2016年2月29日

上午10時05分恢復聆訊

出席人士： 石永泰資深大律師、許偉強大律師及鄭欣琪大律師，為外聘律師，代表食水含鉛超標調查委員會

王鳴峰資深大律師及陳樂信大律師，由律政司延聘，代表水務署署長

李柱銘資深大律師、吳思諾大律師及吳宗鑾大律師，由何謝韋、李偉業律師事務所延聘，代表啟晴邨及葵聯二邨公屋居民代表 Lee Pui Yi、Chong So Nga 及 Lui Hui Ping

何沛謙資深大律師，由羅夏信律師事務所延聘，代表香港房屋委員會

李頌然大律師，由顧增海律師行延聘，代表有利建築有限公司、明合有限公司及伍克明

許佐賓大律師，由的近律師行延聘，代表保華建築營造有限公司

孖士打律師行陳宇文律師，代表中國建築工程（香港）有限公司及瑞安承建有限公司

水務署第八證人：張業駒（水務署（客戶服務科高級工程師））宣誓繼續作供

石先生繼續盤問

問：張先生，星期五我哋討論緊一個問題，就係關於水務署對待 BSI 所出嗰個 Kitemark certificate 嗰個對待。

答：係。

問：個課題點解會即係討論呢一點呢？就係我問到你，你記得，即係而家係回緊帶，即係提醒番我哋，我哋嗰個 context，就係有一啲嘅部件係喺啟晴同埋葵聯嗰度嘅。

答：唔。

問：就實際係用咗一啲嘅部件，冇喺 annex 度 declare 過，但係嗰啲部件又實際上係 on 水務署嘅 approved list。

答：係。

問：但係嗰啲部件又釋出咗即係鉛份，而 check 過，佢哋含鉛量就係超過咗 British Standards，你記得呢個係嗰個問題嗰個背景？

答：記得。

問：我就問到你點解會有呢啲事情嘅咁樣，因為 on 你哋個 list 都已經驗咗出嚟會係超越咗 British Standards。你就講到就係即係現有嘅制度，即係水務署批嗰個 general acceptance 嗰個制度，就都有一啲即係我哋叫做講得中性啲嘅字眼，就係即係可以改善嘅，可以更加完善嘅地方，你記唔記得呢個係我哋討論緊嗰個背景？

答：係。

問：而家就有三種嘅文件，你哋係會接受作為水務署出呢個 general acceptance㗎喇？WRAS 同埋 lab test，呢個第二、第三種。

答：係。

問：WRAS，即係英國嗰方面嗰個證書嗰個 WRAS，就係有 validity date 嘅，對嘛？

答：係。

問：你提醒番我哋，你話你哋就會由嗰個 issue date 開始數幾多年話，你話係？

答：WRAS 其實我哋就唔跟 issue date，我哋跟 WRAS 本身個 expiry date，我哋會跟番 WRAS 嘅 expiry date，stay 喺我哋 Ga 度。即係換言之，...

問：得。

答：...嗰個 Ga 嘅 expiry date 同埋 WRAS 嘅 expiry date 係一樣。

問：好，得。即係某人攞張 WRAS 嘅 cert 畀你，你就會出一個 general acceptance，就 vaild up to WRAS 嗰張 cert 裏面嘅 validity date？

答：係，正確。

問：但係去到盡，就五年？

答：係，最多係五年。

問：去到盡五年？

答：因為其實 WRAS 最長亦係五年。

問：得。即係其實就唔會存在 WRAS 出一個七年，但係你就中間就淨係畀五年，係唔會嘅？

答：唔會。

問：WRAS 去到盡都係五年嘅啫？

答：WRAS 喺網頁其實 stay 最長係五年。

問：好，得，明白，咁 WRAS 擺埋一面，我哋。

答：係。

問：Lab test，佢可能某日攞--佢張 lab test 係 dated 某一日嘅，咁你就會由某一日開始計五年？

答：係。

問：所以佢攞一張五年前嘅 lab test cert 畀你就唔得？

答：唔得。

問：佢攞三年前嘅畀你，就會 issue 畀佢兩年，因為三加二等於五，係咪咁解？

答：係，正確，正確。

問：好嘞，講番 Kitemark。Kitemark BSI 我哋上次講過，就係 BSI 出嘅 Kitemark cert 係冇 validity date，因為佢係一個 ongoing 嘅一個 surveillance 嘅，對嘛？

答：正確。

問：但係你就話你哋同 BSI 就有個 understanding，就係話如果某個生產商佢提供嘅 Kitemark 嘅 certificate 係仍然在 BSI 嗰個網頁裏面 as 一個 valid 嘅 Kitemark cert 嘅話，BSI 就話你可以出一個 valid for 三年嘅 general acceptance 畀佢，係咪？

答：係，呢個係 BSI 畀我哋嘅 advice。

問：好，佢畀你嘅 advice。咁但係呢個 advice 我上次就同你--即係禮拜五下晝臨完之前，就我哋探討一個問題，就係咁點都會有一個--即係潛在嘅一個空隙，有個空罅喺度嘅，就係因為 BSI 佢嗰個 surveillance 嗰個，所謂一個 general auditing 嗰啲咁嘅檢測，佢其實係一個 ongoing 嘅步驟嚟，對嘛？

答：係。

問：佢冇話「我每三年一定會做一次嘅。」可能佢今日出咗個 Kitemark certificate，嗰個生產商攞張 Kitemark certificate 入嚟畀水務署，水務署 check，仲係 on 個 register，咁你就信佢，就話「我 issue 三年。」

答：係。

問：但係可能出咗三年呢個 cert，譬如話你今年出，valid until 2019 年。但係可能 2017 年嘅時候，BSI 走去 inspect，或者走去即係叫做 audit 下我哋叫做，嗰個生產商嘅生產線，或者一切有關呢個佢嗰啲制度、系統，發覺「咦？唔對路嘞。」佢就 withdraw 咗呢個生產商嘅 Kitemark 嘅 certificate。所以喺 2017 年嘅時候，可能呢一個生產商呢一件貨，已經唔可以係 subject to 一個 Kitemark 嘅 certification？

答：有可能。

問：但係你哋喺 2016 嘅時候，就信佢 2016 年嘅時候，Kitemark cert 出咗一份三年 valid 嘅 general acceptance，valid up to 2019 年喎，所以你 2018、2019 年嘅時候，你仍然 rely upon 即係一個 2016 年出嘅 Kitemark cert 或者一個 general acceptance。咁嗰橛時候，就可能有個錯配，就係你哋個 Ga cover 咗嘅時間，就係嗰個部件或者個生產商係唔 subject to Kitemark certification 嘅，你接唔接受有呢個可能？

答：係，接受。

問：接受。但係即係呢一個咁嘅空隙又有咩解救，你覺得？

答：其實咁，Kitemark 嘅 product 通常係比較 international 嘅大公司會採用，因為佢嘅成本係比較貴。

問：唔。

答：我哋 come across 嘅大部分嘅 British Kitemark 嘅 product，佢都係比較 common，包括係大部分嗰啲銅喉或者銅配件，咁佢哋好多時就--我哋睇番佢哋大部分嘅 issue date 都係比較長時間。咁因為 Kitemark 我頭先都講過，佢係一個 continuous monitoring 嘅，其實喺個過程裏面，佢亦會考慮，一路會睇番嗰間公司嘅個 quality control，同埋會唔會--即係應該會 reflect 番最新 British Standards。咁其實我哋理解，其實佢會突然間 disappear 嘅機會唔大嘅，因為我哋睇番好多時好多 product 都係十幾、廿年前，已經開始 refer issue date，一路去到今時今日。

問：唔，唔。

答：當然我亦講過係會，即係根據而家嘅機制，好似你頭先話齋有機會出現。但係我哋亦同 BSI 傾過，BSI 其實即係佢哋點解能夠 advise 一個三年，就係佢哋覺得即係有信心，即係話一個 recommended guideline。因為我哋無論咩嘢情況下都有機會，譬如咁講，我如果佢係入個 form 46 畀我哋，今日我哋 check 到佢係有 on the list 嘅，咁我哋就批咗佢用㗎嘛，咁冇可能我哋要要求佢每日 install 之前...

問：係，冇錯，係，係。

答：...我都要 check，咁即係呢個問題始終都出現。

問：係。

答：咁我哋亦要有一個實際可行嘅安排畀個業界去適應，去 adapt，冇可能我哋話「啊，今日我批咗你，你裝之前，我發覺你 out of the list 嘅，咁我就 reject 你，唔畀你再用。」

問：唔，唔。

答：咁同埋一樣嘢，就話 BSI 亦會一路睇緊嗰樣嘢。如果我哋發覺真係喺個市場係有啲 complaint，或者咩嘢話邊隻 product 係有問題嘅

話，我哋會去 verify 番，同埋我哋會因應嗰個 product 會再 BSI 傾傾，究竟佢--confirm 番。我哋現有嘅機制，Ga 係我哋隨時可以因應如果個 product 唔係 comply 嘅，咁我哋可以攞番佢，...

問：Rebook。

答：...withdraw 個 Ga 嘅。咁呢樣嘢即係其實三年，只係其實係畀--如果你睇番 WRAS，譬如一個 lab test 係五年，其實我哋而家三年，其實比 WRAS 係...

問：短。

答：...短，同埋係畀個機制我哋去再 review 番，究竟呢個 product 係咪 still on 嗰個 BSI Kitemark。

問：唔，唔，得。咁同埋我諗你都會話，「你係咪打底 by default，你都要 fulfil BS㗎喇。」咁你會咁講喇？

答：係嘞，係嘞，係。

問：雖然如果個承建商或者個 contractor，如果你話佢冇 fulfil BS 嘅話，可能佢會返轉頭，即係作為 mitigation，就會話「喂，唔係喎，我盡晒力個囉喎，我畀晒啲嘢你，咁都甩咗轆，咁冇辦法喇。」咁可能有呢啲咁嘅爭拗，點都會有嘅，係咪？

答：（沒有可聽到的回答）

問：Okay。我到最後，我有一個問題就想問一問你嘅，就係關於好細嘅一點嚟，你嘅證人供詞嘅第 27 段，bundle 嘅 13792。你裏面就提到，就係關於 water sampling 同埋 test，water test near the connection points 嗰個 purpose，就係要嚟防止 contamination caused by 一個 backflow（倒漏）；同埋就話 "water testing at the inside service ... is to check the effectiveness of cleansing and disinfection of the inside service."

跟住你就 refer to 你有個 Annex 2，你嘅 Annex 2 就喺 13802 頁。13802。

答：唔。

問：其實陳健民先生都講過，但係即係我亦都想即係大家對照下，cross-check 番嘅啫。你就話"As a routine procedure, samples are taken for tesing from consumer taps on random basis..."

呢個我哋而家唔係講緊 connection point 嗰 part 嘅驗水。

答：唔。

問：Connection point 嗰 part 驗水，我哋都知道即係出事之前，就係驗八個 parameters，就係要嚟--即係目的就係防止倒漏嗰個即係污染個情況。呢度就係講緊出事之前，喺 inside service 裏面有啲乜嘢驗水嘅可能咁。

你就話"on random"--"from consumer taps on random basis for checking microbial safety and general chemical quality..."呢個就係你嘅字眼就叫做"from consumer taps on random basis"。你跟住嗰句，你就話"and consumer taps at fixed strategic locations to verify the chemical quality of treated water in compliance with the Guidelines including lead and other heavy metals..."

你呢一度係講緊兩 part 嘅驗水，係你驗 inside servcie 嘅 tap，對嘛？對嘛？

答：係。

問：第一種，你嘅字眼叫做係"testing from consumer taps on random basis"，呢個就唔係驗呢個金屬嗰啲咁嘅，呢度就係驗即係微生物，或者一啲一般性嘅安全嘅，呢度就唔包鉛嘅，係咪呀？呢 part。

答：老實講，...

問：呢一句。淨係講咗一句。

答：呢個 random water sampling testing，就其實係陳健民先生佢哋嗰個 division 負責嘅，我哋只係負責一個 new work 嘅啫。即係話...

問：負責咩嘢？

答：Newly completed 嘅 inside service。

問：係。

答：呢度就唔係包括嗰方面嘅。咁所以嗰個 detail，我就...

問：呢個唔包括 newly...

答：唔包括，呢個係指我哋 routine，Water Science 個 division 裏面去做嗰啲 water sampling 嘅 testing，所以就係我哋冇--我個 division 係冇 involve。

問：Okay。即係呢一 part 就係唔係話講入伙前咩嘢要做嘅嘢？

答：唔係，唔係。

問：呢個可能係入咗伙之後，可能佢有啲 random 嘅 spot？

答：係。

問：或者佢後面有一句，就叫做有啲 fixed strategic location？

答：係，嗄。

問：呢啲全部都係入伙後嘅，呢個就唔係一個先決條件嚟嘅？

答：唔係，唔係。

問：呢個可能係一個 ongoing 嘅 monitoring 咁樣？

答：係。

問：但係以你嘅理解，就即係 random basis 也好，或者 fixed strategic location 也好，都唔係話要即係入嗰啲住戶嘅屋裏面嘅，係咪以你嘅理解？

答：諗...

問：可能係一啲外面嘅一啲即係公廁或者係商場嘅水喉，係咪以你嘅理解？

答：我聽陳生提及過係類似，即係話能夠 access 得到嘅地方。

問：得，嗄，好，唔該晒。

石先生：我冇其他問題。

主席：唔該。請問有冇人有嘢想問張先生？

何先生：主席，我都攞一個 marker，我冇問題。

主席：好呀，好呀，得，唔該。冇人有嘢問。

好，唔該晒你，好。

答：唔該晒。

主席：唔該晒，走得。可以離開。

王先生：主席，我哋下一個證人係周世威先生。

主席：邊個？

王先生：下一個證人係周世威先生。

主席：係，得，好。

王先生：主席，我有一樣嘢想向你申請。

主席：係。

王先生：因為周世威先生，其實我哋而家就因應個 counsel of for 個 Commission 有個 enquiry about 有啲資料就想補充嘅，咁我哋而家其實通過周世威先生有個 supplementary witness statement。

主席：好呀。

王先生：但係佢應該係今朝簽，但係佢而家未簽嘅。

主席：哦，唔緊要。

王先生：咁我讀咗佢第一個先，好唔好？

主席：好呀。

水務署第九證人：周世威（水務署（總工程師／發展１））以本地話宣誓作供

王先生主問

問：周先生，你面前應該有一份你嘅證人口供嘅。

答：係。

問：我會讀出你嘅證人口供先嘅。

答：好，唔該。

WITNESS STATEMENT OF CHAU SAI WAI

I, CHAU Sai Wai, Chief Engineer/Development (1), Development Branch of the Water Supplies Department ("**WSD**"), of 45th Floor, Immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong, do say as follows:-

2. I was the acting Assistant Director of the Development Branch of the WSD, and had held this post from 16 July 2015 to 19 January 2016. During the aforesaid period, my duties included overseeing the functions of the Development Divisions, which include, amongst other things, formulation and review of the Total Water Management Strategy, asset management, staff training, and research and development, and the functions of the Water Science Division on water quality control and monitoring. I am duly authorised by the Director of Water

Supplies to make this statement, to provide further information to the Commission on the following matters:

(i) Research and development ("**R&D**") in WSD;

(ii) WSD's knowledge of the excess lead in drinking water incidents in Scotland and Wales; and

(iii) Advisory Committee on the Quality of Water Supplies ("**ACQWS**") Paper No.7 and WSD's knowledge of the United States Environmental Protection Agency's ("**USEPA**") Leaflet "Lead in Your Drinking Water".

R&D in WSD

3. In view of the multi-disciplinary nature of WSD's business in civil engineering, water science, and mechanical and electrical disciplines, relying on just one individual division/unit to keep WSD abreast of the latest development of international standards and practices in the water industry is not considered to be a practical approach to support WSD's work. Thus, individual disciplines of WSD have been contributing to the R&D in areas falling within their respective remits in the department. Further, updated knowledge may be acquired through participation in international conferences, experience sharing, visits to other countries and international magazines and journals.

Overview of R&D work by different disciplines

4. A brief account on R&D work in individual disciplines in WSD is as follows.

(i) Civil Engineering Discipline

5. A dedicated team (comprising one senior engineer and two engineers) in the Research and Development Unit ("**RDU**") of the Development Branch of WSD has been deployed since 2002. It primarily focuses on exploiting new water

resources and enhancing water efficiency. The RDU, supported by outside consultants and universities, has over the years conducted studies related to exploration of water resources. Examples of topics studied into are reclaimed water, grey water reuse and water conservation initiatives including new Water Efficiency Labelling Scheme (WELS) products to combat against the impact of global climate change.

6. In parallel, the New Works Branch of WSD has been tasked to enhance standard designs, drawings and specifications for the civil engineering parts of the waterworks in (a) the delivery of capital works projects, such as the territory-wide replacement and rehabilitation of water mains programme, and provisioning or extension of water treatment works; (b) addressing feedback from operational Regions over problems encountered in operation and maintenance of waterworks; and (c) aligning with relevant latest international standards. Relevant studies are conducted either by in-house officers or consultants. Examples are: (a) development of various replacement and rehabilitation methods for government water mains; (b) exploration of advanced water treatment technologies such as ozonation, biological filtration, dissolved air flotation clarification and ultraviolet disinfection adopted for design of water treatment works; (c) adoption of epoxy coating as corrosion resistant coating on both internal and external protection to steel pipes and ductile iron pipes; (d) adoption of more durable black polyethylene pipes and stainless steel pipes for above-ground exposed connections with the saltwater and freshwater systems respectively to guard against corrosion; and (e) migration to Eurocodes for the structural design of reinforced concrete waterworks structures (such as pumping stations and service reservoirs) from British Standards when the former was made mandatory in the European public works.

7. Similarly, the Technical Support Unit of the

Customer Services Branch of WSD has been deployed to review the design of plumbing configuration whilst addressing, amongst other things, the prevention of contamination of the government water supply system through backflow at the connection point from these systems. Recent reviews have been conducted with assistance from consultants, such as the study on an improvised hose reel system for fire service system in existing low-rise buildings due to insufficient space and structural constraints for installation of conventional fire service tank.

8. There are four operational Regions in the Operations Branch of WSD which undertake the operation and maintenance of waterworks installations in their respective operational Regions. In terms of R&D, they at times conduct studies with a view to enhancing the operation and maintenance of waterworks facilities. Examples of studies supported by local universities are: (a) application of ultrasonic wave to control algal bloom in Plover Cove involving laboratory-scale study and on-site study for evaluation of its feasibility and effectiveness; and (b) characteristics and formation mechanisms of solid deposition and marine growth within salt water mains in Hong Kong with a view to enhancing the durability of the salt water mains. The operational Regions also feedback their experience in operation and maintenance of the waterworks to the New Works Branch for any necessary enhancement of the corresponding design.

(ii) Water Science Discipline

9. The Water Science Division of the WSD is responsible for generally keeping abreast of local Hong Kong and international-level R&D on water science aspects including updates on pertinent water quality issues reported by the World Health Organization (**"WHO"**). New information on water safety and background documents for review of WHO guideline values are usually published on WHO's website. WSD periodically monitors WHO's website for new information and relevant background documents.

Further, the Chief Chemist subscribes to WHO's Water, Sanitation and Health newsletter to keep – track of developments. I understand that, as far as WSD is aware, there has not been any alert from WHO regarding the presence of excess lead in water arising from illegal use of leaded solder.

10. One notable example of the R&D work undertaken by the Water Science Division is the R&D of the zebrafish water quality monitoring system (Biosensing Alert System). The idea was triggered following reports in international chemistry related journals about the increasing use of zebrafish as a model organism in scientific and medical studies because of high degree of genetic similarity to humans and the sensitivity to aaminants of zebrafish. Another example is the development of a customised olfactometer by the division to enhance the efficiency of taste and odour detection in raw and treated water.

(iii) Mechanical & Electrical ("M&E") Engineering Discipline

11. In 2012, the Technical Development Unit was established under the M&E Branch to oversee R&D work and provide technical advisory and support services to other branches and divisions of the Department in developing new initiatives and business developments. It provides all-embracing solutions and coordinated services to the branches/divisions so as to ensure an up-to-date and efficient application of state-of-the-art technologies throughout the water supply system. Examples of work done by the Technical Development Unit include a wave-powered self-cleansing device at the intake screen of seawater pumping stations to prevent growth of marine organisms thereon, a hydro-power plant at water treatment works to capture energy for use by the treatment plant, genetic algorithm with support from an overseas university for saving pumping cost, an inline hydroelectric generating system with support from a local university for generation of electric power from water flow in pipes for operating instruments such as flowmeters, and a pilot project of

the Automatic Meter Reading (AMR) system to support water conservation. Other measures to keep abreast of international developments

12. On top of the above, WSD also keeps itself updated on the latest technology and enriches its knowledge of overseas developments and international practices in the water industry through:

(i) Participation in events/international conferences organised by international water associations and professional institutions, including the International Water Association ("**IWA**") and the Chartered Institution of Water and Environmental Management, a UK-based institution;

(ii) Experience sharing, visits, study tours and job attachment programmes organised with other water authorities such as the Public Utilities Board of Singapore;

(iii) International magazines, journals and publications covering a variety of relevant topics including hydrology, water treatment, water security, water reuse, water quality, network management, asset management and water conservation etc.; and

(iv) Arrangement of technology transfer workshops delivered by outside consultants for exchange of knowledge with WSD.

