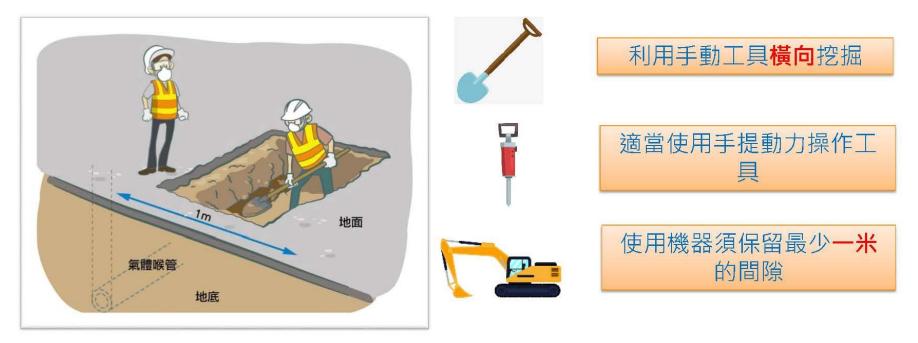






安全工作方式

步驟 4: 採用安全挖掘方法





保護氣體喉管的方法

✓挖掘時發現的氣體喉管需提供足夠支撐、保護及維修通道







保護氣體喉管的方法

- ✓所有氣體喉管必須假定為有氣,直
 至截斷供氣及證明安全為止
- ✓ 在氣體喉管附近進行燒焊或其他使 用明火的熱加工工作時,須採取特 別的喉管保護措施,例如安裝熱力 保護屏障
- ✓ 如有需要,可考慮向氣體供應公司
 申請改道/截氣



保護氣體喉管的方法

- ✔ 回填挖坑必須小心進行
- ✓ 警告帶、磚片、蓋板或其他保
 護裝置必須放回原位
- ✓ 任何可能會損壞氣體喉管填料, 例如大石和石填料,不得使用。









個案分析

居屋屋苑

承建商被裁定罪名成立

- □ 進行咸水管維修工程
- □ 使用手提電炮打石屎
- □ 直徑200毫米的球墨鑄鐵氣體喉管被損毀











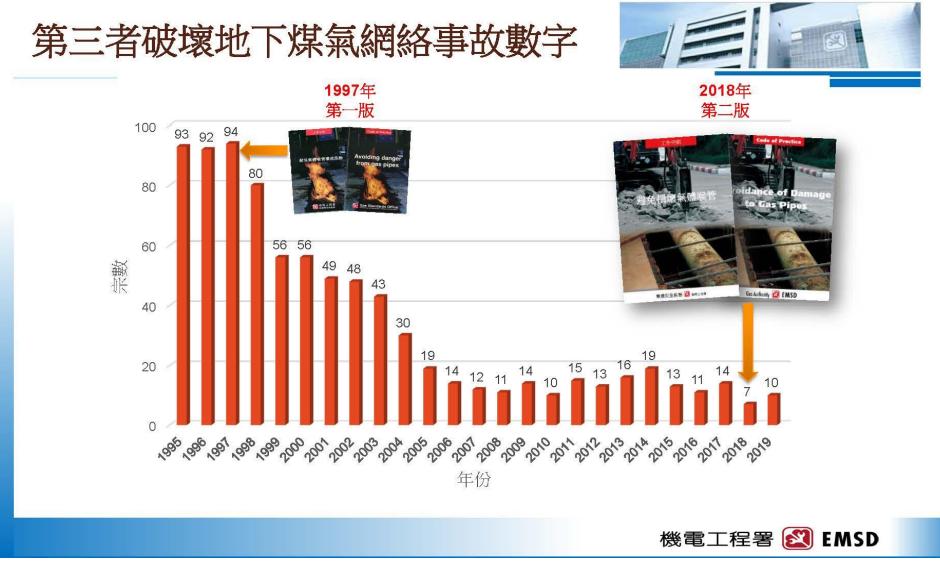
個案分析

地盤平整工程 承建商被裁定罪名成立 □ 曾為地盤馬路喉管探測 地盤馬路旁直徑250毫米的聚乙烯氣體喉管被損毀 圖則













「安全4步曲」

- ✓ 確認地下氣體喉管的位置
- 1. 取得圖則
- 2. 勘測地下設施
- 3. 挖掘試孔
- ✔ 保護氣體喉管免受損壞
- 4. 採用安全挖掘方法











Title: Safety Forum 2020 for Works Contracts and Property Management Services Contracts

Super	Safety Forum 2020 for Works Contracts and Property Management Services Contracts 2 November 2020	
VO:	Here is the footage from "Safety Forum 2020 for Works Contracts and Property Management Services Contracts which was held on 2 November 2020	
Super	Ms. LEUNG Shuk-Yan & Mr CHAN Wai-hung, Engineers of Electrical and Mechanical Services Department Topic: "Gas Safety of Building Estates and Premises" and "Avoidance of Damage to Gas Pipes"	
VO:	The Speakers are Ms Leung Shuk Yan and Mr Chan Wai Hung Engineers of Electrical and Mechanical Services Department Their presentation topics are "Gas Safety of Building Estates and Premises" and "Avoidance of Damage to Gas Pipes"	
Ms. Leung:	 Hello, My surname is Leung, and I am an engineer from the EMSD's Gas Standards Office Welcome to this Safety Forum today In this session, I am going to talk about gas safety-related issues during construction work at housing estates First, I will do a brief introduction on the different types of gas pipes Next, I will talk about how you could avoid damaging gas pipes or devices when you are doing construction work at housing estates Then, I will share some of the legal requirements about gas safety and also some gas safety case studies Do you know what types of gas pipes they are? In general, there are 3 types: gas main, service pipe and installation pipe Gas mains usually refers to town gas or liquefied petroleum gas (LPG) pipes that are underground They deliver the gas to housing estates, all the way up the buildings, and distribute the gas to each household On the side of the building there are vertical pipes called service pipes Inside the flat, after passing the gas meter, they connect to installation pipes, which are then connected to water heaters or cooking stoves, etc. Then what is gas installations and pipes, etc. What kind of people can carry out gas installation work? They have to be registered gas installers who are employed by registered gas contractors, and they have to be registered to the appropriate class For example, I want to install a gas appliance Then I must hire a gas installer with Class 4 qualifications before he can start installing this kind of appliance If you want to look up the list of registered gas contractors and gas installers, 	

you could check out our EMSD website Just now, I asked: during construction or maintenance work in a building, what should the contractor and workers pay attention to? Firstly, we should take a look at the pipes in the project area and see if there are any gas pipes If yes, we need to ask the registered gas supply company for as-built utility plans, in order to know the distribution of gas pipes During construction or maintenance work, we often drill or knock down walls and there may be some concealed pipes inside the wall So, we advise that you use pipe detectors to check if there are any pipes inside the walls This prevents us from damaging them when we drill or knock down walls Sometimes, scaffolding is erected for works related to a building façade Avoid interfering with the chimney shaft operation of the water heater Also, before work, pay attention to the location of the gas emergency control If gas leakage does unfortunately occur, this can help you cut off the gas supply as soon as possible A quick side note: in the case of gas leakage, close the gate of gas meter if it is safe to do so, and open the windows If gas leakage continues, then evacuate as soon as possible and call 999 for help Next, I would like to talk about the legal requirements for gas safety In Hong Kong, gas safety and related issues are under the jurisdiction of Gas Safety Ordinance Cap. 51 There are 7 sections to it, and I have extracted some key points to share with you As mentioned before, gas installation work should be carried out by employees of a registered gas contractor, or registered gas contractor and they have to be registered to the appropriate class This is actually required by law According to the Section 3 of Cap. 51D, Gas Safety (Registration of Gas Installers and Gas Contractors) Regulations violation of this law could lead to a penalty of up to \$25,000 and a jail term too It is mentioned in the Section 12 of Cap. 51D, Gas Safety (Registration of Gas Installers and Gas Contractors) Regulations that apart from registered gas contractors, other contactors such as electrical or air-conditioning contractors, cannot take on gas installation work Violation of this rule could lead to a fine and a jail term And someone who has hired a non-registered gas contractor to do gas installation will be subject to criminal liability as well Next, I am going to share some case studies of gas safety incidents There are now many fresh water pipe replacement works in public housing estates Some contractors enter tenants' flats to replace the fresh water pipes Often, public housing is designed such that gas meters, gas pipes, fresh water pipes, etc. are beneath the stove area Workers may not have looked carefully enough to distinguish gas pipes from fresh water pipes, and they might cut the pipes according to their own instincts Last year, there were 4 or 5 such incidents This number is on the rise, so I hope everyone will pay attention In these incidents, the gas meters were damaged by fire, or that even the whole kitchen was damaged