13. Through the above channels and internet research conducted as and when necessary, WSD maintains its alertness to significant internationally resonant water quality issues. An example is the massive outbreak of cryptosporidiosis in Milwaukee, Wincosin, USA in July 1993, which was reported in reputable professional journals, such as the American Water Works Association

Journal. The event affected over 400 000 residents and resulted in the death of over 100 people. In view of the significant public health risk, the Water Science Division proactively trained staff and developed a complex technique for analysis of cryptosporidium and giardia (**"C&G"**)[1] and started monitoring C&G in treated water in 1997. Time and again, there have been reported sporadic outbreaks of cryptosporidium in public water supply in other countries, such as Sydney in 1998. The Water Science Division reviews the causes of the outbreaks and their relevance in the context of Hong Kong, assesses the relevant risks in Hong Kong, and steps up preventive measures as necessary. Although the WHO has not established any guideline value for C&G, WSD currently monitors C&G in raw water including Dongjiang water and reservoir water, and treated water from major water treatment works to safeguard the quality of water supply.

Identifying areas for improvement through monitoring local water quality

14. WSD has all along been vigilant in maintaining local water quality and constantly keeps watch for any irregularities and areas for improvement through the following three-pronged approach.

(i) Handling enquiries/complaints

15. WSD receives an average of about 180 enquiries/complaints per month in the past three years from the public on water quality. For each complaint, WSD acts promptly to investigate the possible cause(s) of the problem, including taking water samples for examination where necessary, and responds accordingly. Through handling these complaints and implementation of responsive control measures, coupled with knowledge gained on overseas and international developments as mentioned above, WSD is able to identify whether there are enhancement measures which may be implemented on the government water supply system.[2]

16. Notable examples are (a) improvement measures to prevent misconnection of the internal fresh and salt water mains within large developments promulgated since 1997; (b) the development of rapid method for identification and enumeration of algal species and Taste and Odour ("**T&O**") detection after 2010; and (c) enhanced guidance given to consumers regarding the cleansing and disinfection of inside service arising from bacteriological concerns since 2012.

(a) Improvement measures to prevent misconnection of the internal fresh and salt water mains within large developments

17. In 1997, an incident of wrong connection of the internal fresh and salt water systems within housing estates in Ma On Shan occurred as a result of Contractor not having carefully differentiated the two systems before the connections were made. In that case, the fresh and salt water mains were of the same size and same pipe material. Upon reviewing this incident, WSD considered that this arrangement was prone to cause confusion in pipelaying and connection work. To avoid connecting fresh water pipe to salt water pipe by mistake in the future, the Water Authority ("**WA**") issued WSD Circular Letter No. 1197 [COI Ref: C3/P2385-2386] to remind relevant stakeholders to closely observe various good practices, which are by now well established in the plumbing trade. In essence, two key measures were introduced. Firstly, different pipe materials and/or different sizing for the fresh and flushing water mains should be used as far as practicable so that each of the two pipe systems can be easily identified and distinguished from the other on site. Further, a step-by-step planned operation procedure and test methods such as chemical tests should be carried out to identify and distinguish each of the two pipe systems before connecting to the internal fresh or flushing water mains.

(b) Rapid method for identification and enumeration of

algal species and T&O detection

18. WSD's participation in international conferences and overseas training has kept it in pace with overseas challenges and solutions to tackle well-documented water quality issues including algal growthdueto eutrophication in impounding reservoirs and its associated T&O problems in the water supplies. In August 2010, WSD received an influx of customer complaints on T&O in drinking water. In following up on these complaints, WSD found that the unpleasant T&O was caused by the presence of an organic chemical named...

王先生：Mr Chairman, can I skip that two words.

...(blue green algae) or a type of bacteria called as...

王先生：I would skip this, Mr Chairman.

...Notwithstanding that the T&O incident was quickly addressed after necessary control measures implemented by WSD, the Water Science Division carried out studies on algal counting techniques for rapid identification and enumeration of algae and T&O detection technique in 2011. Based on the findings, a rapid method for identification and enumeration of algal species and T&O detection were developed for more effective control and management of water quality. The Water Science Division continuously exchanged views on the issues related to algal growth and shared the findings of its studies with other water professionals through participation in conferences in subsequent years, such as Shenzhen-Hong Kong-Zhuhai-Macau Water Supply Seminars in 2011 and 2013.

(c) Cleansing and disinfection of inside service due to bacteriological concerns

19. Prior to August 2012, to guard against possible pollution to the government water supply system by inside services, the WA required water samples to be taken near the connection point for compliance testing against 8 parameters[6] as a condition precedent to effecting water supply. In light of the detection of Legionella bacteria at the newly completed Tamar Central Government Offices in late 2011, WA issued a guideline via WSD Circular Letter No. 2/2012 in August 2012 [COI Ref: C3/P2215-2222] on cleansing and disinfection of inside service and taking of water samples from the inside service in addition to the connection point for testing. The testing parameters for the additional water samples are the same as those for the water samples taken near the connection point.

20. Not withstanding that satisfactory test results of these additional water samples were not a condition precedent to effecting water supply, the guideline served to provide assistance and encouragement to the relevant licensed plumbers and authorised persons to arrange for proper cleansing and disinfection of the inside service which is to be confirmed by the water sample test results before the inside service was put into operation. For further details, please refer to the 1st Witness Statement of Mr. LAM Ching Man, Assistant Director/Customer Services [COI Ref.: C19.5/P13471-13515].

21. In the 3 years before the lead-in-water incident in July 2015, the water quality related complaints were mainly related to issues such as aesthetic and taste and odour problems etc. As far as I am aware, based on WSD's available records, no complaints related to excess lead in water have been received by WSD throughout the years.

(ii) Water quality monitoring regime

22. Secondly, as part of the three-pronged approach

mentioned at paragraph 14 above, and as set out in the 3rd Witness Statement of CHAN Kin Man [COI Ref.: C19.1/P10498-10708], WSD has implemented a comprehensive water quality monitoring regime through an extensive water sampling programme throughout the territory. Irregularities for improvement as regards the effective protection of the government water supply in Hong Kong could be identified through the monitoring. Since 1994, WSD has pledged to and been able to supply water which complied fully with the WHO Guidelines up to connection points. To promote transparency, WSD has published these monitoring results in WSD website since 2000.

(iii) Opinion Surveys

23. Thirdly, WSD conducts an Opinion Survey on Water Supplies Services every five years, in which customers are invited to express their views on matters such as the water quality in terms of clarity, odour, taste and purity of fresh water. In the last survey conducted in 2012, the majority of customers were satisfied with the overall quality of fresh water. Close to 70% of them expressed a high satisfaction level on the overall quality of fresh water.

WSD's knowledge of the excess lead in drinking water incidents in Scotland and Wales

24. The two excess lead in drinking water incidents in Scotland and Wales, referred by counsel for the Commission during the hearing on 2 November 2015, had not previously caught WSD's attention before the discovery of excess lead in drinking water. Indeed, after the lead-in-water incident in July 2015, WSD has also conducted some internet research on similar incidents.

25. WSD's internet research identified the Scotland incident and hence, at the time of the preparation of the booklet "Hong Kong's Water Supply - Reducing Lead in Drinking Water" (COI Ref.: A1/P809-820) issued by the Hong

Kong government in August 2015 to enable the public to have handy information on relevant topics, WSD duly informed the public that "based on the experience of other countries, excessive lead in water can be caused by the inadvertent or illegal use of substandard pipes and fittings".

Background

Scotland (1999)

26. In 1999, in the small Glasgow town ofUddingston, the water supply at a new house was found to be contaminated by leaded solder as a result of an investigation on the sickness of a child living in the concerned house with unexplained symptoms. A subsequent random survey by the British Broadcasting Corporation (**"BBC"**) on 95 new homes in the West of Scotland showed that 10 of them had levels of lead in the water supply over the legal limit of 50µg/L.

27. After the discovery of the event in 1999, the Scottish Executive Health Department (**"SEHD"**) funded the Scottish New Homes Lead Survey (Stage 1) to determine the extent of use of leaded solder which had been banned for connecting copper pipes used in drinking water plumbing in newly built houses. 661 houses were tested in the Stage 1 survey. On the basis of the Stage 1 survey results, the SEHD initiated a publicity campaign in Scotland to alert consumers to the risks oflead in drinking water. Changes were also made to the Water Bylaws, to increase the penalty for contravening the ban on the use oflead, including leaded solder, on domestic water plumbing systems. SEHD funded further work to investigate the implications of the findings from Stage 1. The Stage 2 survey was conducted to investigate further the use of leaded solder and assess the exposure of occupants to waterborne lead in affected houses.

28. Through WSD's contact in the IWA and research after the discovery of the lead-in-water incident, WSD

understands that there were no further follow-up actions taken by the Scottish Government after the issuance of the Report for the Stage 2 survey, except the issuance of publicity materials to the public and publishing reminders to building industry/plumbing industry via trade organisations about the use of lead free solder.

Wales (March 2007)

29. Despite the close proximity between Scotland and Wales, the above incident in Scotland did not appear to have drawn any attention in Wales. In March 2007, in North Wales, following a complaint by a resident of "cloudy tap water", water samples were obtained from the kitchen tap at a house in a new residential development in Anglesey. Tests of tap water in this house found a very high lead level (205µg/L) compared to the standard (25µg/L). Analysis of the solder sample taken from the kitchen tap pipework at this property confirmed that the solder comprised 61% lead. More samples were taken from the 12 houses within the development. Results of water samples taken showed high lead levels in at least one water sample in 12 of the 13 sets of sampling results.

30. Dwr Cymru Welsh Water (a water company in Wales) subsequently included in its routine inspections of newly built properties (inspecting 5% of new build residential properties and all commercial properties) a "lead-check" swab test for the detection of leaded solder on the drinking water plumbing and services, and continues to carry out random lead sampling on new developments.

Lack of international attention to both incidents

31. To the understanding of WSD, these 2 incidents at Scotland and Wales were regarded as local news only, without leading to (i) major reporting in leading international magazines and/or journals published by international water associations and professional institutions; (ii) widespread attention of leading

international organizations, including the WHO, one of whose essential functions is global co-ordination and communication in respect of significant health issues; and (iii) actions by other governments (which are close to Scotland and Wales, such as England).

(i) Leading international magazines and/or journals

32. The Scottish event *could* not be located in any headline or feature stories in leading international journals and magazines related to WSD's disciplines, such as American Water Works Association Journal and Water 21 issued by IWA.

33. Similarly, the Welsh event could not be located in any headline or feature stories in reievant leading magazines I journals subscribed by WSD. WSD noted that an article on the Welsh event referred by the counsel for the Commission during the proceedings on 2 November 2015 was published in June 2011, more than 4 years after the discovery of the Welsh event in 2007, in the Journal of Environmental Health Research [COI Ref.: Al/P190-197] by the Chartered Institute of Environmental Health. WSD understands that the said journal covers a range of issues in the field of public and environmental health, such as occupational health and safety, environmental protection, health promotion, housing and health, public health and epidemiology, environmental health education, food safety, environmental health management and policy, environmental health law and practice, sustainability and methodological issues arising from the design and conduct of studies etc. Given the considerable difference in focus of this journal and WSD's duties, WSD has not subscribed to the concerned journal.

(ii) Attention by International Organizations

34. Further, as earlier noted, large organizations with international reach including WHO did not draw attention to these 2 incidents, such as through updating its

Guidelines on the control of leaded solder.

35. In respect of WHO, in its 1984 version of the Guidelines for drinking-water quality, it stated that chemicals in drinking-water derived from construction materials (including pipe materials) were best controlled by appropriate specification and application of regulations rather than the quality of the water. In its 1993 version of the Guidelines for drinking-water quality, there was not much deliberation on the approach to the control of lead other than proposing corrosion control and remedy by removing plumbing and fitting containing lead. The Scottish event happened in 1999. In 2004, WHO started to introduce in its 2004 version of the Guidelines the concept of Water Safety Plan which adopted a preventive risk management and multi-barrier approach to assure the safety of water supply. In its 2006 version of the Gui·delines, insofar as chemicals (including lead) from materials in contact with drinking water are concerned, WHO recommended the approach of control through regulation and approval of materials. Particular alerts or recommendations on enhanced measures regarding the use of leaded solder could not be found.

36. The 2007 Welsh event took place after the 2006 version of the Guidelines was published. The WHO published its 2008 and 2011 versions of the Guidelines respectively one and four years later. In both the 2008 and 2011 versions of Guidelines, the aforesaid recommended approach of control over chemicals remained unchanged. There were no additional measures in tightening up the control on the use of leaded solder in the 2008 and 2011 versions of Guidelines, or any highlighting of any associated risks. A summary of extracts from the 1984, 1993, 2004, 2006, 2008 and 2011 versions of WHO Guidelines in relation to control of chemicals in water is appended in **Annex 1**.

(iii) Responses by other governments (which are close to Scotland and Wales)

37. According to the City of Edinburgh Council, after the Scottish event in 1999, the local municipality-Edinburgh council (instead of Glasgow) stated that they were the only local authority in Scotland which required the submission of a water quality test certificate to confirm the absence of leaded solder for new buildings.

38. In 2000, the Drinking Water Inspectorate (**"DWI"**)[7] in the Britain updated an Information Leaflet titled "Lead in Drinking Water" as may be found at Annex 2. This was after the Scottish event in 1999. It explained how residents in a household could find out if lead was in drinking water and what could be done to reduce lead levels. The leaflet put emphasis on the issues stemming from lead pipes and recommended residents to replace them by copper or plastic pipes. There was no warning to hazards and/or illegal use of leaded solder in jointing copper pipes.

39. The occurrence of the incident at Scotland in 1999 also did not prompt the drinking water authority in relatively nearby Wales to step up its control measures on leaded solder until the occurrence of the Welsh event in 2007. In addition, the Welsh event was not classified as an "incident" by the DWI in connection with any of the drinking water quality "incidents" that occurred in England and Wales in 2007[8]. An "incident" is defined by DWI as an event affecting or threatening to affect drinking water quality[9].

40. Further, as far as WSD is aware, England itself has neither stepped up the existing regulatory actions nor tightened up monitoring regimes in response to both incidents.

41. In any event, as far as WSD is aware, these 2 incidents did not result in a high level of attention or regulatory action from the governments of the adjoining towns and countries in the Great Britain.

ACOWS Paper No.7 and WSD's knowledge of the USEPA Leaflet

"Lead inYour Drinking Water"

42. The ACQWS Paper No.7 (**"Paper No.7"**) was prepared in response to the request from the then Secretary for Works to propose a number of strategies for enhancing the entire water supply system such that Hong Kong citizens could have confidence in drinking high quality water directly from their taps. At that time, according to customer complaints, corrosion of the internal surface of the unlined Galvanised Iron (GI) pipes remained as the main cause of discolouration of drinking water in Hong Kong albeit the abandonment of their use in plumbing applications received after 23 December 1995. Another cause of water quality problems at that time was unclean water tanks and water pumps due to poor maintenance, normally the sump tanks at the base of buildings and the roof tanks. In the course of preparation of Paper No.7, it was considered useful to amongst others, carry out research to the water quality problem and maintenance practices in existing buildings in overseas countries, such as the UK and USA.

43. Against the above background, Paper No.7 was prepared with the focus of concern on the proper maintenance and cleansing of the plumbing system of existing buildings. Based on the literature research at that time, lead pipes and leaded-solder copper pipes were widely used[10] in the UK and USA during their development stages and consequently the most common problem was the presence of lead in water at the material time. In contrast, the use of leaded pipes was banned in Hong Kong since as early as 1938, followed by the ban of leaded solder in 1987. Further, before the ban of unlined GI pipes in December 1995, unlined GI pipes were commonly used in Hong Kong for fresh water inside service in the then existing buildings. Given the different historical backgrounds, the risk of presence of lead in water in the UK and USA had no direct application to Hong Kong.

44. The USEPA's leaflet "Lead in Your Drinking Water"

[COI Ref.: A1/P399-402] issued in 1993 was referred by counsel for the Commission during the hearing on 2 November 2015. According to WSD's available records, the said leaflet was within the research materials leading to the preparation of Paper No.7. Be that as it may, as mentioned, at the time, the interest and focus of Paper No.7 was on the proper maintenance and cleansing of the plumbing system in existing buildings.

45. Indeed, towards this end, it was suggested in the Paper No.7, amongst others, a strategy to require consumers or their agents to employ Licensed Plumbers or registered plumbing contractors to arrange for periodical checking and submit inspection reports to WSD, with a view to addressing the water quality issues as mentioned in paragraph 42. ACQWS members had different views to this strategy during the discussion of Paper No.7 at the 3rd ACQWS Meeting on 15 January 2001 [COI Ref.: G2/P644-653]. In particular, a member expressed great concern on the strategy including chemical and bacteriological analyses as statutory requirements as there might not be enough accredited laboratories to do the required tests and the tests might be very expensive. He suggested that WSD should look for the minimum requirements and members agreed on the meeting (as recorded at paragraph 6.5.5 of the minutes of the above meeting).

46. I confirm the contents of this Witness Statement to be true to the best of my knowledge, information and belief.

Dated this 27th day of January 2016.

問：周生，你見到你個簽名，係咪？

答：係。

問：你可唔可以確認呢個證人口供入面嘅內容係真實無誤？

答：可以。

問：Okay。你願意將呢個證人口供作為你嘅主問證供嘅內容？

答：係。

問：Okay。

王先生：主席，我冇其他補問。Subject to 仲有一個 additional supplementary witness statement，我哋...

主席：讀埋佢。

王先生：嗰個未 ready，佢要簽。

主席：哦，未 ready 呀。

王先生：佢要簽。

主席：未簽，唔使簽，adopt 咪得囉，口講都得㗎。

王先生：應該係準備好，睇佢簽名應該係。或者 stand down 一陣間，好唔好？

主席：嗄，讀咗出嚟先喇。

王先生：可唔可以 stand down 五分鐘？

主席：好，咁我哋休息二十分鐘。

<u>上午 10 時 55 分聆訊押後</u>

<u>上午 11 時 18 分恢復聆訊</u>

出席人士如前。

<u>水務署第九證人：周世威（水務署（總工程師／發展１））宣誓繼續作供</u>

王先生繼續主問

王先生：主席，我而家讀埋第二份證人口供。

主席：好呀。

2nd WITNESS STATEMENT OF CHAU SAI WAI

2. I am the same person who made the 1st Witness Statement of CHAU Sai Wai dated 27 January 2016. I make this 2nd Witness Statement, to provide further information on the following issue arising from the hearing as requested in a letter from Messrs. Lo & Lo to the Department of Justice dated 24 February 2016.

3. The issue which requires further information covered in this statement arises from the hearing on 23 February 2016 (see p.88 of the Chinese transcript). It concerns WSD's knowledge on incidents related to use of leaded soldering materials since 1980s.

4. The use of leaded solder has been prohibited in Hong Kong since 1987. The prohibition was a result of the adoption of the updated British Standard at the time. It was not a response to excess lead in drinking water incidents elsewhere.

5. Prior to the lead-in-water incident in July 2015, WSD did not learn of any single major overseas incident about the illegal use of leaded solder. For details, please refer to my 1st Witness Statement dated 27th January 2016.

6. Notwithstanding, it is a fact that prior to the incident, the WSD and indeed licensed plumbers were aware of the need to use lead free soldering materials.

7. However, given the monitoring system (involving LPs and APs) in place in Hong Kong, prior to the incident,

WSD did not consider there to be any real risk of illegal use of leaded soldering materials.

8. I confirm the contents of this 2nd Witness Statement to be true to the best of my knowledge, information and belief.

Dated this 29th day of February 2016

問：周生，呢個就係你嘅第二份證人口供？

答：係。

問：你確認個內容係真確無誤㗎嘛？

答：係，確認。

問：Okay。你都願意將呢個作為你嘅主問證供嘅一部分？

答：好。

王先生：好，主席，我冇其他問題。

主席：唔該。

<u>許偉強先生盤問</u>

問：周生。

答：係。

問：睇番你個證人口供，或者我哋睇下你第一份先。

答：好。

問：即係C21嗰度嘅。

答：係。

問：第2段都係講番你嗰個工作背景。

答：係。

問：就我哋都知道你喺2015年7月開始，大概一路有半年嘅嘅時間，就作為嗰個acting assistant director，係咪呀？

答：冇錯。

問：咁就唔知好彩定唔好彩，就係...

答：呢個經驗嚟嘅係一個。

問：...啱啱即係個鉛水。

答：呢個經驗嚟㗎喇。

問：係嘛？

答：係。

問：咁之後就你開始做嗰個acting assistant director？

答：係。

問：我想問一問你，即係背景咁睇，你喺嗰個Development Branch做咗幾耐左右？

答：我喺Development Branch都做咗幾年，最早就係做呢一個高級工程師，就係資產管理，asset management。

問：係，係。

答：其後，就係調咗去就係新界東區，就係做呢一個總工程師，就係2013年1月。

問：係。

答：其後，就係返番2014年7、8月嘅，就返番去呢個發展1部，發展1部，都係喺呢個發展科下面。

問：係。

答：咁發展科下面就係有發展 1 部、發展 2 部，同埋呢個水質科學部，即係基本上係三個 division 咁樣。

問：明白。

答：就係 14 年 7、8 月嘅，就返番去發展 1 部。咁發展 1 部個主要工作基本上就係都係頭先講過，就係話嗰啲資產管理、漏損管理，漏損管理其實即係基本上係 water lost management，咁而家就係我哋推行緊就係智管網，咁都係其中一個產物嚟咁樣。

問：係。

問：就另外亦都係期間，就係做過一啲 water conservation，即係呢個節約用水嗰啲工作。

問：節約用水，唔。

答：其後，就 7 月嘅時候，就因為就係發生鉛水事件，就係需要就係抽撥一啲同事特別去負責呢個 task force，咁變咗騰空咗一個位，變咗就需要搵個同事就係去署任住一段嘅時間咁樣。

問：明白，好。唔好意思，可能麻煩你跟住落嚟可以講慢少少。

答：Okay，係。

問：係，係，唔好意思。就我想問一問你，就係嗰個有關嗰個水資會。

答：係。

問：因為我一陣間可能會問多你少少問題。就係我睇番啲紀錄，你係咪 2014 年大概 4 月開始，都有份即係代表水務署即係參與水資會嗰啲會議？

答：2014 年 4 月，水資會會議呀？

問：係嘞。

答：我印象應該冇喎。

問：應該冇？

答：印象應該冇。

問：我等陣再同你睇睇一啲有關嘅文件。

答：嗄，係。

問：就住你嗰個第一份證人口供嗰度，我想都問一問你，因為我知道你哋水務署就有個 Development Branch？

答：冇錯。

問：亦都有個 Customer Service 嗰個 branch，係咪呀？

答：係。

問：我想問下，就係即係你 Development Branch 都有涉及一啲嘅 customer service 嘅工作，係咪呀？

答：應該就--我諗有聯繫，因為最主要就係話水質科學部就會係同水質有關，咁所以客戶服務部就都會係即係因為內部供水嘅問題，都會涉及一啲水質咁樣，咁所以兩個科喺呢個層面上，係應該會有啲...

問：有啲重疊？

答：唔係重疊嘅，我諗即係互動，或者係...

問：有啲互動。

答：...有啲協同咁樣。

問：明白。即係例如如果我哋針對性啲睇下，你證人口供第 7 段，例如好似講到個 Technical Support Unit of 個 Customer Service 個 branch。咁我哋亦都聽過其他你哋水務署嘅同事啲口供，都知道例如 Customer Service，呢個 Technical Support Unit，咁其中一個工作可能都會即係檢視下啲 British Standards，更新咁樣。咁就住例如可能 Technical Support Unit，咁佢哋同你哋 Development 嗰個 branch 都會唔會不時即係嗰啲 coordination、溝通？

答：照計就唔太多，我相信就唔太多。

問：Okay。但係你哋 Development Branch 會唔會處理即係有關例如

British Standards更新等等呢啲嘢，你哋會唔會睇呢方面？

答：比較少。

問：比較少。

答：我相信因為最主要就係如果講British Standards，就係因為牽涉到呢個水務設施，咁水務設施就會係我哋有個設計及建造科，就係即係New Works Branch，因為佢要去推薦一啲水務工程，咁入面都係會牽涉到一啲英國標準咁樣。

問：明白。

答：咁就佢會係喺佢設--呢個New Works Branch下面，又有設計部，就會係去睇住呢啲咁嘅標準咁樣。

問：Okay，好。咁可以睇番你證人口供第2段嗰度，你就介紹即係個function of個Development Divisions，咁其中我都見到嗰個工作範圍都幾廣闊？

答：係，好闊。

問：都幾闊嘅。咁當然其中一個最主要嘅我哋叫做個環節，或者係個disciplines我哋所稱，咁就係你剛才有提過個Water Science嗰個division，係咪呀？

答：係嘞，冇錯。

問：咁你喺--睇一睇你第12段嗰度所講，12段之前，你有提過啲其他嘅discipline，即係例如civil engineering？

答：冇錯。

問：M&E嗰啲咁樣嘅部門入面，即係有啲R&D嘅work做咗？

答：係。

問：咁呢度就特別係講番一啲--即係除咗嗰兩個特別嘅部門之外，一啲即係general啲嘅R&D，即係或者general啲係同國際嗰個水平可能大家有啲--好似你剛才講，有啲互動或者...

答：係嘞，係嘞。

問：...有啲更新嗰方面嘅工作？

答：我諗最主要就係希望透過嗰啲渠道，能夠係解決到水務署面對嘅問題，即係因為我哋工作個層面有時都會遇到啲問題。譬如我所講，即係我以前負責嗰啲管網咁樣，咁譬如就變咗可能會同多啲外國嘅即係專家或者盛，去即係吸收下人哋喺即係佢哋管理管網嗰方面嗰個經驗，即係呢一類。

問：好呀。就住12段，就有一點嘅啫，就係你呢度就話--12段嗰度就話"On top of the above, WSD also keeps itself updated on the latest technology and enriches its knowledge of overseas developments and international practices"呢啲，咁我哋都知道即係國際經驗可能都緊要，...

答：係。

問：...所以你哋都要不時要更新下。第(iii)，羅馬(iii)嗰度，就係講話即係你哋會可能派啲同事都去睇下啲 international magazines、journals、publications咁？

答：係，係，係。

問：咁其中即係包括好多個topics，即係最主要都係water quality、water conservation等等。咁我想問一問，就係即係呢個派啲同事去即係閱讀下有關嘅一啲國際嘅journals或者magazines，嚟到去即係可能 update 下個知識咁樣，咁呢方面係咪都係個 Water Science division啲同事做？我想知道。

答：因為呢啲journal，即係譬如呢啲月刊、期刊，牽涉嘅層面就好闊。基本上，就係即係我哋個總務部就如果係收到呢啲咁嘅journal，就即係會派畀啲同事去 circulate。咁當然佢亦都會喺即係呢個library裏面，就會係即係保留住咁樣。

問：即係派畀同事 circulate。即係我嘅意思就係話，即係應該就唔會話特別有個部門有特定嘅同事，即係佢就花好多時間去做呢個工作，即係都係不同嘅同事，佢哋可能牽涉到唔同範圍，就自己如果有時間，就會攞下咁樣，係咪...

答：基本上可以咁講。

問：...咁樣做法？

答：係，係，基本上係。

問：唔。如果你話就住 water quality 嗰個範疇入面，如果有啲係即係 international 嘅 publication，都係唔會話特定係 Water Science Division 嘅同事去做，即係都係睇下邊個同事得閒，咁佢可能睇下，就向你哋匯報下咁樣？

答：都係，基本上係咁運作。咁過往實際上都有一啲例子，就係透過呢啲咁嘅--閱讀呢啲咁嘅期刊，即係譬如我喺證人口供入面都提過，就係話喺 93 年，就美國呢個...

問：隱孢子蟲嗰個問題？

答：係嘞，隱孢子蟲嗰個。咁我哋都其後就係好自己主動咁樣去再制訂一啲監察嘅計劃，亦都有應變嘅計劃。所以就我理解，就係話透過呢啲咁嘅閱讀，其實都係會幫到水務署去改善即係嗰個服務。

問：唔。

答：咁另外一個例子，即係喺口供入面亦都提到，就係話嗰個斑馬魚，咁我諗就水質科學部嘅同事喺呢一方面，都係喺資源有限嘅情況底下，都會係盡量去更新自己嗰個水平，即係個科技水平、技術水平，咁樣從而係去保障呢個食水嘅安全咁樣。

問：係。有冇啲話特別嘅規定，就係例如可能每個月，如果同事睇完即係啲咁嘅 journals，即係要向你哋特別去匯報嗰啲，有冇啲咁嘅機制？

答：我就唔係好覺。

問：唔，好。你喺個...

答：因為基本上嗰個就會係水質科學部嗰個即係同事佢會去處理咁樣。

問：明白。你喺你個證人口供就特別提到有幾個，即係我哋喺呢個聆訊入面都有提及過嘅幾個...

答：事件，係。

問：...事件，即係有蘇格蘭嘅事件，有啲 Wales 嘅事件。就住蘇格蘭嘅事件我哋睇下先，咁我哋都知道因為你都喺呢個證人口供都詳細解釋到點解嗰兩個事件，就水務署就冇特別...

答：留意到嘅，係，係。

問：...即係當時係有認知嘅呢方面，係咪呀？

答：係嘞，係嘞，係嘞。

問：咁你喺嗰個你進一步嗰個證人口供，第二份咁都有提到。

答：提過，係。

問：咁就我想問一問你嘅就係喺你嘅證人口供第25段。

答：唔。

問：呢度你係咁講，呢度就係你話「WSD有個internet嘅research，identified the Scotland incident and hence, at the time of preparation of 嗰本書仔，個booklet "Hong Kong's Water Supply - Reducing Lead in Drinking Water' issued by the Hong Kong Government in August 2015 to enable the public to have handy information on relevant topics, WSD duly informed the public that 'based on the experience of other countries, excessive lead in water can be caused by the inadvertent or illegal use of substandard pipes and fittings."」我呢度就想首先問一問你，就係呢個就係應該8月之前，即係嗰個鉛水事件曝光咗，...

答：出意外。

問：...直到出呢本書仔，8月中間呢段時間，即係7月嚟、8月呢段時間，你哋水務署去做呢一個internet research。我想問下，當時點解你哋會即係主動去做一個咁嘅internet research？

答：我諗咁，即係話成個--因為鉛水事件爆發咗之後，咁我諗就公眾都係會有個關注，即係有個擔心，咁就我冇實際參與嗰個過程，就係話即係想儘快能夠係畀出一啲資訊公眾咁樣。咁所以就即係當我哋有個主題去做嘢嘅時候，咁我哋就會去即係喺internet上面，就即刻去儘快去啲一啲多啲資料，希望能夠搜查到啲資料，係能夠係可以發放畀--即係做到本書出嚟，就發放畀公眾，等佢即係多啲了解咁樣。

問：係。咁其實都係--即係如果我理解啱唔啱，就係即係我睇番你本書仔個內容，咁而家唔需要攞番出嚟。咁同埋你呢一度證人口供所講，即

係當時係咪都想知道，有冇外國都試過有啲 similar，即係類似嘅情況，係中過招嘅，咁都想--即係你哋水務署想多少少呢方面即係認知咁樣，有冇啲咁嘅即係原因，做呢個 internet research？

答：我諗最主要都係希望係搵到啲資料，可以係睇下外國點樣去處理呢啲問題，咁然後就發放畀公眾，即係等佢多啲信息咁解。

問：因為你哋當時你哋 8 月就出呢個書嗰陣時，即係我哋喺呢個委員會因為都仲未正式進行，即係喺我哋喺委員會發放呢啲咁嘅蘇格蘭啲資料，都未--即係未有，咁所以嗰陣時你哋就知道咗有呢個蘇格蘭嗰個問題。當時你哋水務署嘅睇法係點，即係有冇話當時去諗下，「咦，點解我哋從來都唔知有啲咁嘅嘢？」即係會唔會覺得有少少驚訝，因為你哋水務署從來都冇察覺到一啲咁嘅事故呢，當時？

答：當時--實際嗰個所謂搜尋工作，我就冇參與嘅，但係我相信應該就直至到去到聆訊委員會提出--喺 11 月提出嘅時候，我諗即係我哋個焦點先至會去番就係話，譬如話即係點解當其時係唔知咁樣樣。

問：係，唔。因為即係及後，即係你嘅意思就話及後，到有委員會嘅時候，咁都覺得需要可能要解釋番，點解你哋水務署對呢個事件就冇認知，都需要解釋番，係咪呀？水務署。

答：要睇番即係個過程係點。

問：好。因為我睇番你個證人口供，你都係講緊話即係水務署所得知一啲國際嘅即係有關水質或者水務嘅問題，通常都係從一啲--即係比較高層次一啲，一係就係世衞發放嗰啲資訊，...

答：係，冇錯。

問：...一係就話係一啲你哋所訂閱嘅 international journals 入面如果有提到嘅，即係會知嘅咁，咁啱就係即係呢個蘇格蘭呢件事，就即係冇喺呢啲咁樣嘅資訊入面發放到，當時？

答：係，係。

問：咁你哋就即係冇呢個認知。我想問一問，就係而家你有機會喺個蘇格蘭呢個咁樣嘅事件，即係我哋都知道係同一啲非法用咗一啲含鉛嘅焊料係引至到呢啲問題嘅？

答：係。

問：你而家睇咗，你覺得係咪即係呢啲咁嘅事件，即係國際上面發生嘅事件，都係一啲即係水務署即係需要關注嘅問題，同唔同意？

答：其實我諗水務署都係一直都關注。就正如我證人口供入面都提到，就係話我哋基本上係有一個--即係都有一個系統，嗰個系統就係話--即係如果尤其喺水質方面，咁我哋就即係都係因為就資源嗰個問題，我哋係會盡量善用我哋嘅資源。

善用個資源，即係話喺水嗰方面，我哋會睇住就係話世衞，因為世衞，我哋相信佢，一，係權威；二，嗰個資源應該係會多好多，即係個涉足面亦都係會闊。咁變咗如果有啲重大嘅事件，或者係有啲值得係要去跟進嘅事件，我都希望喺即係世衞裏面能夠係攞到資訊。

其實喺事件之後，我哋都係加強緊同世衞嗰個即係聯繫咁樣，即係我理解就係水質科學部，就同呢個西太平洋嗰個辦事處，即係都希望睇下會唔會可以加強啲個溝通咁樣。咁當然我哋都明白，我哋唔係話喺嗰個層面，世衞嗰個層面，可能嗰個資訊都未必會係太快咁樣，即係有啲滯後又未定咁樣。

我相信就係話即係隨住而家基本上資訊科技，即係信息流通嗰個係快好多咁樣，即係同 99 年好或者同 07 年好，我相信都會已經係進展咗好多咁樣。所以我諗即係都會比以前，除咗世衞同埋其他嗰啲渠道，包括同嗰啲專業團體嘅溝通，或者係啲期刊，或者係啲交流，我諗即係都會即係比以前嗰個運作應該會好啲。即係譬如最近嗰個 Michigan 嗰個 case 嚟講，我哋都有叫啲同事就係特別去睇睇個情況。

咁我諗其中一樣嘢，即係話我哋了解世界--即係第一，我哋唔能夠--即係資源嘅問題，我哋冇可能即係地氈式咁樣時時刻刻去睇住世界發生緊咩嘢事，因為即係都可能會好多都未定，亦都係即係資源上嘅問題咁樣。但係另一方面，我諗要睇就係話，即係如果我哋知道一啲重大嘅事嘅時候，我哋都要睇下嗰件事本質同香港嗰個實際嘅環境嗰個比較係咪適合，即係舉番 Michigan 嘅例子嚟講，佢因為佢係用緊鉛喉咁樣，咁就變咗就係話佢轉咗個水源，個水源佢又冇去做一啲腐蝕嘅防護咁樣，即係嗰個就 orthophosphate 咁樣。咁變咗導致佢有成四萬幾戶，即係一半嘅屋，就係--即係因為佢都係用緊啲鉛喉咁樣，所以就變咗受到影響。

咁但係嗰個情況同香港嗰個實際嘅環境、背景係咪一樣咁樣，即係香港，我嘅了解，因為即係實際情況，就係話我喺我工作經驗裏面，

就冇喺呢個水質科學部做過，因為我係工程師，唔係化驗師。亦都冇喺呢個客戶服務科裏面工作過，咁所以即係我都係根據我自己一般嘅理解咁樣。咁就係話呢啲情況，就要睇番係咪適合番香港，喺香港嚟講，即係一大部分嘅時間，早期啲，即係1930年已經禁咗鉛喉咁樣，其後，我哋基本上都係用一啲就係冇內搪層嘅鍍鋅鋼管咁樣，所以我哋嗰個關注就會係即係水黃嗰啲問題。

所以我最主要簡單講一句就係話，我哋一，要知道究竟係發生咗啲重大嘅事，引起到我哋關注咁樣。二，就係話我哋都要睇睇嗰件事本質係咪適用於香港咁樣。

問：係。即係如果就外國經驗嚟睇，當然每一件事可能都要睇番下即係香港嘅情況係咪適用咁樣？

答：係。

問：但係即係一般嚟講，經過呢次鉛水事件之後，你都同意即係就住例如水務署喺嗰個research，喺嗰個研究嗰方面，或者係即係吸取外國經驗嗰方面，即係加強啲力度呢樣嘢，即係你同意？

答：我相信咁講，我哋而家嗰個機制係有喺度，咁我哋亦都會加強，就譬如頭先所講，我哋會同呢個世衛加強合作咁樣。咁亦都會--即係正如署長亦都喺佢個聆訊嘅期間都講過，就係話都會特別提示啲同事，即係水質科學部嘅同事，都會密切啲留意咁樣。我亦都就睇到，就係話喺聆訊期間，主席好，或者Professor Fawell又好，都有啲提議，即係譬如話建議嗰個 water quality manager，咁就我相信呢個係好嘅建議嚟嘅，我諗即係水務署係會去認真考慮咁樣。

問：唔，好。咁或者我睇另外一個問題，就係喺你個證人口供第19同埋第20段，咁嗰度就係講番"Cleansing and disinfection of inside service"，咁呢度你都講番喺2012年8月之前，就用咗八個參數，就係主要都係即係檢驗番嗰個connection point入面嗰個水質。跟住因為有呢個退伍軍人症嗰個問題之後，咁亦都係即係你哋出咗個 circular，咁就有關個"inside service in addition to connection point for testing"。

但係就退伍軍人症之後，都係只不過係話即係 optional，即係可能要--唔係compulsory,即係驗嗰個inside service嘅水質，即係除咗connection point之外，如果你inside services入面嗰個water quality，可能都係即係抽樣檢查嘅啫，就冇話係一

啲係一啲 compulsory 嘅形式嚟到去作檢查嘅。

咁你20段就解釋話雖然呢個唔係一個 condition precedent，但係都可以達到一啲目的。咁我想問一問，就係即係你哋當時喺呢個退伍軍人症事件發生喺之後，Development Branch 或者水務署整體嚟講，有冇考慮過話即係抽嗰個水辦，喺 inside service--除咗 connection point 之外，喺 inside service 都可以抽一啲水辦嚟做一啲測試，係作為一啲係 compulsory，就唔係話--即係個 condition precedent，唔係話就咁--即係 optional 嘅調查嘅啫，有冇討論過呢方面？

答：唔係，即係唔好意思，呢個就我唔係好熟，我都即係驚答錯你咁樣。

問：係。

答：因為就即係正如頭先我講，即係話我個工作範圍以往嘅經驗，就冇話即係接觸呢個--接觸太多呢個客戶服務科同埋呢個水質科學部。其實喺--我相信會唔會其實呢個議題喺林生嗰個 statement 裏面、口供裏面，都會有即係交代過或者咩嘢。

問:好。即係我哋都有問過林生,不過因為你特別係講到19、20段出嚟,...

答：唔係，唔係，即係因為...

問：...咁所以我睇下你會唔會有啲個人嘅認知啫，呢度係？

答：呢度最主要想交--即係或者想帶出一個點，就係話即係我哋都會係睇住成個本地發生嘅事件，如果有事件發生嘅話，我哋都會係盡量去改善或者係搵啲解決嘅方法咁樣，...

問：好，得。

答：...即係基本上一個機制即係咁解嘅啫。

問:明白。43段，講番 Paper No. 7 嗰度。呢度你就講番嗰個 Paper No. 7，當時就係即係嗰個預備呢份文件嗰個背景，入面你都有講，43段就話，即係"Based on literature research ... lead pipes and leaded-solder copper pipes were widely used in the UK and USA during their development stages"等等嘅。如果我畀你睇一睇，就係嗰個 Paper No. 7，就係比較係--我哋睇過幾次有關嗰個喺 Y1，第7頁。

答：係，得。

問：我相信你做呢份口供之前，都應該係問過預備呢個 Paper No. 7 嗰個同事，問佢攞番多少少...

答：資料。

問：...有關嘅資料。如果我哋睇呢個--我哋睇過好多次呢段都，喺第 7 頁嘅第 9 段，咁都係講番就喺英國同美國就比較常見嘅問題，都係"presence of lead in water ..."

答：Development stage，係。

問："... since during their development stage，lead pipes and leaded-solder copper pipes were widely used." 呢度就亦都講到好清楚，就係話即係水中含鉛，咁其中都係呢兩個問題咁樣，呢兩個成因，應該咁講。

你喺你個證人口供呢度就係咁講，你就話--係嘞，"Based on the literature research at that time, lead pipes and leaded-solder copper pipes were widely used in the UK and USA"，跟住"consequently the most common problem was the presence of lead in water at the material time. In contrast, the use of leaded pipes was banned in Hong Kong since as early as 1938, followed by the ban of leaded solder in 1987." 跟住"Further, before the ban of unlined GI pipes in December 1995, unlined GI pipes were commonly used in Hong Kong for fresh water inside service in the then existing buildings."

就住呢一段，我想問一問你，就係我哋而家知道食水喉用銅喉呢樣嘢，如果係我哋講緊即係政府屋邨嗰啲工程，即係例如講緊房...