Luckily, the workers did not sustain any injuries Damaged gas pipes are definitely not small matter You also run the risk of breaking the law According to the Gas Safety (Gas Supply) Regulations (Cap 51B) 23A, there are two things we have to pay attention to no one is allowed to carry out or permit others to carry out works near gas pipes; and before the works begin, you should take the appropriate steps to check the positions of the pipes If you violate these two rules, you could be fined Another situation is you might have known that there are gas pipes where you are working, but you have not taken any measures to protect them or prevent them from damage-that is against the law too If you have violated this law, the penalty is even more serious, as you could be fined up to \$200,000 I have been talked a lot about protecting gas pipes What can we do to protect them? The contractor's personnel and site supervisor have very important roles to play These supervisory persons have to first make sure if there are any gas pipes in or near the work site, and find out their routes They also need to remind workers not to damage them Because there have been quite a few cases in the past when workers started work on the first day without any supervision, and cut pipes according to their own personal experience, which led to incidents of damaged pipes After locating the pipes, the supervisors have to mark them out so that during work, workers can see clearly which are town gas pipes and which are LPG pipes, so they take care not to cut them Also, I talked a bit about how there may be lots of gas pipes near the pipes that you want to cut, so protective measures are needed, for example a shield or some small, portable tools that stop us from slipping and cutting the wrong pipes The most ideal way of working is to consult the gas supply company, who will help you inquire about, even arrange for, gas disconnection before you begin the works Another case was when some renovation workers entered a unit to clear away some unused pipes, but they did not check clearly whether they were gas pipes in use In fact, Town Gas Company, for example, usually adds markings to pipes that have been disconnected but still has live gas You can see these markings in this photo But perhaps some old flats did not use town gas, or they might have removed the gas meter and no markings are shown So workers must check carefully before dismantling unused pipes If you have any questions, please ask for assistance from the gas companies The last case study is a situation I have already mentioned If scaffolding is erected on a building façade for renovation works, pay attention to water heater chimney shafts that extend to the façade Once, a contractor tried to seal it with bandages, and the property management company was not informed

It might be OK if the residents did not use the water heater at all When the resident uses the water heater the exhaust gas could not be discharged and had to travel back A mild explosion occurred when the water heater was used again These incidents could lead to injuries of users, etc. Also, the scaffolding should not press against the chimney shafts There was once an incident where the shaft was crushed to deformity The above incidents and examples are all potential violations of Gas Safety (Installation and Use) Regulations Cap. 51C Section 7(2), which stipulates that no one can carry out works which could affect gas fittings, including flue or ventilation facilities Violations could lead to a maximum fine of \$5,000, so please be aware of that A quick summary for everyone during projects and works remember to remind the contractors and workers to avoid damaging the gas pipes If needed, you can get the plans from the gas companies, but do this before works so as to take appropriate steps to protect the pipes Also, remember not to cover the chimney shafts of water heaters If you commit the above offences, you may have certain legal consequences OK, I have finished talking about the things to note for pipes above ground Now, it turns to Mr. Chan, Engineer He will talk about underground gas pipes Welcome, Mr. Chan Thank you, Miss Leung Actually, what I have to say is quite similar to Miss Leung's sharing But her talk just now focused mostly on gas pipes inside buildings, and what I have to say now is more about gas mains that are usually beneath roads or housing estate walkways and planters How do we avoid damaging them? The EMSD has actually issued Codes of Practice related to this area, covering the main points of Cap. 51B Section 23A, which Miss Leung talked about just now When carrying out works near these gas pipes, how do we locate them, and how do we avoid damaging them? Cap. 51B Section 23A covers two things Step one: using appropriate measures to locate these gas pipes, and step two: after locating them, how do we safely protect them? Our Code of Practice encourages a safe system of work There are four basic steps to working safely Firstly, before works begin, collect a copy of the plans to determine the pipeline route or their depth

Secondly, carry out an underground utility survey

Thirdly, dig out a trial hole

Mr. Chan:

This means, where you think there are pipes underground digging out a trial pit to expose these gas pipes,

to confirm their exact location and depth

Lastly, make sure you adopt safe excavation practices while carrying out the works Step 1: collecting the plans Actually, each gas owner or operator has copies of these plans, so before you start, you can ask these organisations for the plans As the Code of Practice says, these owner or gas supply companies have the responsibility to provide these plans Next step: do an on-site underground utility survey You use the plans you have collected, and at the same time, use an appropriate pipe locating device to locate the pipeline route on site Just to give you a little more detail about this point: these two steps are mutually beneficial Sometimes, the plans offer a preliminary source of information because on site, the routes may have been changed, which the underground utility survey would help Sometimes, it is the opposite You may find what seems like a gas pipe during the utility survey. but the plan may indicate that there are two co-existing pipes in place So these two steps really do complement each other Next step If we have a preliminary understanding of the pipeline route, we need to dig out a trial pit to determine the exact location Pay attention throughout this process, you should use power-driven tools designed for operation by hand or hand tools, because, as we all know, the surface of walkways and roads is very hard so we can use appropriate power-driven tools designed for operation by hand, but we need to pay attention to the depth For walkways, it is 150mm, and for roads, it is 300mm Lastly, safe excavation practices Simply speaking, we require that everyone keep a 1-metre distance Keep a minimum horizontal clearance of 1 metre from either side of the gas pipe, and do not use heavy plant, in this clearance such as excavators or hoe rammers We should use hand tools instead For those heavy plants, you can use them in other areas Just now I mentioned: now that we have located the pipes, the next step is even more important: how do we protect them? You see a relatively large confined space, and there are some pipes here, so enough support is needed to protect them At the same time, maintenance is needed You can see some yellow fabric in the photo on my right That is actually a fire blanket There may be hot work processes in a works project, and pipes, especially polyethylene (PE) gas pipes, are very sensitive to hot work and, so we have to pay extra attention Also, because we are working underground,

there are many different types of gas pipes live gas pipes; temporarily disconnected pipes, and even abandoned pipes but there may be some gas left in them still so if you find these pipes, you should assume that there are live unless proven otherwise, or you can find the relevant gas company to verify I mentioned just now how we should pay extra attention when doing welding, naked flame, or hot work, etc. You can also consider asking the gas supply company to apply for a temporary disconnection or diversion solutions This could help your works project run smoothly After works completion, do not just put the cover back The steps below are crucial too, so we need our contractors' help Firstly, the pipe may originally have had some warning tape, marker tiles or capping plates, etc. These need to be put back into place If they have been damaged, that is alright You can ask for replacements from the relevant gas supply company, and put them in the original positions This prevents the workers of the next project from mislocating or damaging those pipes easily Here is a little case study analysis for you This was inside a Home Ownership Scheme housing estate, where there was a flushing water maintenance project In fact, the workers had asked the estate management office for utility plans, and they had determined that there were no pipes nearby, so they began their drilling work In the end, they drilled into a yellow polyethylene (PE) gas pipe I want to bring out an important message here The workers had good intentions asking property management for the plans, but the most accurate copies are with the gas supply companies Just now we saw a circular structure which was in a settlement zone The gas supply company must have tried to reduce the risk of settlement and added a settlement lock at a later stage So, the plans from the property management office's plans were not the latest, hence this pipe was not marked on it This was a new pipe that was installed afterwards So, when collecting plans, get them from the right people or organisations Also, some theme parks may have building works in progress You can see that there are some pipes on the bridge here An accident happened with this pipe in this soil area, which is a bit sloping Actually, there was not really a major works project here The contractor simply wanted to place a water tank nearby, but it needed to be placed on level ground, so some minor site formation work was needed In our review of the case, we found that they had collected plans and even found a professional to do utility surveying for the area However, in the contract, the utility surveyor was only asked to survey along the road The area in question was not covered in his contract So in actual fact, a pipeline had crossed the bridge and then passed this soil area here But the utility survey report had simply indicated that

after crossing the bridge, the pipe would extend along the road here It was not expected that the pipeline route would extend and then come back so this position was not covered by the utility survey This case was examined in court and this version of events was accepted I have talked about some worrying incidents, We are happy to see that the industry has been working hard with us, and with the passing of relevant laws as well as the implementation of our Code of Practice, the number of incidents has dropped steadily from over 100 in the past to less than 10 recently This is greatly encouraging I hope that our industry stakeholders will continue to work hard with us Thank you

VO: Thank You For Watching