答：房委會嗰啲。

問：...委會、房署嗰啲工程，咁就大概係 2002 年之後，就比較普遍啲使用呢個銅喉，呢個你知道？

答：係，聽過，聽過下，係。

問：係嘞。但係即係 2002 之前，例如我哋都知道，即係我哋都問過例如

房委會嘅即係啲證人等等，佢哋都話知道就係其實 2002 年之前，即係其實一九八幾年開始，即係香港用銅喉作為食水喉都幾普遍，即係呢樣嘢你知道嘛？

答：呢個我唔清楚。

問：唔係好清楚？

答：嗄，嗄。

問：得。如果我哋就咁睇番呢一度，你呢度就話"Given the different historical backgrounds, the risk of presence of lead in water in the UK and USA had no direct application to Hong Kong." 如果你唔係好清楚，例如佢係一九八幾年開始...

答：唔係，我諗即係或者補充少少。

問：係，係，係。

答：即係話我其實喺第 43 段裏面，就我理解就係話即係有啲同事嘅文件都講過，就係話 1974 年好似銅喉都准用，即係基本上咁樣。咁但係就係一直以嚟，都係唔係話太過普及，正如就係話喺黃副署長嗰個聆訊期間，佢都約略講過咁樣，就係早期，即係接近我諗一九九零年代尾或者嗰啲時間，都係比較少，喺一啲即係高級住宅多啲咁樣；同埋用嗰個情況，都係就用嗰啲叫做 compression joints，即係接合式，就少用即係呢個焊料咁樣去做焊接。

問：但係即係你個人，對於例如你由八零年代開始，即係食水喉使用銅喉有幾普遍呢樣嘢，你個人方面就唔係話太清楚，係咪？

答：因為頭先解釋過，就係話我本身嗰個工作個經驗，基本上都係喺呢一個--即係冇喺呢個客戶服務科裏面，咁客戶服務科就會係比較熟悉成個發展嘅歷史咁樣，咁我都係基本上即係靠啲同事係幫手去提供啲資料咁樣。

問：明白。咁因為我哋如果要睇下英國同美國嗰個經驗，究竟係咪真係適用於香港用，...

答：香港，嗄，嗄，係。

問：...其實即係例如你銅喉，例如用咗幾多年、有幾普遍呢樣嘢，都係

一個即係相當重要嘅考慮嘅一環嚟嘅？

答：我理解就係話喺 1986 年，美國之前用嗰個銅喉係好--即係啲文獻講，即係我都聽番啲同事講，即係都係相當普遍，即係反而少用呢個--喺香港嚟講，我就係用過冇內搪層嘅鍍鋅鋼管，即係個情況就變咗係唔同。

問：但係你都知道其實即係呢個如果用 solder 嘅 joints 嘅喉管，其實即係香港唔好話普唔普遍先，你香港有用，而亦都用咗好幾十年嘅呢樣嘢，你知唔知？

答：我個人就...

主席：對唔住，你話咩嘢？

許偉強先生：即係用 solder joint 去做，喺香港嚟講，都用咗好幾十年，即係有用到。

答：我個人唔知。

問：你唔知道？

答：嗄，係。

問：如果係咁嘅話，我想問下你最後嗰句嗰個總結，就話"Given the different historical backgrounds, the risk of presence of lead in water in the UK and USA had no direct application to Hong Kong." 即係我想問下，即係呢樣嘢即係你哋水務署--你係講緊水務署喺當時個 Paper No. 7 ...

答：嘅認知。

問：...做出嚟嘅時候，你哋已經有呢方面嘅討論，定係你係就住你作為呢一--作呢個證人口供嘅時候，你先至即係推斷番出嚟呢一個總結？

答：唔係，我通常係同作呢個文件，即係寫呢個文件--準備呢個文件嘅同事都傾過，即係佢畀我嗰個--即係個理解就係咁樣。

問：即係佢係咁樣同你講，咁你就咁寫番落去，係咪呀？

答：即係個理解係咁樣，係，係。

問：我想問一問你，就係呢個 C21，你睇一睇有份文件，18998，呢個我哋之前都有問過之前有幾位水務署嘅證人，我想問一問你嗰個，就住呢方面嗰個認知有幾多。先睇下 18998 先。

答：哦，呢度，okay。

問：Tab 179。

答：係呀。

問：見到呢度係一個"Minutes of the First Working Group Meeting or the Development and Implementation of Water Safety Plan for WSD"，如果我哋睇下嗰個出席嗰個名單，你本人都有出席，係咪？

答：正確。

問：即係當時應該係作為新界西...

答：高級工程師，我係西區...

問：...嘅高級工程師？

答：係，負責分配。

問：係嘞，咁有出席，裏面都有好多位水務署嘅同事都有參與。咁如果我哋睇一睇呢個出席嘅名單，屘二嗰位係一位"CL Leung"，見到嘛？

答：係，見到。

問：佢個全名係咩嘢？

答：梁中立，梁中立。

問：係。係咪即係而家你哋嘅 assistant director？

答：係，正確。

問：即係 Michael Leung？

答：係呀，正確。

問：咁佢當時就係 engineer 嚟嘅，係咪呀？

答：正確。

問：而家就我知道佢就係你哋 Development Branch 個阿頭，係咪呀？

答：Head，係，係。

問：咁就佢當時就係 Prosecution Unit？

答：係，冇錯。

問：PU (Prosecution Unit)。梁先生，咁我都知道佢亦都係個 task force secretary。咁呢度如果你睇番 19000 頁，第 3.8 段，呢度就咁講，呢度就話 E/PU，即係梁生應該係講緊。

答：唔。

問：咁佢就"asked whether the WSP [water safety plan] would include systems within private premises. The chairman responded that the consumer service issue would be covered in the master plan and the Water Science Division would cover the monitoring of indirect supply." 跟住就 senior engineer 呢個就係...

答：新界西區嘅。

問：...應該係另外一位李生，呢度就係。

答：係。

問：咁佢就補充個資料，就係話"WSD had indirect control of the systems after the connection points under Waterworks Ordinance."

我首先就想問一問，你有冇即係印象，曾經有討論過呢一個問題，即係話究竟嗰個 WSD 係咪會包括一啲 system within private premises 呢樣嘢，你記唔記得係有討論過呢樣嘢？

答：就 05 年都相隔十零年，即係我諗老實講，就好難記得番當其時嗰個情況係點咁樣。但係都留意到就係話聆訊期間都提過呢一份文件，我都即係睇番。

一，就係唔記得；二，就我理解，即係因為接觸咗鉛水事件都一段時間，就係即係我懷疑想理解嘅，就係話即係李生當其時就係話即係 SE/NTW(1)所講嗰句說話，就係話 indirect control of 個 system after 個 connection point，咁其實基本上最終呢個理念就係化成就係喺嗰個--最終個 WSD 個 product 裏面嘅 general plan 裏面嘅 Annex 4。即係 Annex 4 裏面就係包括咗就係話呢度所講嘅 indirect control，其實就係 regulatory control 嚟嘅啫。

即係話其實水務署都係會即係透過呢個 Waterworks Ordinance，咁就會係 control 到呢個新落成樓宇嗰個 internal 嗰個 plumbing 嘅質素。所以我諗如果夾埋之前，睇埋之前即係嗰句，就係話 cover 個 monitoring of indirect control--唔係，indirect supply，...

問：係，indirect supply。

答：...咁其實基本上就係兩個層面，一個層面就係話佢落成嘅時候，即係我哋透過 WWO，即係 Waterworks Ordinance，監管，定咗一啲標準，英國標準，咁有一個系統就係 AP--sorry，先有個 LP 同埋個 AP，然後，就即係確保嗰個落成樓宇係符合個英國標準咁樣。但係往後嗰件產物，即係嗰件 building 做起咗出嚟之後，嗰個就要靠就係話嗰個用家，即係話嗰個 consumer 就係點樣去保養嗰件--即係嗰個 internal 嗰個--即係內部嗰個供水系統。

喺嗰個層面，我哋有兩樣嘢做，一，就係話我哋會攞辦，所以其實水質科學部嘅同事都工作量都大，佢如果喺呢個用戶嗰面，每年攞萬六個，成個香港嚟講，十六萬個咁樣，即係變咗就即係係睇住嗰個落成樓宇之後嗰個水質，即係咁樣。咁亦都第二個層面做，就係話透過嗰個優質食水計劃，咁希望就係鼓勵嗰個用家能夠就係去保養住佢嘅內部供水系統。所以整體嚟講，就即係水務署係喺呢個--即係都係關心住全港市民嗰個用水咁樣。

問：如果你呢度所講，即係如果而家睇番個文件，呢度所講嘅"indirect control"，即係以你嘅理解，綜合嚟講就係話即係喺水務條例同埋佢嗰個水務設施入面，喺水務條例或者水務規則入面所講到一啲規

格，係咪呀？

答：係嘞，係嘞。

問：即係一啲同 inside service 入面要用嘅部件，嗰啲喉嘅規格。

答：係嘞，我理解係咁。

問：另外，你剛才亦都有提過，就係話即係可能有牽涉過即係 LP 佢哋個工作，即係都係呢一方面？

答：係，即係呢--係嗰個機制，indirect control 就係話透過呢一拃機制，就可以去最終就係話保障到嗰個水質。即係因為呢度其實成個 water safety plan 個概念，即係話點樣可以係對個水質係有個保障喺度。

問：都係講番個法例入面個機制，最主要都係？

答：係嘞，嗄，嗄。

問：最後，我就係想問一問你，我一開始嘅時候，問你有關嗰個水資會...

答：係，你話 14 年？

問：係嘞，14 年，而家麻煩你睇一睇 G2。

主席：我想返番去 43 段，其實都係最屘嗰句。

答：係。

主席：咁我--同而家香港，1938 年就已經冇用鉛喉，...

答：禁咗鉛喉，係。

主席：...咁可能喺英國或者美國都繼續，...

答：英國好似喺九幾--七零嘅時候先禁。

主席：...喺英國、美國都可能仲有。

答：好多嘅。

主席：係，都仲有用鉛喉。我哋將銅喉撥埋一邊嘅話，但係呢一個用 leaded solder 呢一個現象，就其實係 common to both jurisdictions 個喎，common to ...

答：唔係，喺法例嘅層面，時間差唔多，大家--即係譬如我哋同英國都係大約--即係我哋跟英國標準，都係 1987 咁樣。

主席：係喇，係喇。

答：美國嚟講，就 1986 就開始立--即係要求有條例就正式實施，就 1988。

主席：係。

答：咁但係例喺度，但係之--喺例之前，大家用嗰個率係有唔同，即係我...

主席：唔係，你唔好理佢嗰個用幾多先，但係即係你唔可以完全話完全英國、美國，即係我講緊 leaded solder，同香港係完全冇關。你講鉛喉，我同意，勉強可以講得通，係咪？

答：係。

主席：即係個 problems common to 英國，亦都 common to 香港，at least in terms of 呢個 leaded solder 嚟講。因為一樣㗎咋嘛，大家都係用嗰個 British Standards。

答：係，係。

主席：大家都係差唔多 87 年 ban，但係 87 年 ban 咗之後，你去到二零零幾年，即係你蘇格蘭嗰啲佢係繼續用。咁個問題即係所以你唔可以話，即係理論上蘇格蘭 ban、香港 ban、英國 ban，...

答：係囉，大家都英國標準。

主席：...大家都應該一樣，但係個問題就係 subsequently 你真係搵到蘇格蘭、Wales、England and Wales，你搵到有呢樣嘢，咁所以你唔可以話係我哋個"risk of presence of lead in Hong Kong，the risk of presence of lead in water in the UK and USA have no direct application to Hong Kong."

答：唔係，我諗寫嗰份文件嘅時候，嗰個理念嗰個認...

主席：因為你寫，喺2011年寫，係咪？

答：係。即係因為當其時嗰個焦點，我諗即係其實之前都可能講過好多轉，就係話都係因為個焦點係放咗喺水黃度，咁個評估就係話--同埋就係即係以往個包袱就係話即係喺英國、美國，佢用嗰個 leaded solder，即係 copper pipes 同埋 leaded solder，我理解就係話都係好普遍，即係變咗我哋嗰個...

主席：香港都普遍其實。

答：我嘅理解，就即係我都係同啲同事...

主席：最初當然我哋知道係用 compression 多，係咪？呢個比較多啲，不過係咪唔用走錫，唔係㗎嘛，因為我哋知道...

答：可能喺05--即係呢個房署...

主席：呢個房署用啫，但係私人已經用咗好耐㗎喇嘛？

答：私人，我聽個講法就係話用 compression joint 多過...

主席：私人又唔係嘅--唔係，應該咁講，我哋知道--唔係，at least 我哋知道 VTC 裏面教呢個抹錫瓜都已經抹咗好耐，係囉，都唔少日子。不過唔緊要，繼續。所以我就係話你最屘嗰句...

答：都明主席意思，即係話大家都法例其實都係差唔多。

主席：係，係吖。

答：係。

主席：同埋你過去係咩嘢，即係其實--即係當然你話1938年，我哋個個都未出世，係吖，我同意，係咪？但係作為水務署，作為一個 institution，你唔可以話「我哋已經」...

答：我哋有一百六十幾年歷史，我哋。

主席：...「唔記得咗呢樣嘢」咁樣樣，唔可以㗎嘛，作為一個 institution，你明唔明，係咪？

答：唔。

主席：即係當然，1938 年個個都唔係--一係就過晒身，一係就退晒休，唔使講。

答：唔，唔。

問：或者我同你睇一睇 G2 嘅 910。

答：係，okay。

問：呢個即係水資會，咁 2014 年 9 月嗰陣時開會，我哋見到嗰啲出席名單。咁下面有一橛就係--有一部分就係"Water Supplies Department Representatives in Attendance"，係咪呀？

答：In attendance，係。

問：咁嗰個就係有你--應該係有你個名嘅，第三？

答：唔係，正確，因為你頭先我以為你講 2014 年 4 月。

問：明白，明白。即係咁我係講緊...

答：佢呢個 2014 年 9 月，之前...

問：唔好意思，我可能講得唔清楚，喺 2014 年 4 月開始，即係你係咪...

答：開始乜嘢？

問：...有參加嗰個水資會？

答：唔係，我因為 2014 年嘅 7、8 月，頭先所講，即係因為我之前就喺新界東區就做嘅，咁所以我喺 2014 年 7、8 月嘅時候先至調咗過去發展 1 部。

問：明白，係。

答：其實就係不嬲嚟講，呢個會都唔使話即係發展 1 部嘅總工程師去參與嘅，只不過就係話當其時我即係新接任呢個位，即係署方都覺得都想搵啲同事去聽下咁樣，所以就出席咗呢個會議咁樣。

問：係。除咗呢個會議之外，水資會個會，你有冇仲有其他出席過？

答：往後就--即係參加咗呢個之後，往後我就即係多咗。

問：都有嘞？

答：係。

問：我都想畀你睇下一個文件，就係即係呢個鉛水事件爆發咗之後，咁我都知道即係水資會都有啲討論，就即係有關呢啲鉛水事件嘅一啲問題，咁作出咗啲討論。

答：係，係。

問：就比較近期啲，或者我哋睇一睇 C19.6，C19.6 嘅 14111。我哋冇一個正式嗰個水資會嗰個 minutes 喺度，不過我想睇一睇你有冇對呢份文件有啲印象嘅啫。呢個就係我哋從呢個...

答：陳生，我有印象。

問：黃生嘅口供，我哋都有問過佢。另外，就係我哋睇過有關呢個 task force 嘅第五次會議，而且我哋睇下呢個 14057 先。

答：14057。

問：即係我都知道你唔係 task force 嘅成員。

答：係，唔緊要。

問：但係我都想你睇一睇嘅啫，呢度就係 task force 嘅第五次會議，就係 2015 年 8 月 26 號，就喺 14057 度睇到，咁有你哋同事黃仲良等等都有出席。

答：係。

問：陳健民都有出席。

答：係。

問：如果我哋睇 14061 嗰度，3.2，就係 task force of secretary，即係梁中立先生，咁佢就「presented the paper titled 'Proposed Mitigation of Lead Contamination in Tap

Water' prepared by呢一個水資會」，咁呢份"paper set out the overseas experiences in tackling lead contamination problem and proposed a number of measures"，咁其中就係啲 short-term measures，就有flushing，入面有 proper use of filter，第(c)，就有個"Standardizing of water sampling methods"嘅呢度。

我哋就睇番嗰個--有關即係呢度提到嘅嗰份 paper，咁就喺14111嗰度睇到。14111，或者我哋睇下頭兩段，好唔好？

答：好呀。

問：咁就頭兩段就係講番，就係話即係有關一啲立法會嘅議員就一啲嘅查詢，就亦都係講番嗰個食水安全嗰個問題，14111，第1段。跟住第三句，就話「As more and more water samples taken by the WSD and the Democratic Party were found to have lead concentrations exceeding 個世衞個標準，public housing residents have demanded the government to extend the water testing programme and to test the blood lead levels」等等。

跟住下面，第2段，"In view of the recent panic and unrest about drinking water safety, the government has set up two special task forces to investigate the causes for the excessive lead in drinking water and to review the quality control procedures in relation to the installation of fresh water system in public housing estates. While the task forces are working independently to produce a report"等等。水資會呢度就講"wishes to offer some advice to the director of WSD under its terms of reference on mitigation of lead contamination in tap water. This advice is independent of any findings to be announced by the task forces."

我首先想問一問你嘅，就係即係你有冇印象，喺你出席水資會嘅會議入面，有曾經討論過即係呢一個咁樣嘅 paper？

答：我冇咁嘅印象，冇咁嘅印象。

問：係，好，好。就我想問一問你，就係如果我哋講緊呢個水資會，2015年，我哋講緊8月份左右，就...

答：同呢件事。

問：即係鉛水事件發生咗之後，你有冇參加過即係水資會有關嘅會議？

答：我有參加過，但係就即係詳細我都唔係好記得清楚。

問：明白。有冇記得參加過水資會嘅會議入面，有討論過啲即係抽水辦嗰啲問題？

答：印象唔深，即係冇乜印象。

問：冇乜嘢印象？

答：嗄。即係我懷疑就係其實--同埋呢一份文件係冇正式話提交過呢個水資會，即係我有啲懷疑，不過我唔係好敢肯定，係。

問：好。即係鉛水事件發生咗之後，開嘅水資會嘅會議，你係咪每一個都有出席？

答：我相信唔係每一個都有出席。

問：但係你對呢一份文件就冇乜嘢印象？

答：嗄，冇乜印象。

許偉強先生：我冇其他問題，唔該。

主席：唔該。有冇人有問題？係，Mr Ho。

何先生：我有個短嘅問題。

<u>何先生盤問</u>

問：就想請你睇番你嘅證人口供嘅第45段，唔該。

答：45段？

問：係。

答：係。

問：嗰處你就再講番呢個 Paper No.7，但係嗰一段就關於呢個 Paper No.7 嘅另外嘅一個部分，就唔係即係好似你上面打上第 43、第 44 段講嗰個部分。我想你睇番嗰個 Paper No. 7，我睇緊嘅 reference 就係 G2，978，不過好似頭先 Y1 你都會搵到同一份。

答：係，第幾段？你相關嗰啲嘢，paper 嘅...

問：我想你睇番嗰個 Paper No. 7 嘅第 12 段開始。

答：第 12 段？

問：唔。應該係喺 G2，981。剛才頭先許大律師就問過你第 8、第 9 段。

答：係。

問：呢個 Paper No. 7，你睇落去第 12 段，第 12 段嗰處就係另外一個 topic 嚟嘅，嗰個 topic 就係叫做"Strategies to Reach the Situation that People can Drink Water Direct from Taps"，見到嘛？

答：係。

問：第 12 段，基本上，呢一個--就係當時呢一份 paper 所講話即係睇下點樣可以令到啲市民，對於話直情喺水喉度飲水都會增強咗個信心咁樣，見到嘛？

答：係。

問：咁就有--即係你嗰個 strategies，即係我睇嗰啲 subheadings 有幾樣嘢，譬如你好似去到第 13 段個頂嗰度，第一種--第一個--即係 strategies 嘅第一項就係話"Continue Efforts in Upkeeping Existing Distribution Systems"，嗰個係講嗰個 distribution 嗰個部分。

答：係。

問：然後，跟住第 14 段個頂，就係"Adopt Plumbing Designs to Enhance Water Quality"。咁就係講話即係點樣可以--你見到第 14 段，第 3 行，"High quality corrosion-resistant pipes and fittings should continue to be required in plumbing systems." 呢個就係要用啲好嘅物料，即係唔使咁--冇咁容易腐蝕嘅。然後，跟住就係"the use of pneumatic pumping systems for example can minimise the number of water storage tanks." 就即係話，就真係可以唔使用咁多 storage tank，亦都可以減低嗰個污染到食水個風險嘅，見到嘛？

答：唔，唔。

問：呢個就係講 design。然後再落去，就"Educate the public"，一路落去，"Educate the public"。

然後，就係再睇到第 15 段，你就話--嗰個 paper 就話"Publicity"，publicity 係要點樣呢？就要"strengthen public confidence in water quality and to combat prejudice against drinking water directly from taps." 即係令到市民唔好對於話直情喺食水喉飲水係有個抗拒性咁樣，係咪呀？

答：係。

問：然後，跟住就落去，第 16 段，另外一個 strategy 嘅一項，就係"Encourage the Inclusion of Renovation of Plumbing Systems into the Building Maintenance Programme"

我想睇下--特別你睇就係話，我--呢度所講嗰個問題所在，"As leaking plumbing systems can cause corrosion of reinforcement bars in reinforced concrete structures, peeling off of external/internal finishes or electric short circuiting, they do pose potential safety concerns."

So，當時嗰個講話要有一啲 renovation programme 喺個 building maintenance 裏面，其實個注意力係咪就係集中咗喺--譬如好似如果係有侵蝕嘅情況出現，就可能會有啲安全性嘅風險，即係譬如好似話會腐蝕咗嗰個--嗰啲鋼鐵，個 reinforcement bars，或者係令到裏面嗰啲譬如好似電--電線嘅問題可能有

short-circuiting，呢一類嘅安全風險，所以就會帶出咗個問題，就係話我哋喺個 building maintenance 嗰個 programme 裏面就要加強。你見到嘛？

答：唔，唔。

問：當時嗰個問題嘅重點係喺嗰個腐蝕所帶出嚟個安全風險嗰度嘅，見到嘛？

答：嗄。

問：唔嗯。或者我哋再睇遠啲，去到第 18 段個頂嗰度，個 strategy 就係話"Add A New Requirement on Building Management to Carry Out Periodical Checking and Submit Inspection Report"。

呢一度就--我理解就係呢一度底下所講嘅嘢，就係你第 45 段，你個口供裏面所話，即係呢一個 paper 帶出咗，就係需唔需要嗰啲 consumers 用--即係等佢哋去搵一啲 licensed plumber，或者係 registered plumbing contractors 去做一個定期嘅檢查，或者係要求佢哋係要交一啲 inspection report，呢一個咁樣嘅討論，就係我哋頭先喺 18、19 段嗰度睇得到出嚟，係咪咁意思？

答：唔，嗄。

問：係咪呀？

答：唔係，我唔係好清楚你想--最終想問啲乜嘢？

問：我就係問你，我問你即係我個咁嘅理解，你第 15 段所講話，要--即係呢度呢一個 paper 裏面，有講話要求 consumers 去搵啲 licensed plumber 或者係 registered plumbing contractors，去交一啲定期嘅 checking 或者係 submit inspection report。呢一個咁樣嘅 idea，就係喺頭先好似我哋睇第 18、19 段嗰個 paper 裏面所講㗎嘞？

答：或者我咁講，即係就 Paper No. 7 我就唔係話作者，即係成份文件嗰個詳細內容就我冇深究嘅，呢個第一；第二，就係話整體嚟講，嗰個文件個目的，即係正如想講--即係正如文件裏面已經交得--交代得清楚，即係佢想最終達致一樣嘢，即係話希望即係市民喺個即係內部供水系統裏面嘅水係有保障咁樣。即係話因為當其時我哋見到個問

題，就係話水黃，即係內部供水系統嗰個維修就係出現咗啲問題。所以我哋就去即係做 internet research，睇下其他國家會唔會遇到同樣嘅問題，點去處理咁樣，咁亦都提供咗一啲策略。

其實整個討論最終就係做咗個叫做大廈優質食水計劃出嚟嘅，嗰個就係要求就係話嗰個即係物業管理人，就係定期去檢查同埋維修嗰個內部供水系統，即係每三個月清洗水缸一轉咁樣，咁亦都搵啲...

問：即係我哋聽過，亦都明白嗰個優質食水計劃裏面所含啲乜嘢嘅項目。我想睇--你睇番，因為你個證人口供第 45 段咁講，所以我帶番你去嗰個 paper 咁解嘅啫。

答：係。

問：即係如果你話你根本就唔係好知道嗰個 paper 裏面到底有啲咩嘢嘅討論或者咩嘢嘅項目，我就唔會再需要你詳細去解釋。不過因為你 45 段咁樣帶出嚟，我就...

答：唔係，即係我整個內容，我唔係話太了解。

問：吓？

答：我成個文件嗰個--即係嗰個內容，我唔係話...

問：唔肯定，好。

答：...--即係我知道頭尾，即係話知道個目的係乜嘢，知道最終達致到嗰個結果係乜嘢。

問：好，唔緊要。或者我問--我就睇埋嗰 18、19 段，咁我唔再詳細問你。睇番個 paper 嗰個 18、19 段。呢度我哋見到，譬如好似第 19 段嗰度，"To ensure that the internal plumbing systems are in a good and clean condition, it may be considered desirable to follow a practice similar to that in Singapore by requiring consumers or their agents to employ licensed plumbers or registered plumbing contractors to arrange for periodical checking and submit inspection reports to WSD."

首先嚟講，呢度就係講話希望可能可以做到，就係請嗰啲 consumers 就聘請 licensed plumber 或者啲 registered

plumbing contractor 做一個定期嘅檢查，同埋交份報告畀 WSD。

然後，跟住就係話"The [LPs] or registered plumbing defects are found and a water analyst will confirm by water sampling and testing ..." 呢度所講嘅 defects，當時你嘅理解係咪亦都係話，即係譬如好似我哋頭先講嗰啲安全風險，即係譬如如果有鏽蝕嘅時候，就可能會係侵蝕到嗰啲 reinforcement bars，或者係會有 electric short-circuits 呢一類咁樣嘅即係問題嘅風險，就係呢一段裏面所想 address 嗰個問題，啱唔啱？

答：我唔係好即係確定得到，但係我諗即係最主要個目的都係話希望個水質，即係因為成份文件，即係我理解個目的都係話講水質，即係點樣可以即係避免咗啲水黃嘅問題，所以呢度最--即係呢度個目標都係話去解決嗰個水質水黃嗰個問題。

問：如果我咁講成份文件其實嗰個重點或者個集中處理，都係講緊話一係就係嗰個水黃，或者水箱唔清潔，或者係呢啲我哋頭先睇過嘅即係個風險，即係話譬如好似 short-circuits，或者譬如好似會鏽蝕，嗰個影響個結構，嗰個 reinforcement bars，呢一類咁樣嘅 function 嘅問題？

答：我相信主要都係講水質，即係我個人嘅理解都係。

問：你個人理解，唔。

答：因為即係我確實係冇深究呢一份文件嗰個詳細嘅情況。

問：好呀，唔該晒你先。

何先生：主席，我其他嗰啲，我都係擺番個 marker 喺其他部分。

主席：得，好，唔該。

好，好，唔該晒，周先生，畀完口供。

答：好，唔該。

王先生：主席，陳漢輝博士就要下晝兩點半先到。

主席：好呀。

王先生：不如我哋傳召咗嗰個 Paul Ho 先，好唔好？

主席：好，好，好，何生先先。

王先生：佢就有份證人口供嘅，我哋應該畀咗秘書處。

主席：Tab--喺邊一個 bundle？

王先生：C21，最屘嗰份，C21，最屘嗰份。

主席：好。Tab 幾？

石先生：19120，最屘嗰個應該係。

主席：19120，我哋...

石先生：Scan 咗，不過我唔知道擺咗入去未。

主席：我哋未有。

石先生：Hard copy 係未有。

王先生：可唔可以印一份畀主席？

主席：請坐先。請坐先，請坐先。

唔係好長㗎咋嘛，係咪呀？

王先生：兩頁。

主席：兩頁紙，得。宣誓吖，我哋一路讀，一路睇得㗎嘞。

王先生：嗄。

石先生：你讀出嚟嘅時候可以睇。

王先生：係，係，睇個 screen。

水務署第十證人：何祺威（水務署（客戶服務科工程師））以本地話宣誓作供
王先生主問

問：何生，早晨。我而家會將你嘅證人口供讀出嚟嘅，就兩版紙，你可以睇住個螢光幕，或者有個 copy 畀你嘅。

答：好，唔該。

WITNESS STATEMENT OF HO KEY WEI, PAUL

I, HO Key Wei, Paul, Engineer, Customer Services Branch, Water Supplies Department ("**WSD**"), 13th Floor, WSD Kowloon West Regional Building, 2 Lai Hong Street, Cheung Sha Wan, Kowloon, do say as follows:-

2. From September 2002 to July 2007, I was deployed to work as an Engineer/Customer Services (Technical Support) of WSD. My duties included, amongst other things, liaising with relevant trades of the plumbing industry. During such period, my Senior Engineer and I represented WSD to join the Meetings for Working Party on Licensed Plumber with the Vocational Training Council ("**VTC**").

3. I make this statement to provide information on issues arising from the hearing on 22 and 23 February 2016 (see pp. 67-69 and pp.16-17 respectively of the Chinese transcript) regarding the meeting with the VTC in 2004 and the circular dated 24 March 1998 issued by Hong Kong Plumbing and Sanitary Ware Trade Association Ltd (HKPSWTA) [COI Bundle: AB7/93-94]. I am the "KW Ho" referred to in the meeting minutes at [COI Bundle W1/482].

4. Around 2004, I observed that there had been an increase of applications from suppliers for no objection from WSD to the use of copper pipes/fittings as inside service. I understood that there were two methods of jointing copper pipes, viz., capillary (by soldering) and compression. The meeting held with the VTC on 22 December 2004 [COI Bundle W1/482] was a regular meeting between WSD and VTC. The purpose of my attendance at the meeting was to review and enrich LP's training from an educational perspective. Towards this end, noting the said increase in applications relating to copper pipes / fittings at the time, I took the opportunity of the meeting to remind VTC, as an "AOB item", that their students should be taught to use lead-free soldering in capillary joints of copper pipes.

5. I am personally not aware of the circular dated 24 March 1998 issued by HKPSWTA until it was submitted to the COI in the present inquiries. My suggestion at the meeting with VTC in 2004 as stated above was not related to the said circular. Moreover, there was no incident which prompted my drawing of attention to the use of lead-free soldering in capillary joints of copper pipes. As far as I am aware and according to available records, WSD's Technical Support Unit, the unit responsible for liaising with relevant trades of the plumbing industry, was also not aware of the circular.

6. Unlike those VTC students, existing LPs and the trade were well aware that solder materials must be lead free. LPs would have known about it through their training with VTC and like institutions and it is a common knowledge amongst the trade. As such, it was not considered necessary to remind the LPs and the trade on this specific requirement on lead-free soldering in capillary joints of copper pipes.

7. In another annual meeting held on 8 March 2006, the issue of on-site testing method of lead soldering material in pipe connection was mentioned [COI Bundle W1/483.1].

The on-site testing method was considered as an effective measure to check whether leaded-solder was used on-site. It was mentioned in the discussion because it was thought that, if relevant information was available, the VTC may mention the on-site testing method in its training for its students for completeness. The VTC's representative said that such method could not be found in the prevailing market in Hong Kong. To assist the VTC in this regard, I visited the UK WRAS website to see if there were any papers in relation to testing lead on-site advertised therein, put I also could not find any relevant information on the on-site testing for lead. The said discussion was a general one and not prompted by any incident. There was no further discussion relating to lead-free solder in subsequent meetings.

8. I confirm the contents of above Statement to be true to the best of my knowledge, information and belief.

Dated this 29th day of February 2016

問：何生，嗰個係你簽名嚟㗎嘛？

答：係。

問：你確認呢個證人口供嘅內容真實無誤？

答：係，係。

問：亦都願意採納呢個證供作為你嘅主問證供，係咪？

答：係。

王先生：主席，我冇其他問題。

主席：唔該。

石先生盤問

問：何生，我想你就--開宗明義，直情係睇嗰個 minutes，就係 W1，482頁。見到未？嗰個有個 AOB，你睇你面前嗰個電腦嗰個屏幕都應該見到。

答：Yeah，係。

問：基本上，你嘅證人供詞就主要就係解釋呢一段裏面，你之所以提到你嗰個 concern 係點嚟嘅。

答：冇錯。

問：你就提到其實就係唔係因為有一件事即係撞咗板或者出咗事，你先至提出，而係因為你 04 年嘅時候，見到一連串或者比較多申請去應該係攞呢個 No objection general approval？

答："No objection" letter，唔係 general approval。

問："No objection" letter 係 for 乜嘢，嗰陣時係？

答：通常嚟講，我個 understanding 就係 general approval 嗰啲，就係喺法例上面嗰五大類嘅 fitting 係水務署要畀一個 approval。

問：Terminal fitting 嗰啲？

答：嗄，terminal fitting 嚟嘅。其他嗰啲，原則上全部都係 no objection letter

問：Okay。Terminal fitting 就叫做 general approval，pipes 就 no objection？

答：Pipes 或者其他嗰啲 non-return valve，即係總之唔喺嗰五大類裏面，都係叫做 no objection letter，通常我哋咁叫。

問：得，好。即係都係基於就係開工嘅時候，WWO46 嗰拃文件裏面所需要嘅嘢嚟嘅，我知道呢啲全部都要填落去個 annex 嗰度。

答：一般都係要嘅。

問：係，所以攞嗰個 no objection，其實都係基於就係要攞咗個 objection 之後，就填落去個 annex 嗰度嘅？

答：一般嚟講，我哋冇硬性規定，你一定要--因為呢啲係 supplier 嚟嘅，就上嚟嗰啲係 supplier 嚟，唔係一個 consumer service--即係唔係一個 customer 嚟嘅。

問：哦，okay，得。

答：通常嚟講，你搵到個 LP，LP 自己就問嗰個--即係 whatever 個 contract 上面佢個 supplier，就畀呢啲咁嘅 document 佢，佢就揸住嚟填落去，或者係 WWO46 嗰度。

問：明白，明白。即係個 supplier，基本上就係攞定呢啲 no objection 嘅信，就係等到有啲 plumbing contractor 或者 LP 話「喂，我要填 form，呢件嘢係咪水務署即係」...

答：係嘞，係嘞，係嘞。

問：...「肯接受嘅先？」

答：肯接受。

問：你畀張紙我，我就知道，即係舒服。

答：即係係咁樣樣嘅啫。

問：得，我明白，好。你知道其實來龍去脈，就係其實點解 2004 年多咗咁多申請攞嗰個 Objection 係為咗啲銅喉，你知唔知道其實 around 2002 左右，2003、2004 係公營房屋佢哋嗰啲合約嘅要求係開始容許用銅喉，呢個背景，你知唔知？

答：唔知。

問：唔知嘅？

答：係。

問：總之你係知道嗰陣時突然間多咗好多申請就攞 Objection，就係銅喉？

答：突然間多咗好多--即係應該咁講，係 around 喺 2004 年嗰個特別多

咗，其實每一年都有嘅，咁係突然間有個 surge。通常嚟講，喺譬如 95、96、97 嗰個時候，就多咗嗰啲 lined G...

問：Lined GI pipe。

答：...--lined GI pipe，之後...

問：因為嗰陣時就因為有鏽水事件，咁就...

答：係，即係用開咁樣樣。跟住就轉咗做 copper pipe。

問：得，得，明白。你個人嘅認知，就係知道用銅喉有兩種接駁方法，一種就係即係用 mechanical 嘅，即係 compression 嚟擰嘅；...

答：冇錯。

問：...另外一種就係焊接。

答：焊接。

問：呢一個認知有呢兩種方法，你係喺乜嘢渠道學到？

答：一般嚟講，係 BS 嘅，喺 BS 裏面有講。

問：得，好。你亦都知道 BS 裏面對焊料嘅要求係屬於無鉛級別，呢樣嘢亦都係你嘅一般認知嚟嘅？

答：係。

問：即係你喺水務署履行你嘅職責，呢個係你對有關嘅要求，你嘅即係我哋叫做...（聽不清），根本即係呢個你係日常都要處理，你係知道嘅？

答：係知道嘅。

問：知道嘅？

答：係知道嘅。

問：好。所以就你係因為咁樣，所以你就同 VTC 呢啲定期嘅會議，你就喺個 AOB 嗰度就提出，你就有呢個 concern。咁你 raise 呢個 concern，其實你主要係希望提醒 VTC 要教啲學生咁樣？

答：咁樣樣，因為除咗提醒之外，我想知道而家 VTC 係咪繼續教緊佢哋用緊係 lead-free 嘅 solder。

問：係。你話想知道佢係咪繼續教緊，即係你嘅理解，佢係之前都有？

答：因為佢答我哋嗰個時候，佢係已經教緊嘅，佢係教緊啲同--啲學生係用緊無鉛嘅 solder，咁我就覺得 okay 嘞。

問：因為你個第 4 段，你就話"remind VTC,...that their students should be taught"，即係基本上你就係話，你知道佢教緊嘅，不過你想確保佢繼續教。

答：係，冇錯。

問：呢個就係即係我哋叫做 take care of future，因為我哋睇番即係 VTC 嗰啲嘅課程咁樣，佢哋係有教話要用無鉛嘅。

答：Okay。

問：呢個我之所以話 take care of future，就係 VTC 佢一路有教，咁你知道，okay，我信你有教，你亦--佢亦都即係 assure 你話佢會繼續教，即係佢呢度就係話"have been taught to use"，即係其實有啲隱含，即係話我哋一路都係咁教，繼續都會咁教㗎喇。

答：唔係因為我而家講，佢先話去教。

問：得。你嘅第 6 段，就 19121，你就話"Unlike those VTC students, existing LPs and the trade were well aware that solder materials must be lead-free. LPs would have known about it through their training with VTC and like institutions and it is a common knowledge amongst the trade."

呢度就我想同你探討下嘅，即係呢個唔係任何形式嘅批評嚟嘅，因為你出席呢個即係會議嘅會議，你就即係咁有心，其實喺 AOB 提出嚟，根本唔係一個議程嚟嘅，所以即係唔係話作出一個批評。不過想同你即係探討下，就係你呢個第 6 段嗰個基礎，因為你睇番轉頭，就即係其實會唔會係即係相對比較樂觀咗咁樣，呢個係我嘅解--即係我想同你探討嘅。

答：樂觀啲咩嘢？

問：吓？

答：樂觀啲乜嘢？

問：比較樂觀咗啲，就係話你就話"existing LPs and the trade were well aware"，呢句嘢會唔會係比較對佢哋識嘅嘢，相對地可能比較樂觀咗少少？

答：咁樣樣，如果係用鉛，大家都知道鉛就唔--即係大家係咪知道鉛唔好先？如果係大家知道鉛唔好嘅話，喺鉛掂到水嗰陣時候，會污染我個水源㗎嘛。咁污染 water supply 根本係觸犯水務條例，你喺 trade 裏面做咗咁耐，我哋即係水務署啲人就係執行水務條例嘅，冇理由唔知道有鉛嘅 solder 會污染我個水源個喎。

問：就係呢一點，我就係想同你提出，就係可能呢一個論點，就可能對一啲叫做 grandfather 咗，或者相對早期攞到 LP 資歷嘅人，對佢哋嘅認知，你可能就相對樂觀，即係可能--我同你探討下。

答：咁樣，水務條例就冇講。

主席：唔係，我想問一問你第 6 段嗰度所講嘅，你係講緊喺 2004 年嘅情況，抑或你而家講緊 2016 年、15 年嘅情況嚟㗎？

答：Sorry，我...

主席：你二零...

答：...follow 唔到，你兩個時間。

主席：你...

答：因為我而家講緊--即係而家係講緊我 2004 年嗰個時候...

主席：石大狀就帶你去睇第 6 段。

答：我個第 6 段，係咪？

主席：係，你嘅第 6 段。

答：Okay。

主席：你嘅第6段裏面所講嘅嘢，你係講緊2004年你見到個情況，抑或係講緊2015年你見到個情況？

答：而家係講緊2004年㗎嘛。

主席：唔，好。

問：得，係，即係...

答：因為係--你係講緊係--我而家嚟講，就因為喺2004年講過呢段嘢，而話點解你嗰個時候，係嗰啲人點解--即係點解我覺得係唔需要去remind其他人咁樣樣，...

問：係特別例子--係，係，係，係。

答：...變咗嚟講，我個understanding就係話，因為根本污染水源，污染食水就根本係水務條例嚟嘅。你喺 trade 裏面做咗咁耐，或者我哋水務署啲職員係執行水務條例，冇理由唔知道鉛係會造成污染呢個問題。除非你話，鉛係冇--即係係好嘅，咁我冇得講。如果但係我個認--我owrj 認...

問：有人曾經提過可能延年益壽，不過...

答：吓？

問：唔緊要，繼續。

答：Sorry，聽唔到。

問：有人曾經提過可能會延年益壽嘅，不過呢個我哋...

答：延年益壽？

問：係呀。

答：我唔知，因為我嗰個 common sense 就話畀我知，就鉛係唔好嘅，就因為譬如好似我哋又話要用無鉛嗰啲電油、油，話嗰啲菊花牌油漆嗰啲。所以我一直個印象，就係鉛係應該唔係好嘅嘢嚟嘅。我覺得用咗--即係你係做 trade 咁耐嗰啲人，我哋水務署啲人係執行水務條例，冇理由唔知道鉛會造成嗰個水質嘅污染，所以我就即係覺得唔需

要特別去提醒佢哋，...

問：得。

答：...呢啲佢哋應該係即係我覺得係basic應該要知嘅嘢。

問：喺一個美好嘅世界裏面，就執行水務條例嘅人，佢對水務條例裏面嘅要求都熟悉，喺個 trade 裏面攞得牌，就應該對所有水務條例相關嘅條文都有認知，我頭先話呢個係一個理想嘅世界。

但係其實喺實務嚟講，你都知道其實有好多嘅 licensed plumber，佢哋唔係叫做正式上過VTC呢啲叫做系統式，即係有埋個syllabus 畀你可以睇到嘅課程嘅。你知道㗎，因為 licensed plumber其實呢個制度係沿用好耐，之前有好多唔同嘅渠道可以成為licensed plumber，你知道嘅，係咪呀？

答：係。

問：有啲就係正式上過課程，VTC 2004年嘅課程上緊堂嗰啲學生，或者早之前畢咗業嘅，係咪呀？你第6段都有提到，係咪呀？即係"Those licensed plumbers"畢咗業嘅，但係都係 VTC train 出嚟嘅，嗰啲你就相對有信心，就係起碼你知道VTC個syllabus教乜，係咪？

但係有好多唔係VTC教㗎嘛，你知道，licensed plumber。佢哋好多根本就可能係即係好多年前，即係學徒起，即係有啲叫grandfather咗嘅，佢哋係學徒咁樣做起。佢哋...

答：佢哋係咪畀--我哋畀license佢㗎嘛，係咪？

問：係，你哋畀license。

答：你而家係講緊license嗰啲㗎嘛？

問：係，冇錯。Licensed plumber，叫得做LP，梗係有license。

答：VTC之前，唔係水務署自己去教嘅咩？

主席：水務署去考佢哋。

答：點解有 VTC，就係因為水務署唔想自己去做吖嘛。

問：係。

主席：啱呀。

問：我哋唔好再即係...

答：譬如話我哋教嗰陣時，就冇教佢哋呢啲咁嘅嘢。

問：我哋直情有啲 licensed plumber 嚟講，佢自己連點樣做 soldering 都唔識嘅。

答：咁講吖...

問：佢唔係話唔記得，佢直頭冇學。或者佢當年學，根本就唔係用--學 solder 嘅。即係你知 solder 呢樣嘢都相對新，因為早幾代嗰啲，佢哋就咁用力，都唔係用 solder 呢啲咁嘅新興嘅嘢。方法唔同，時代唔同，教嘅嘢都唔同。好多 LP 真係來自五湖四海，係咪呀？背景唔同，好多可能真係冇學過呢樣嘢，你會唔會有呢個認知？

答：我就問一樣嘢，就係你唔識，你走去做呀？

問：係呀。你唔好問我，我係聽到咁多返嚟，我話畀你聽，係有啲咁嘅人，你知唔知道？

答：我覺得好奇怪，就係話你唔識就去做咁樣樣，我都真係...

問：個牌仲喺度個喎。

答：個牌喺度，但係你...

問：係，個牌，畀咗佢個喎，好似？

答：...識--你唔識就都去做咁樣，我就有啲奇怪囉。係，點解你唔--你--即係你識就去做，你唔識都去做呀？

問：係。

答：咁我冇法...

問：你真係幫佢唔到嘞，如果係咁就你嘅意思係？

答：我真係--真係冇 comment。

問：Okay。

答：因為你--即係其實你嚟講，你做嘅嘢，你就應該係去識--你識先去做㗎，你唔識都去監--即係咁講，唔識就充內行，我監硬去做，就因為我揸住個牌。

問：係。

答：咁我冇 comment。

問：好。因為當然我唔會同你逐個逐個 licensed plumber 嘅...

答：係，因為根本嚟講，licensed plumber 自己本身一直都係去演變化，係咪？

問：係吖，係。

答：其實嚟講，就後代都會推前浪，即係個後代都會 replace 咗前面嗰啲人，係咪？

問：啱。

答：其實...

問：後代識嘅嘢，可能就係前人學嘅時候，根本考牌都未有添，好多時候佢哋唔會知道。

答：可能佢哋賣經驗都未定，係咪？大家即係可能係賣經驗嘅啫，係咪？變咗嚟講，如果你係監硬話，唔識都充內行去做嘅，呢樣嘢我就冇 comment，真係唔可以 comment。

問：我明白。即係所以我就係想問你，即係當然我都大概知道你嘅諗法，就係你係一個比較--諗嘢係比較 strict 嘅一個，所謂 curious 就係話一定要識先至做，唔識你就唔好做咁樣。

但係我想問你，就係即係你心裏面，當年，2004年嘅時候，即係會唔會有一個認知，就係呢個世界理論就咁寫啫，真係好多人攞住個牌，就即係可能開咗間公司做老闆，去接生意做，就睇嘢就走去即係睇啲大圍嘅嘢，即係 alignment、整咪錶，就即係對呢啲咁樣嘅焊料呢啲咁嘅嘢，一係就未學過，一係就唔多理囉。你有冇其實諗過會有呢一類咁樣嘅 licensed plumber？

答：我都有 care，我會 expect 嘅人都有。如果你係冇嗰個即係認知，然後去做嘅話，我覺得就唔應該有--即係唔應該要去做嘅嘢。

問：我明。我哋而家唔係講緊有冇 duty，一定有 duty 有 familiarise，所以如果 breach 咗，一定會有相應嘅所謂紀律行動，扣分又好，點都好，但係呢個撇埋一面先即係。但係你好多嘢即係應唔應該做，同埋實際有冇人咁做，就兩回事嚟㗎嘛。

答：咁講，我一直 accept 呢個世界係唔 perfect 嘅，係，我係 accept 係 imperfect。即係話係有樹大有枯枝，一定係有。你想一係...

問：我嘅問題就係即係如果即係大家都接受，或者你接受係會--即係呢個世界會 imperfect。當時即係你2004年嘅時候嘅取態，就係話你...

答：佢如果係即係咁樣觸犯嗰個水務條例嘅話，你 remind 佢幾多次都冇用㗎，係咪呀？

問：哦，唔。

答：如果佢係有心觸犯水務條例，同埋佢即係根本都唔理嘅，咁你同佢講幾多次有鬼用？冇用㗎。

問：蓄意，特登犯險嘅，當然你叫佢十次，佢都會咁做。但係即係會有一嚟嘅人，有個 bracket 嘅人，係佢唔係特登話「我要同你作對，你叫我做，我就係都唔用㗎嘞。」但係好多人即係基於無知，或者係掉以輕心而冇做咁，即係一個友善嘅提示就可能令到佢哋--舉個例，有一啲佢哋真係落手落腳都未做過嘅，你提一提佢，佢話「哦，咁你提到，咁我會即係打醒多兩分精神喇」咁樣，就係嘞。呢一類嘅人，即係你會唔會接受，就係如果當時提咗一提，即係可能會 capture 到呢一拃即係掉以輕心或者係無知，就即係呢個即係又要扮識嘢去做嘅，嗰班人你會 capture 到佢，如果有一個 reminder？

答：唔係，而家係咪出事係咪呢一類人先？

問：係。

答：就係佢哋唔係...

問：起碼部分係因為咁喇，部分。

答：你覺得係--即係咁講，佢哋做咗呢啲嘢，就係因為佢係冇提示呀？

問：佢冇話係因為冇提示，但係即係我哋而家係諗過即係睇番以往，或者即係計劃將來，而家將來就我諗都未必需要好大嘅提示，因為而家全城都知，我哋即係睇番會--即係以往。就係即係當然我哋而家冇得話問番佢哋，「如果提咗你，你會唔會做？」但係我係同你問一個好簡單嘅問題啫。

答：咁樣樣，因為有一啲假設性嘅問題，我都唔知點樣去答你好，因為...

問：唔係，同埋我都唔係批評你嘅，所以你用...

答：因為我唔知道究竟你話即係呢個提示係唔係有咁嘅必要，因為我個understanding，就係話你做咗咁耐，大家都做咗咁耐，係咪？就我哋自己本身水務署啲人同埋業界啲人，喺--即係理論上應該係知道究竟我哋水務署嘅要求就係唔可以造成任何水質嘅污染㗎嘛。

呢個咁嘅大前提之下，我會 expect 佢哋係有個即係understanding喺度。即係除咗你話係鉛之外，仲有其他好多、好多物質，唔係話我特別因--因為好簡單，因為你有鉛呢個水事件，你先咁樣問我話係鉛嗰個問題，我係啱啱好喺呢個咁嘅 incident 裏面就講咗咋嘛。其實水質裏面有好多重金屬呢啲咁嘅嘢嘢，係唔係--即係到時你又係話問我係咪又要全部提晒佢咁解嘅啫。變咗嚟講，我唔係咁即係 follow 呢樣嘢，就係話 basically 嚟講，佢哋自己本身應該係知道我哋水務署嗰個要求，無論喺業界同埋我哋水務署嗰啲人。而有鉛呢樣嘢係只不過係污染我哋水源嘅某一個 element 咋嘛，其實嚟講佢應該--佢哋應該會知道。

問：得。即係你嘅取態其實就係你嗰次就純粹係確保喺 VTC 學嘅人將會學到啫，以前嗰啲，就算你有冇教都好，你嘅出發點就係你做得呢行，你就會 expect 佢係跟番呢行嘅規矩做。

答：冇錯。

問：就算世界係唔完善嘅，你有啲人真係即係鋌而走險或者犯險嘅話，就

提都冇用，同埋後果你要自己承受，係咪咁嘅...

答：冇錯，因為我哋水務...

問：...--即係其實你嘅取態就係咁樣，係咪？

答：水務條例都講得好清楚，如果你係觸犯咗水務條例嗰個污染又乜乜乜乜嘅後果咁樣樣嘅。

問：好。但係即係你--其實你當時，講番2004年，你對即係業界裏面唔同嘅licensed plumber，佢哋嗰個運作嘅模式大致你知唔知道？

即係我可以specific少少，就係有啲licensed plumber可能係自己開公司做老闆嘅；有啲licensed plumber就可能係即係打份工嘅；有啲licensed plumber打份工，然之後就簽名as licensed plumber；有啲licensed plumber就有個牌，但係佢甚至唔會出嚟簽名as licensed plumber，佢可以喺啲大公司裏面負責即係做一啲即係水喉工程策劃嘅人。即係唔同嘅licensed plumber佢哋嘅運作模式，你大致有冇呢個認知？頭先我所講嘅譬如話例子，頭先我講嗰啲。

答：即係你呢啲咁嘅例子，就等如我engine出嚟一樣可以做老闆，亦都可以簽名，或者落手落腳去contractor嗰度做。呢個我覺得係common嘅practice。

問：係，得。你知道係唔同嘅licensed plumber佢有咗個牌，佢可以唔同嘅出路、做法？

答：唔同嗰個路，係呀。我覺得係即係普遍應該即係唔係好似你咁specific話係邊啲、邊啲。

問：我明，我明。

答：但係係有唔同，唔係淨係純粹做即係licensed plumber--即係license嗰樣嘢。

問：係，即係我攞咗個牌，我可以用唔同嘅模式去做licensed plumber，甚至我可能係唔係做licensed plumber要做嘅嘢添，我可以係喺間公司度打工或者whatever。

答：Yeah，something like that，yeah。

問：得。即係你知道佢哋有啲咁樣嘅唔同嘅可能性嘅？

答：係，我覺得我係 common sense 話畀我知，係行行都--啲人畢咗業之後，唔係話一定係做嗰行嘅嘢。

問：得，得，明白，明白。請你等一等，我睇下仲有冇第二啲嘅問題問你。而跟住嗰兩個會議，我唔使你睇番嗰個 minutes，你跟住有兩個 follow-up 嘅會議，你記得就係同 VTC 嘅同事--就唔好叫同事，同 VTC 嘅代表傾開，就係有冇一啲可以 on-site testing 嘅啲物料。

其實嗰陣時，即係你嘅證人供詞就解釋番，我想 confirm，就係你其實唔係想話真係想立例或者引進係話要所有嘅人喺個 on-site 嘅時候，或者要水務署去 introduce 一啲 testing material，走去檢驗嗰啲焊料有冇鉛，即係你唔係想 introduce 呢樣嘢？

答：唔係，唔係 in...

問：其實你係想佢哋啲教材裏面，睇下可唔可以整埋呢樣嘢，就教埋佢哋「嗱，你哋如果想知道呢隻料有冇鉛，就 beep 下，黐一黐上去就會知道嘞」咁樣？

答：我覺得係應該教育嗰樣嘢係負面都要知。

問：得。即係其實你提起呢啲咁樣嘅要 test 下有冇鉛呢一樣嘢，其實就 in the context of 你睇下有冇可能提議，善意提醒 VTC，就話「你教佢哋無鉛嘅時候，試下可唔可以即係搵呢啲做埋啲教材，就教埋佢睇下，『嗱，你如果試驗到有，你就唔好用嘞。』」係咁樣嘅 context 討論㗎嘛？

答：係。因為佢--我係同 VTC 係講緊點樣教嗰個 LP 嗰個 training 嘅，係。

問：得。就後來發現原來咿極都冇即係呢一類咁 handy 嘅物料嘅？

答：我係問 V--因為係 VTC 去教，所以我嗰時候就係叫 VTC 去搵嘅。就佢就唔知第二次，即係一年之後，就話去搵過全香港嘞，冇，搵唔到咁樣，我先話「欸，如果係咁，我不如去 WRAS 嗰度睇下。」

問：係，你上佢網頁。

答：係，去網頁嗰度睇下有冇。其實嚟講，我就覺得有呢，係對佢個教育

係好啲；但係冇，即係唔係一個必需。

問：冇，佢都 assure 你，就話「冇都唔緊要，我係都會咁教㗎嘞，我 assure 你，我係會教佢哋用無鉛嘅。」咁你就接受咗？

答：係，係無鉛嘅。

問：即係呢個 topic 就叫做 draw to an end 咗，咁就？

答：係，冇錯。

問：得，好，唔該晒。

石先生：我冇其他嘅問題。

主席：唔係，我想問下，即係你 2004 年嘅時候，就有好多 supplier 就上嚟你哋水務署，係咪你會見佢哋嘅呢，即係？

答：唔係。

主席：唔係？

答：佢通常就寫封信入嚟，就夾埋啲 catalogue，就上嚟就問我哋係咪即係用喺--可以用得喺嗰個 inside service 裏面。我就見嗰啲 copper，同埋睇過佢嗰啲 copper 嘅 catalogue，就有時我就見到佢係成套嘅，就係話 pipe 同埋 compression 嗰個 fitting 嘅，有時佢就根本係冇嘅。冇嗰時候，我先諗下可能會燒焊個喎，因為佢都冇嗰件嘢去夾咁樣，所以我先帶出嚟畀 VTC make sure，VTC 係有教佢哋。

主席：咁有啲 catalogue 裏面係咪又會講到，「啊，如果你要做 soldering 呢，其實係有 specification 嘅」？冇？

答：印象之中，有啲有，應該有啲係冇講咁樣樣。

主席：有啲有講，有啲係冇講？

答：有啲有講，有啲冇講。但係通常嚟講，如果佢自己本身係用--即係諗

住成套都係夾嗰種，就唔需要講 soldering。

主席：係呀。即係咁...

答：即係用 compression 嗰種，佢就未必需要講到 soldering。

主席：啱，啱，啱。咁有啲可能已經係--我哋知道嗰啲 integral 又已經喺埋裏面嗰啲，又唔使講，係咪？

答：係嘞，係嘞。因為呢啲係通常嚟講，係嗰個即係工人嗰個 workmanship 嗰個問題，一般嚟講，佢哋都未必會講。

主席：係。於是你又即係見到啲 catalogue 咁講，於是你就去到呢個 VTC 開會嗰陣時，就順便...

答：係嘞，順便問一問佢...

主席：...bring up，「你哋其實有冇教㗎？」

答：因為呢個喺--特別喺 LP 要去做嘅嘢嚟嘅，即係喺嗰個 soldering 嗰個係 manufacturing on site 嘅，其他嗰啲佢都係有廠出嚟，而只不過就佢大--夠唔夠大力，咁樣睇下漏唔漏水咁解嘅啫。

主席：係。

答：但係你 soldering 就零零舍舍佢係 LP 去處理，所以就要提 VTC，「你究竟有冇教佢哋呢樣嘢先？即係用無鉛嗰個 lead-free--lead 嗰樣嘢？」因為大家都知道鉛--有鉛嘅話，就可能對個水質有影響吖嘛。

主席：係呀。嗰陣時你去 VTC 提佢哋嗰陣時候，你係咪--喺你個心目中係咪知道呢個 BS 864 Part 2，即係你有呢一樣嘢喺你個心裏面，你先...

答：佢好似 864 係咪寫喺--應該係寫喺水務條例裏...

石先生：寫咗喺 WWR 嗰度。

答：寫喺水務條例裏面㗎嘛。

主席：係呀，係呀。

答：我睇過 864，佢裏面係有講話...

主席：即係你當時候係有呢一樣嘢喺你個心裏面，你先至去同佢哋講嘅啫？

答：梗係喇，知道係--因為我係好 specific，因為我要問清楚 VTC 佢係教緊啲乜嘢畀人，我哋係--就係其實我哋水務署嘅要求，就唔係教啲 LP 去燒焊，我哋係教啲 LP 係燒一啲無鉛嘅焊。所以我係好 specific 問 VTC，「究竟你係唔係做緊呢樣嘢？」

主席：係囉，即係換句話嚟講，即係當時你嘅注意力又好，你嘅擔心就係究竟嗰啲人係咪用無鉛嘅焊料去做燒焊。

答：係嘞，係嘞，無鉛。因為我哋嗰個水務個要求同 VTC 講開都係，個要求我係要無鉛。我唔係格--我唔係要求 VTC 去教嗰啲學生去燒焊，我係教啲學--要求佢教啲學生係用無鉛嘅燒焊。

主席：啱嘞。

答：所以我係好 specific 問佢，「你係咪用緊 lead-free 嘅 soldering？」

主席：係，係。所以後面就係話「你作為水喉匠，如果你要去 check 你嗰啲工人係咪真係用咗 lead-free，你睇--就可以搵下嗰啲咁嘅 test paper 嘞，諸如此類？」

答：即係其實嚟講，係喇，我即係--你係咪有一啲方法可以 check 得到呢樣嘢，因為原則上嚟講，我個睇法就係 LP 自己本身係需要做呢個即係 undertaking 嘅。

主席：要做呢個咩嘢話？

答：Undertaking。

石先生：Undertaking。

主席：係，undertaking。

答：因為我個 understand，佢唔係真係...

主席：落手落腳做？

答：...落手落腳去做，但係佢起碼一樣嘢，佢要 pass 個 information 落去嗰個工人嗰度，佢要知道即係嗰個--即係點講呀？嗰個嚴重性，或者係嗰個情況係點樣。

主席：除咗你知之外，當時你個 senior，senior engineer 佢都知㗎喇，佢 present㗎嘛？

答：我好奇怪點解我上司唔會知喎。

主席：吓？

答：因為大家都係執行緊水務條例喎。

主席：你上司應該知，係咪呀？

答：我上司應該知囉。

主席：係，係，即係個 senior engineer--因為唔單只係你去...

答：唔單只--總之我哋係執行水務條例嗰啲人應該全部要知道呢個唔可以做任何 water supply 嘅 contamination 呢樣嘢。

主席：啱，啱，啱，啱呀。得，好，我冇問題。

黎先生：我想問一問少少啫，嗰個 supplier 去提供呢一啲新嘅呢啲嘢畀你嗰陣時，有冇提供埋話係點樣樣用，點做，有冇講㗎？冇嘅？

答：冇，唔會嘅。因為佢係 supplier，佢只係問我哋，「欸，啲喉料係咪可以用得？」佢唔係用喺個 project 嗰度，如果 project in--project 個 stage 嗰度，就要入到去即係譬如我哋有啲業--即係嗰啲叫做 client 寫入嚟話「我要供水嘞」，佢用咩嘢喉料，開工嗰時候就有 46，報嗰啲喉料呢啲咁嘅情況。Supplier 唔係做呢樣

嘢㗎嘛，...

黎先生：Okay。咁...

答：...所以佢唔會話畀我知，佢會用喺邊度。但係我知道...

主席：唔係，佢唔係話畀你聽用喺邊度。我諗黎生嘅意思，即係話譬如佢supplier，佢唔會淨係交譬如銅喉，佢可能會交埋晒其他啲配件，一次過，唔會呀？

答：唔會嘅，唔會嘅，佢哋係好 freedom，佢鍾意交啲乜嘢畀我，我只不過係 base on 佢交上嚟嗰個 information 去做嗰個 assessment。

黎先生：我又想問另一樣，就關於 testing 嗰樣嘢，即係話去試，即係有冇嗰啲貼嚟到去試下有冇鉛呀嗰啲呢，會唔會--你有冇諗嗰陣時問啲 supplier，佢哋有冇啲咩嘢方法去 check 嘅呢？你自己搵唔到，supplier 有冇資料可以提供呢，事實上？

答：咁樣樣，因為我就係 expect 係 VTC 自己本身去做一個 search 先，佢就喺--佢就搵過全香港冇呢個咁嘅 test 吖嘛，所以我諗我冇咁特別去問嗰個 supplier。

黎先生：即係冇諗到問 supplier？

答：係呀，因為佢都係喺香港嗰。

黎先生：Okay。好，唔該。

主席：有冇問題，其他人？冇。

唔該晒，何先生。

答：Okay。

主席：畀完口供，可以離開，唔該。

答：係，得㗎嘞，係咪？同埋我擺番啲嘢喺度。

主席：係。我哋晏晝兩點半再繼續，唔該。

下午12時59分聆訊押後

下午2時33分恢復聆訊

出席人士如前。

王先生：主席，開始陳漢輝博士。

官：好呀。呢邊，陳博士。

水務署第十一證人：陳漢輝博士（水資源及供水水質事務諮詢委員會主席、水務署調查食水含鉛量超標專責小組成員）以本地話宣誓作供
王先生主問

問：陳博士，你就為呢個聆訊委員會做咗一份證人口供嘅，我而家就會將個證人口供讀出嚟，你睇下有啲乜嘢你需要 confirm 或者係 amend 嘅。

答：好。

問：如果冇，就話我知冇。

COMMISSION OF INQUIRY INTO EXCESS LEAD FOUND IN DRINKING WATER APPOINTED PURSUANT TO SECTION 2 OF THE COMMISSION OF INQUIRY ORDINANCE (CHAPTER 86) ON 13 AUGUST 2015

WITNESS STATEMENT OF CHAN HON FAI

I, CHAN Hon Fai, Chairman of Advisory Committee

on Water Resources and Quality of Water Supplies of 46th Floor, immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong, do say as follows:-

2. I am the Chairman of Advisory Committee on Water Resources and Quality of Water Supplies, whose terms of reference are to keep under review and to advise the Government of the Hong Kong Special Administrative Region through the Director of Water Supplies on matters relating to water resources and quality of water supplies. I have held this position since 1 April 2012.

3. I make this Witness Statement pursuant to the request of the Commission of Inquiry into Excess Lead Found in Drinking Water ("**the Commission**"), conveyed in a letter from Messrs. Lo & Lo to the Department of Justice dated 27 October 2015 ("**the 27 October Letter**"). Save where otherwise appears, the facts deposed hereto are within my personal knowledge or are derived from office files and records and sources to which I have access and are true to the best of my knowledge, information and belief. Save as otherwise specified, this Statement adopts the same abbreviations and nomenclature as in the 27 October Letter.

4. This Witness Statement addresses the second paragraph of the 27 October Letter:-

> "Dr CHAN Hon-fai (Chairman of the Advisory Committee on Water Resources and Quality of Water Supplies) to explain the investigation of Task Force"

5. I was appointed as a member of the WSD Task Force on Investigation of Excessive Lead Content in Drinking Water ("**WSD Task Force**") and hence, I have direct knowledge of matters relevant to the second paragraph of the 27 October Letter.

Component Sampling

6. To investigate the cause of excess lead in drinking water, over one hundred components of pipes and fittings were dismantled for testing from three water supply chains, each serving an individual flat in Hong Ching House and Yuet Ching House of Kai Ching Estate ("**KCE**") and Luen Yat House of Kwai Luen Estate Phase 2 ("**KLE2**") respectively. For comparison purposes, components were also dismantled for testing from a water supply chain in Hung Hei House of Hung Fuk Estate ("**HFE**") to serve as a control, since the lead contents in drinking water samples from HFE were found to be well below the applicable World Health Organization Provisional Guideline Value for lead ("**WHO PGV**").

7. Five categories of components, namely, pipes, valves, water meters, taps and elbows and sockets with joints were dismantled from the said water supply chains. The water samples taken from the sump tanks and roof tanks in the above three housing blocks had undetectable lead contents. Therefore, the presence of lead in the drinking water samples taken from these housing blocks must have come from parts of the inside service below the roof tanks. As such, only components of pipes and fittings along the down pipes and branch pipes downstream of the roof tanks were dismantled for testing.

Leaching Test

8. A leaching test was conducted for all the components of pipes and fittings which were dismantled. The purpose of the leaching test was to investigate which component(s) leached and if so by how much of four heavy metals, namely, lead, chromium, cadmium and nickel leached during a 24-hour test. Each component, without any treatment or cleansing, was sealed off at one end and placed in an upright position. It was filled up with water.

The other end of the component was then sealed off and the component was allowed to stand for 24 hours before the water was taken out for testing. For simulating the actual conditions on site, the water used for the leaching test was taken from the roof tank of the housing block where the component was dismantled. Elemental analyses of various components were conducted to determine their lead contents.

9. The leaching test results showed that little lead leached in the down pipe from roof tank to the floor of the flat. However, lead leaching was observed in the branch pipe along the floor of the flat and within the flat. On examination, deposits of various amounts were found inside the components of pipes and fittings in the branch pipes. It was believed that there were compounds containing lead in the deposits which might have released lead into drinking water. In order to determine whether lead leaching originated from the components themselves or from the foreign deposits, the deposits in some of the components were cleansed and another round of leaching test was conducted thereafter.

10. The leaching test results for the copper pipes in the three water supply chains in KCE and KLE2 before cleansing the deposits showed that there was lead leaching from the pipes. The amounts of lead leached reduced to very low levels after cleansing the deposits and this indicated that the leached lead originated from the deposits rather than the copper pipes themselves. Subsequent analysis of the cleansed deposits also confirmed that there were lead containing compounds. In addition, the elemental analysis showed that the copper pipes contained minimal amounts of lead (0.001%-0.007%) as impurity. The Task Force therefore concluded that copper pipes did not leach lead.

11. Both copper alloy fittings and solder joints leached lead even after cleansing the deposits. The copper alloy fittings including valves, water meters and

water taps may contain small amounts of lead according to the British Standard ("**BS**"). However, elemental analysis showed that the lead contents of the solder in the joints were high (16%-42%) and were well above the limit stipulated in the BS of 0.07%. The Task Force therefore considered that lead leaching occurred in both the copper alloy fittings and the leaded solder joints.

12. In order to determine whether the copper alloy fittings or the solder joints were the cause of excess lead in drinking water, the WSD Task Force conducted isotopic analysis and mathematical modeling and compared the three water supply chains in KCE and KLE2 with the control water supply chain in HFE. Isotopic analysis provided a preliminary deduction of the source of lead in drinking water by comparing the lead isotopic ratio of the water sample with those of the copper alloy fittings and leaded solder joints.

Details of the isotopic analysis are explained by Mr. CHAN K in Man, the Chief Waterworks Chemist.

Mathematical Modeling

13. The WSD Task Force has made use of mathematical modeling to confirm or otherwise if the source of lead in the drinking water mainly came from the leaded solder joints. By using the 24-hour leaching test results of components, the mathematical model estimated the relative contributions from respective components in water supply chains to lead found in drinking water at a kitchen tap. The lead concentration in drinking water in a water supply chain over a given period of time may be estimated from the amounts of lead leached under stagnant condition from each component in the water supply chain during that period.

14. Leaded solder joints were found to be the major source of lead in drinking water in the three water supply chains in KCE and KLE2. Mathematical modeling also showed that if only the copper alloy fittings leached lead, the lead contents in the drinking water in the three water supply chains should be below WHO PGV of 10μg/L. It was concluded that, although copper alloy fittings leached lead, they would not result in excess lead in drinking water. It followed that the cause of excess lead in drinking water should be the leaded solder joints.

Comparison with HFE

15. The above findings were further corroborated by comparing the results obtained from three water supply chains in KCE and KLE2 with the control water supply chain in HFE, where lead contents in its drinking water samples were found to be well below WHO PGV of 10μg/L. Stainless steel pipes with mechanical joints and copper pipes with lead-free solder joints were used in the communal area and inside the flats respectively in HFE (i.e. without leaded solder joints). Nevertheless, copper alloy fittings were used in HFE just like in KCE and KLE2. Based on the leaching test results, the amounts of lead leached from the copper alloy fittings in Hong Ching House and Yuet Ching House of KCE and Luen Yat House of KLE2 were comparable with that of copper alloy fittings in Hung Hei House of HFE. This comparison reinforced the Task Force's assessment that it was not copper alloy fittings but leaded solder joints which was in fact the cause of excess lead in drinking water. Indeed, there is sufficient evidence in hand to indicate that even if copper alloy fittings were leaching lead, they would not result in excess lead in drinking water.

Conclusion

16. Based on the above investigation, the WSD Task Force reached the following findings:

(a) Leaded solder joints were the cause of excess lead in drinking water; and

(b) Copper alloy fittings also leached lead but did not result in excess lead in drinking water.

Applicability of the findings on other public rental housing developments with excess lead in drinking water

17. Apart from KCE and KLE2, some drinking water samples taken from nine other public rental housing ("**PRH**") developments were also found to have lead contents exceeding WHO PGV. No components of pipes and fittings have been dismantled from these nine developments. Nevertheless, the design of the inside service and the specifications of the pipes and fittings in these nine PRH developments are similar to those of KCE and KLE2, and the solders in the joints of their copper pipes were also found to have lead contents ranging from 18% to 61% levels which were well above the limit stipulated in the BS of 0.07%. The Task Force therefore considered that the above findings should be applicable to these nine PRH developments.

Other Findings

18. Based on the leaching test results for chromium, cadmium and nickel from the various components of pipes and fittings in the three water supply chains in KCE and KLE2, the amounts of chromium and cadmium leached were low. However, there was significant leaching of nickel from some taps in KCE, e.g. the highest leached amount of nickel after standing for 24 hours was 102.0μg (or

1,569µg/L in the testing water) in one washing machine tap. Elemental analysis on the cross section of these taps showed that nickel had seeped into the wetted surfaces of the taps during electroplating. Nevertheless, as the taps hold very small amounts of water (less than 150ml) under stagnant condition, the leached nickel should be flushed away within one to two seconds after turning on the taps.

19. Some valves and taps dismantled from the three water supply chains in KCE and KLE2 were found to be not those brands and models submitted to Water Authority ("**WA**"), although they were on the directory of pipes and fittings accepted by WA. In addition, elemental analysis showed that some of the copper alloy valves and taps in the three water supply chains in KCE and KLE2 did not comply with BS requirement in respect of the lead content. Despite non-compliance with the BS requirement, the leaching test results of these copper alloy valves and taps were comparable to the leaching test results of copper alloy valves and taps which comply with the BS requirement. In other words, the copper alloy valves and taps which did not comply with the BS requirement found in KCF and KLE2 were not the cause of excess lead in drinking water.

20. In view of the technical and specialized nature of the Report, I stand ready to give evidence to fully assist the Commission by answering queries which the Commission and / or its expert(s) may have.

21. I confirm the contents of this Witness Statement to be true to the best of my knowledge, information and belief.

Dated this 10th day of November 2015

問：陳博士，呢個就係你嘅證人口供，你可唔可以確認入面嘅內容係真實無誤？

答：真實，我確認嘅。

問：你願唔願意將呢個採納成為你嘅主問證供？

答：願意。

王先生：Okay，主席，我冇其他嘢補問。

主席：唔該。

石先生盤問

問：陳博士，我代表委員會有啲問題想請教你嘅。

答：好，好。

問：麻煩你可唔可以向我哋講一講--當然呢個係 public record 或者係網上或者一般媒體都應該有介紹過，但係可唔可以同我哋簡述你嘅學術嘅背景呢？

答：我自己本身係响香港大學攞 bachelor of science 嘅，我個 major subject 係 physics 嘅，我亦都响同一個大學就攞咗一個 master of philosophy，亦都我個 major research 係 in physics 嘅，我亦都响香港大學亦都攞咗個 doctor of philosophy，我個 research 亦都係 physics，就係 upper atmosphere physics 嘅。

問：Upper atmosphere physics？

答：Upper atmosphere 嘅 physics 嘅，呢個係我個學歷嚟嘅。

問：照我嘅理解，你嘅工作或者你喺 career-wise，你嘅研究，主要係與環境或者係污染方面嘅科學有關，對嘛？

答：係，冇錯。

問：環境同埋關於污染嘅科學就包括埋水嘅污染，係咪呀？

答：係。

問：所以你都會係曾經出任過一啲係同環境或者係食水有關嘅公職，對嘛？

答：食水方面只係呢個水諮會啫。

問：咁環境保護之類嗰方面？

答：其他嗰啲就係我哋工程師學會，我係當過一屆嘅主席嘅，係個 Environmental Division 嘅主席，喺 1999 年至到 2005，喫係純粹係環境工程方面嘅主席嘅。

問：你亦都有從事過教學嘅工作？

答：冇錯。

問：好喇，我就關於 Task Force，即係關於嗰個水務署，由黃仲良副署長擔任主席嗰個 Task Force 嗰個報告，其實委員會方面都有兩位專家嘅證人係審視過，其實佢哋大體嚟講都係認同嗰個 Task Force 嘅報告嗰個結論嘅，佢裏面有一、兩點就有些少評語，但係唔影響總體嗰個結果，你都有睇過嗰兩位專家嘅報告嘅，係咪？

答：睇過，睇過，睇過。

問：所以由於嗰度係關於 Task Force 嘅報告嘅內容或者結論同兩位專家其實唔係有所謂 material 嘅分歧，所以我就唔打算再喺嗰度冗贅地再去逐字逐句地去講，反而我有一、兩樣報告以外嘅嘢反而有興趣想同你探討下嘅。

答：好呀，好呀，好呀。

問：就係關於你喺水諮會裏面嘅一啲 involvement。但係首先我想你睇咗一份文件先，就第一，就係水諮會--唔係，唔係，呢個 Task Force 嘅第五次會議，就係 19.6。C19.6 嘅 14057，14057 就係呢個第五次 Task Force 會議嘅紀錄，你見到係"5th meeting of Task Force"，見到嘛？

答：係。

問：個 heading，"Minutes of Meeting"，你見到喇，陳博士，係咪

呀？

答：係，係。

問：你見到就出席嘅人士就係黃仲良副署長，你就係第二位喺個名單上面。

答：係。

問：你一路睇落去，就會見到譬如話水務署嘅總化驗師陳健民先生，第一頁中間嗰度，你亦都有見到就係"Michael LEUNG"，梁中立先生，係咪呀？而家嗰個就係 Task Force 嘅秘書，對嘛？"Mr Michael LEUNG"。

答：唔。

問：好喇，請你睇一睇第 3.2 段，14061。

答：14...

問：14061。

答：...061，係。

問：係呢個會議紀錄嘅第 3.2 段，under 呢個"Any other business"，佢裏面就"The secretary"，即係呢個梁先生--"presented the paper titled 'Proposed mitigation of lead contamination in tap water' prepared by"水諮會，"The paper set out the overseas experiences in tackling lead contamination problem and proposed a number of measures, inter alia, Short-term measures."

就係"(a) Flushing for at least one minute prior to drawing water"，"(b) Proper use of filter certified under the NSF/ANSI 53 standard."，同埋 (c)，就係"Standardising the water sampling methods."。

跟住有啲"Medium-term measures"，就係"Exploring the dosing of orthophosphate."同埋 enhancing 嗰個優質食水計劃，嗰個 Quality Water Supply Schemes，(c) 就係"Strengthening education to the public and property management agents."

3.3就係"Members were invited to propose measures to prevent recurrence of similar incidents in future."

佢裏面提到嘅一個paper，就係呢個秘書梁先生present去畀呢個會議，就係"Proposed mitigation of lead contamination in water"，就係水諮會準備嘅。呢一個paper其實喺同一個會議紀錄後面就係一個attachment咁樣嘅形式，我哋睇一睇嗰個paper，就係14111頁，14111頁，係同埋一個bundle嘅，14111。

答：係，得。

問：呢個14111頁，你見到就係"Proposed Mitigation of Lead Contamination in Tap Water"，見到喇？

答：睇到。

問：右上角就係有個manuscript，手寫嘅reference，就係話"para 3.2 of minutes of 5th meeting"。

答：唔。

問：呢一個就照睇，就應該係嗰一段裏面refer to嗰個水諮會嗰個paper，"Proposed Mitigation of Lead Contamination in Tap Water"。

答：係。

問：你見到裏面就有--我相信你對呢個paper有認知，係咪呀？首先。

答：係，係我寫嘅。

問：你寫嘅，好。

答：係我寫嘅。

問：咁我直情無需要再讀晒有關嘅段落畀你睇。

答：我都知道內容㗎喇。

問：你就有其實基本上裏面嘅一啲旁徵博引嘅對第二啲系統、第二啲地方嘅研究。

答：係，係。

問：跟住到到後來，譬如話你睇番 14117，就有個叫做"Recommendations"？

答：係。

問：你就見到最底嗰度就係第3段，就係"WSD should standardise and educate the public on the proper sampling methods"，呢一段都係你寫嘅，係咪呀？

答：係。

問：好喇，我哋睇晒有關我想你睇嘅文件，我就首先就有一連串嘅問題想問你嘅，呢一個 paper，水諮會呢個 paper，就你剛才講，就係你寫㗎喇？

答：係。

問：嗰啲 underlying 嘅 research，譬如話要睇下各個地方佢哋嗰個做法係點，嗰啲係你自己做，定係譬如話你有啲同事或者你有啲...

答：我做嘅。

問：你自己做嘅？

答：係喇。

問：好，咁就你自...

答：但係有補充，就係我呢份 paper，我係 circulate 咗畀我哋呢個水諮會嘅 members，佢哋都確認咗嘅，同埋呢啲 recommendation，佢哋都係同意，我先至畀署長嘅。

問：好，咁就即係話雖然呢一個 paper 佢就冇一個抬頭或者冇一份會議紀錄就話 members have discussed 呢個 paper and endorsed in 水諮會某個會議咁，...

答：冇，冇。

問：...但係好多時候，我哋知道呢一啲咁嘅 paper 或者係一啲咁嘅委員會嘅運作，好多時候啲嘢都係會 by circulation，係咪咁嘅意思？

答：係，係，冇錯。

問：你會 send 一份嘢，就係話可能你 draft 完，咁就 circulate，就係「大家有冇意見」？

答：係，係。

問：如果冇意見嘅話，呢份就可以係水諮會嘅一個叫做一個 official paper，...

答：係，可以咁講。

問：...就可以以水諮會嘅名義，咁就出街，可以叫做係？

答：係，因為時間係急嘅，個時間係短，所以我亦都唔夠時間，我只係 circulate over 一個 weekend 咁上下時候，circulate 畀我啲 members，佢哋亦都同意咗嘅。

問：好，我哋就知道就係水諮會有陣時開會，真係叫做 physically 坐低開會，就有好多唔係水諮會會員嘅都可以叫做 sit in 嘅，係咪呀，會係？

答：主要都係水務署嘅代表，即係我哋開呢啲會就主要係水諮會嘅會員，但係亦都有水務署嘅代表响度出席嘅。

問：得，因為水諮會嘅會員，就譬如話你上網睇，就會搵到譬如閣下嘅名，佢哋 appoint 就 2014 至 2017 嘅應該，如果我冇記錯，係咪呀，應該？

答：係。

問：14 至 16，係咪呀？

答：我就 16 嘅啫。

問：16，係，okay。

答：16。

問：總之會有個 fixed term。嗰一拃用名，appoint 嘅，嗰拃固然就係會係水諮會嘅會員，譬如話你開會、你 circulate 文件，就會係 circulate 畀嗰拃嘅水諮會嘅會員？

答：係，係。

問：From time to time，水務署可能佢會有一 group 嘅同事佢會走嚟參與，叫做 sit in，但係佢哋技術上就唔係叫做水諮會嘅會員嘅，可唔可以咁講？

答：啱，啱。

問：所以你 circulate 就未必會 circulate 到畀...

答：冇 circulate 畀佢哋，我淨係 circulate 咗我哋啲 appointed 嘅 unofficial members 嘅。

問：好，咁就...

答：Unofficial 嘅。

問：好，所以水務署如果有同事佢話「我哋耐唔耐會去 sit in，但係又冇叫做喺個會度攞過呢份嘢出嚟大家討論深究。」呢個你覺得不足為奇嘅，對嘛？

答：唔。

問：因為佢哋如果唔會係 on 你個 circulation list，佢哋純粹係靠開會見到嘅，佢 e-mail 收唔到呢份，不足為奇，係咪呀，你會覺得？

答：係。

問：好，所以呢一個 paper，你剛才講咗就係咁樣嘅由來，我哋記番就係嗰個 Task Force 第五次會議，裏面 secretary 就有叫做 present 咗呢個 paper，就去畀個會員聽，你有冇記憶係喺呢一個會議裏面，到到臨尾 AOB 嘅時候，關於 present 呢一個 paper 嗰個討論係點樣呢？或者我 focus 少少，我想你講邊個 area 嘅嘢。

即係有陣時開會，大家開到七點半，可能臨尾大家都趕住「個 paper 擺喺度，大家睇喇，大家有咩嘢意見，第二時大家 e-mail 算喇，invite comments。」大家就執包袱就走，可能係咁樣倉卒嘅情況之下，叫做 officially table 咗，定係真係喺呢個會裏面係大家真係攞住大家喺度真係逐個 recommendation 去討論，大家係有共識定係點樣，究竟係邊一類呢，以你嘅記憶，呢一個會議裏面，present 呢個 paper？

答：呢份 paper，我講清楚，就係我係直接係畀個 Direct of Water Supplies，係畀署長嘅。

問：林天星先生？

答：係，林天星嘅，因為我作為係水諮會嘅主席，我有個責任係去 advise，或者你呢度有個 terms of reference，我有責任去 advise，尤其是係一個--呢個咁重大嘅事件，我係有責任去 advise 個 Director of WS 嘅，我就畀佢啫。至於我嘅理解，就係佢將呢份 paper 就 circulate 咗畀佢嗰啲同事，at 第五次嘅會議嚟講，就 chairman 就攞出呢份 paper，然之後就派咗--當日我記得，就將呢份 paper copy，就 copy 畀當日嗰啲出席嘅與會人士嘅，咁...

問：你係講第五次會議？

答：係喇，咁就將我呢份 paper 就 copy 畀啲出席嘅會員嘅。當時嚟講，chairman 亦都 request 我就將我個 recommendation 係讀出嚟嘅，最主要我諗個理解就係話其實呢份 paper，你可以睇到我好多嘅內容就係講到我 research 不同嘅國家响呢個鉛水事件佢嘅對應係點樣，同埋佢發生咗咩事個對應係點樣，最後我就有啲 recommendation，署長，副署長可能覺得我啲 recommendation 係對個將來嗰個 Task Force 嘅 recommendation 係都有啲關係，所以就要求我讀咗出嚟。咁讀完出嚟之後...

問：副署長，即係 Task Force 嘅主席黃仲良副署長？

答：即係 chairman，係呀，黃仲良。佢就要求我係讀出嚟嘅，我亦都跟住咁樣係讀咗出嚟嘅，讀完出嚟之後，就冇乜點討論，因為...

問：你所指嘅 recommendation 就係 under 嗰個"3 Recommendations"，...

答：係。

問：...bold letter，下面嗰一拃，long-term、short-term...

答：係喇，係喇，我就讀晒出嚟嘅。

問：Okay，好。

答：我讀出嚟，都唔係話倉卒嘅，我哋係 middle of 個 meeting 去讀

出嚟，就唔係話草草了事咁樣嘅，係 properly 咁讀出嚟，但係就冇乜點討論，因為嗰啲 recommendation，可能佢哋覺得都係好 straight forward 嘅 recommendation 嚟嘅，所以就冇乜點討論。

因為正如我諗以前都有啲人都會提供咗啲 evidence 畀你哋，就係我哋呢個 Task Force 其實個目的係最主要就係去研究下呢個今次嘅事件嚟講，就攞走三條水鏈，就睇下個成因係乜嘢啫，所以呢啲咁嘅 recommendation 未必係好 relevant，但係對佢 as 一個 recommendation to general public，都可能會有啲幫助，所以黃仲良 chairman 佢就要求我讀出嚟，for members 去考慮嘅啫，當時係即席係畀嗰啲會員嘅，所以我諗佢哋冇時間去好詳細去 digest 嘅，for 佢 consideration 嘅啫。

我亦都理解到，其實我哋最後嚟講，响我哋個 9 月 25 號嗰個 PowerPoint presentation to 個 press release，我哋都將有一部分嘅 recommendation 係讀畀咗出去畀 public 嘅，包括係我哋話建議係會做啲 flushing of 個 water，即係嗰啲 tap water，係做 flushing 咁樣，同埋我哋都...

問：即係建議公眾 flush 咗之後先用，係咪呀？

答：係喇，係喇，係喇。同埋譬如係用啲濾水器，我哋應該點用法，我哋都有一啲 recommendation。响上次 9 月 25 號嗰個 meet the press 嗰陣時，我哋都有啲建議出咗嚟畀啲...

問：呢個係指 Task Force 用個 PowerPoint present 嗰陣時？

答：Task Force，冇錯，係喇。

問：即係未出 final 嗰陣時？

答：未出 final。

問：嗰個 PowerPoint presentation？

答：冇錯。

問：好，多謝晒你先，你都解答咗我有好多打算問你嘅問題。你當中就其中有一 part 就係有提到，就係關於嗰個 recommended sampling method。

答：係。

問：你都睇過好多唔同嘅地方佢哋嗰個 sampling 嘅方法。

答：冇錯，冇錯。

問：佢哋好多時候都有啲法例咁樣寫明嘅，譬如話美國直情隆而重之，而家就直情 convention，就大家叫佢做 Lead and Copper Rule 咁樣。

答：係，冇錯，冇錯。

問：所以就你嗰度就話冇一個 universal 嘅方法，因為其實就各處鄉村就各處例咁，但係你就喺你嗰個 recommendation 嗰度下面就有講到，最屘嗰度，就係"We recommend that both pre-flush" "and post-flush samples" "should be drawn from the kitchen taps and that ICPMS should be used for analysis in a HOKLAS accredited laboratory."，所以喺呢一個 paper 嗰度，就水諮會嗰個推薦、嗰個提議就係 flush 咗-- sorry，unflush 六個鐘頭同埋 flush 嘅 sample 都要 take。

答：啱，係。

問：呢一個其實都係因為考慮過有好多地方佢哋有啲就做 flush，有啲就唔 flush，所以其實你就嗰個思路係點嘅呢，個背後係？

答：我可以咁講法，其實正如你講，各處鄉村各處例，亦都我好多時响啲傳媒嗰度我亦都講過，其實你做個 sampling，好重要就係睇下你所攞個辦係有咩嘢用途。

問：Purpose of 你嗰個 test...

答：係，個 purpose of 個 sampling 係好重要嘅，你盲目咁跟，譬如係美國嚟講，佢 Lead and Copper Rule 就要求你六個鐘頭 stagnation and then 攞 first draw 1 litre，and then 就將嗰個數就 compare with 佢個 action limit of 15 個 micrograms per litre，呢個係一種做法。亦都响英國嚟講，佢用 random day sampling，求其 any time 走去嗰啲地方攞啲 sample，佢哋 compare with 個 WHO 嘅做法，即係加拿大有做法，唔同嘅做法。

但係我當時嚟講，我寫呢個 recommendation 個理念，我亦都同過我哋啲水諮會個議員傾過，最主要亦都唔係話因為各個地方做唔同嘅做法，因為佢哋做嘅方法我哋未必需要參考佢，因為佢個目的同我目的唔一樣。

但係最主要就係我當時會覺得响個市面上嚟講，呢個咁嘅 sampling 個方法就好多爭議，亦都好多聲音，因為好多譬如政黨或者唔同嘅機構佢有做，呢個方法做，有嗰個方法做，水務署我亦都記得係水務局又都另外，水務署又跟 ISO 5667A 個方法，Part 5 嘅，有啲政黨或者有啲人佢哋用跟呢個 Lead and Copper Rule 去做，咁又 compare with WHO，變咗係好亂嘅。

所以我當時嚟講，我覺得譬如係做 sampling 嚟講，如果佢係個能力、個資源係許可的話，我覺得係應該係兩種 sampling 都做，起碼我 benchmarking，我唔係講 compliance，compliance 我覺得如果水務署--我認同佢哋用 ISO 5567 個方法，如果係 for compliance purpose，因為如果你話要...

問：Compliance with 乜嘢？

答：Compliance with 個 WHO，因為我哋--譬如我响 8 月 27 號水務署長都同我哋開過一次會，我亦都當席我都解釋畀佢聽嘅，因為你 WHO 嚟講，你 10 個 micrograms per litre 佢係有個理據去得出嚟嘅，佢係 base on 一個 provisional weekly intake of 嗰啲 infant 嘅，嗰啲人去得出呢個 10 個 micrograms，我亦都解釋過點解。

所以基於呢個咁嘅原因嚟講，如果我哋 take 個 first-draw sample 嚟講，我哋會覺得個 sample 就 too conservative，亦都唔代表到，所以對水務署而家現時用個 flushed sample 嚟講，我係認同嘅，不過我覺得，我同水務署講，我話「如果出面嚟講，係有啲人係用咁嘅方法，應該統一番，大家應該係統一個方法」。

因為你啲數字，你就話用 first draw 就攞到 30、40、50，我用 flushed 就係 less than 10 或者 even undetectable，大家係冇意思嘅。咁所以我哋可唔可以 benchmark 到，如果我同時一個地方，同時一個 tap，我又係做 pre-flush，我用 flush，大家個數字係咪都可以有啲比較呢？

即係當時我個目的係咁樣，我唔係表示話我贊同 first draw，亦都我會响其他個場合，我講過，first-draw sample 係有佢唔好

處嘅，因為 first-draw sample 嚟講，佢只係睇住由個 tap 前面嗰大約係 4 米水嗰啲鉛浸出嚟個情況啫，beyond that further down 個 pipe，佢係睇唔到，所以美國嚟講，好多時就話 even 佢係 first-draw sample，係冇問題，但係佢跟住落嘅鉛係有--啲水係有鉛，就係因為佢 beyond that，佢嗰啲係 leaded pipe 嚟嘅，佢睇唔到，所以就有個叫做 first-draw sample 或者叫 second draw、third draw 都有人做嘅，如果淨係 first draw 嘅時候，未必一定睇到嘅，所以我呢個--我亦都好多場合，我亦都講過畀佢聽。

不過我覺得我當時，你問我我理據，我嘅諗法就係既然出面啲人咁做法，我哋點解唔 benchmark 去做一啲嘢呢？如果你能力許可，呢個係我個目的嚟嘅。

問：其實你嘅理念就係就算你覺得某種做法係啱都好，既然人哋有 alternative 嘅提議，做晒兩種，等個閱讀者個 reader 佢知道你用乜嘢嘅 basis 嚟到去 flush 嘅，佢自己咪自己去演繹囉，係咪呀？

答：係喇。

問：舉個例，你話你嘅覺得就係話其實 first draw 係未必真係可以--可能太過保守，即係話個數太過勁喇咁？

答：係喇。

問：但係一個可能性就係話但係有啲人真係想知道 worst case scenario 呢，...

答：係，冇錯。

問：...如果想知道 worst case scenario 嗰啲嘅，起碼佢知道 worst case，...

答：畀嗰個數你...

問：...佢可以要嚟，佢點樣去演繹，佢點樣走去再做自己嘅分析，呢個係佢自己嘅事。

答：係。

問：但係起碼多呢一個步驟，你唔好話畀人聽點演繹，佢要自己演繹，佢自己演繹。

答：係，冇錯。

問：係咪咁樣意思呢？

答：冇錯，因為視乎你個目的係點，亦都我唔希望見到一樣嘢，就係話你畀人嗰個感覺就係話我因為要減低個水個鉛含量，所以我 flush，呢個 message 就唔好，如果我特登係 flush 佢，使到個鉛嘅含量降低，而話畀人聽「你合格喇。」人哋就會話「你特登咁嘅啫。」如果我能夠--我 pre-flush 又做一次，flush 又做一次，我睇個數字點樣樣，係咪呀？

問：唔。

答：因為無謂 A 出面就咁做，我哋水務署又堅持自己咁做，即係當時我個目的係咁嘅。

問：同埋 in fairness，你頭先講都有個--你講到又話有陣時又 first draw，遠處嗰啲鉛未必可以 detect 到。

答：睇唔到嘅，睇唔到嘅。

問：可能你睇過李行偉教授佢嗰個專家報告，其他佢用幾個 flush 嘅，佢唔係用幾個 flush，sorry，佢用幾個 draw 嘅，first draw，跟住 20，跟住 40 咁嚟，in a way，佢都偵測到你講嘅現象，有陣時嗰個 peak 係唔係 first draw 嘅，可以係 second draw，可能係 20 秒之後嘅。

答：係，冇錯，亦都有嘅，美國嚟講...

問：因為佢嗰啲鉛唔係積喺個口嗰度吖嘛，佢啲鉛可能積喺個 meter 房，咁咪要隔一陣先到囉。

答：冇錯，冇錯，因為佢美國嚟講，好多時就話嗰個 service pipe 係換咗鉛喉--換咗做銅喉，但係之後嗰啲係冇換到，仍然係 leaded pipe，所以嗰度會有好多鉛出嚟，你用 first draw 係睇唔到嘅，所以呢個美國係有咁嘅個案，所以有好多 criticism of first draw 嘅，所以係未會有。所以視乎係你...

問：目的，即係個 purpose。

答：...目的係乜，如果我想睇個水喉頭至到三、四米嗰個鉛有幾多，first

draw，fine，但係如果你想睇成條 pipe 嚟講，我覺得 first draw 就唔足夠，你可能要 third draw、second draw。

問：Second draw。

答：或者如果你要睇下我一日之內，我飲水個 average lead concentration，如果佢符合呢個 WHO 嘅，我可能真係用 flushed sample 係比較穩陣啲。或者好似英國做 random day sampling，我 any time 嚟做，攞個 sample，就會 more representative，我覺得。

問：世界就冇話一定啲人幾點鐘開始飲水嘅，...

答：冇，冇，冇。

問：...所以 in the same way as 你話 first draw 未必代表到一個人正常飲水嘅吸收量，...

答：冇錯，冇錯。

問：...flush 晒都未必嘅，因為好多人嘅 pattern 唔同。

答：係喇，係喇，係喇。

問：所以就如果你話想搵出有邊一種嘅抽法係代表一個 apply across the board 嘅所謂飲水量嘅含鉛量，其實就冇呢個 formula㗎嘛？

答：冇嘅。

問：呢個就唔係科學嘅，呢個係習慣嘅，呢個唔係關科學事，對嘛？

答：係喇，係喇，即係睇下嗰個飲水嘅習慣，飲水嘅習慣好重要嘅。

問：所以呢個係一樣嘢。第二，就係可能你都有睇過 Prof Fawell 佢嗰個報告，因為佢係世衛嗰方面嘅，佢直情有份參與撰寫嗰個世衛嗰個標準。佢提出過佢有個觀點，就係話如果睇番嗰個 10 microgram 嗰個嘅演進，開頭就係由於嗰個 provisional...

答：Provisional weekly intake。

問：...weekly intake，嗰個就計出嚟就係 10，但係後來到到 2011 年嘅時候，就由於嗰個專家委員會就 withdraw 咗原先嗰個

provisional weekly intake 嗰個 figure，...

答：啱，啱。

問：...因為冇 threshold，佢哋可以話。

答：啱，啱，啱。

問：所以 Prof Fawell 就話就其實原先嗰個 10 就已經唔係話因為 base on 一個 provisional weekly intake，就純粹就係因為客觀環境，嗰個係 base on 一個 performance --...

主席：Treatment performance。

問：...嗰個叫做 performance-based 嘅嘢嚟嘅，即係佢嘅 analytical achievability。

答：Practicality。

問：係喇，analytical achievability...

答：係喇。

問：...同埋 treatment performance。

答：冇錯。

問：基於咁樣？

答：係，因為當時講係曾經係建議過係低過 10 嘅，但係發覺係做唔到，做唔到...

問：某啲地方做唔到？

答：係喇，佢即係話要 treat 到低過 10，佢未必做得到，所以最後...

問：係喇，某啲系統如果佢要由充滿鉛嘅水喉減到 10 以下係相同困難，做唔到？

答：做唔到，所以臨屘都係 revert 番 to 10 嘅，as 一個--你講到係一個 administrative 嘅 guideline 嚟嘅。

問：一個折衷嘅辦法，你可以話係。

答：折衷辦法，冇錯。

問：因為如果一啲系統佢裏面自古都係用緊鉛造嘅水喉嘅，咁已經係一個鉛嘅 environment，...

答：冇錯。

問：...你要撳，咁就梗係相對困難，但係香港如果三十年代開始直情係唔准用鉛嘅水喉，佢個 starting point 就唔係要撳低㗎喇嘛？

答：係。

問：個 starting point 就直情唔畀你升起，對嘛？應該咁講，係咪呀？

答：係，係，係。

問：所以 Prof Fawell 就講就係話由於各處鄉村各處例，你呢個 10 係咪可以應用喺香港，就要視乎香港嗰個風土民情，包括原來香港唔係自古用緊含鉛嘅呢個喉嘅，呢個你冇異議嘅，應該，係咪呀？

答：我都冇異議嘅，因為其實 scientifically 係冇個 threshold 嘅，呢個真嘅，即係唔會話--因為亦都佢哋專家係做過，even 低過 10，啲細路哥嘅智商係有跌嘅，所以佢先 withdraw 咗呢個嘅...

問：所以因為咁先 withdraw 吖嘛？

答：係喇，先至 withdraw 嘅啫，所以嚟講，as low as practicable，我覺得。

問：有啲地方因為成條管都係鉛嘅，就 impracticable to do it below 10，就即係講得俗啲就焗住用 10，唔係話佢想嘅，差唔多係講喇，我可以咁樣理解，關於嗰個叫做 analytical achievability，係咪呀？

答：係。

問：如果你講緊一啲第二啲系統或者落後啲嘅地方，或者甚至仲有好多鉛

嘅水管嘅地方，佢用10。

答：係。

問：Prof Fawell 提出過，就係話如果喺香港嘅話，差唔多佢就話"we deserve better"，香港，即係其實好恭維嘅說話嚟嘅，因為香港三十年代就立法唔可以食水喉用鉛添。

答：係，係，係。

問：所以 Prof Fawell 其實基本差唔多就係話你開頭 pledge 話要用10，其實可能已經唔係一個太過正確嘅一個出發點嚟嘅，好，呢個 Prof Fawell 發表咗佢意見。我想問你嘅，就係你頭先講到就係抽水用咩嘢樣辦係一個 purpose 嘅問題，但係如果想偵測你個系統裏面有冇人用咗一啲含鉛嘅配件，如果呢個係個 purpose 嘅話...

答：用 stagnation。

問：係，用 stagnation，因為你 flush...

答：因為呢個歐洲嘅做法，呢個叫 investigative mode，佢都係建議係做 stagnation 嘅，因為用 stagnation 嚟講，你就會將嗰個數字係放大去睇，就容易去 detect 得到，同埋知道真係幾壞，呢個 investigative mode 係會用 stagnation，不過係咪六個鐘頭，歐洲就有唔同嘅做法嘅。不過 anyway，佢都係話如果係 for investigation purpose，係會建議係用 stagnation 嘅，不過就歐洲就唔係六個鐘頭。

問：stagnate 幾耐唔好理喇，但係因為...

答：係喇，係喇，總之呢個係一個方法係去做 investigation。

問：就係因為知道咗有一個問題存在，而我哋想知道呢個問題係存唔存在喺我哋香港呢一啲特定嘅屋邨，呢個就比較 specific 啲，你 target 緊，因為你已經 identify 咗個 problem 吖嘛？

答：冇錯，冇錯。

問：你要 investigate 有冇呢個 problem 喺度，係咪呀？

答：冇錯，係。

問：好。仲有一點，就係我想問一問你嘅，就係 Task Force 個 report，應該你都相對熟嘅，你個證人供詞都有提到，就係有一啲嘅部件就釋出咗 nickel。

答：係。

問：但係 Task Force 嘅結論，就係嗰啲 nickel 應該係 electroplating 嘅時候滲咗入啲水度，應該一開水喉一、兩秒就冇㗎喇咁樣。

答：係，冇錯。

問：就呢一個釋出 nickel，就真係切咗啲部件出嚟做 leaching test 先至見到嘅，係咪呀？

答：係，係。

問：以你嘅認知，有冇啲咩嘢相關嘅 British Standard 係有關部件嘅含 nickel 量嘅？

答：我就唔太熟呢個 British Standard 嘅，但係你話 nickel 嚟講，現時嚟講，就有啲 British Standard 都有 specify 係 nickel、lead 嗰個含量嘅，不同嘅 alloy，copper alloy 嚟講，係有個數字嘅。

問：但係以你頭先你引述咗嗰個 Task Force 嘅報告裏面所提到，係話都有啲 nickel...

答：有。

問：...leach 咗出嚟，不過就秒幾、兩秒就會沖走㗎喇？

答：係。

問：同埋嗰啲 nickel 因為 electroplating 先至入去。我想請教一下，就係呢個係咪代表有一啲部件含咗過量嘅 nickel，定係唔係，即係 electroplating 呢個外來嘅 process 令啲 nickel 釋出嘅，就唔關嗰個部件超咗 nickel 嘅事，可唔可以詳細解釋下？

答：其實而家嘅 copper alloy 嚟講，如果佢係跟個 British Standard 嚟講，係有個 nickel 嘅個含量嘅 maximum 嘅，有個數嘅，我而家

背唔到個數畀你聽，但係係有 British Standard 嘅。

而家現時嚟講，而家我哋睇到嗰啲部件，其實我哋响做啲 leaching test 嗰陣時候，我哋其他嘅部件，我哋都唔發覺個 nickel 係有問題，係响個水喉頭先有嘅啫。水喉頭嗰處，我哋嘅分析，割開嚟睇，就發覺佢因為個 electroplating 個過程之中，就有啲係滲咗入個嘴，因為我哋發覺係個嘴先有啫，就係個嘴先有啫，其他地方係冇嘅，所以我哋個結論就係呢啲個 nickel，其實就係因為嗰個水喉頭個嘴裏面，响電鍍嘅過程就走咗入去，即係走咗入去嗰個裏面，內壁裏面。

問：即係唔係嗰個配件本身含咗...

答：唔係個內件嘅，係喇。

問：...超量嘅 nickel，...

答：唔係嘅，係，唔係...

問：...而係喺電鍍過程中外在引咗入去？

答：係引--即係 sip 咗落去，可以講褪咗落去，造成咁，所以我哋嘅結論就係話既然係一個嘴，咁好小嘅範圍有，如果我哋一開水喉，基本上已經冇問題㗎喇，所以我哋覺得呢個 nickel 都唔係一個好大嘅 concern，但係我哋都 report 咗呢個 situation 响我哋個報告嗰度嘅。

問：原諒我嘅無知，你叫做 forgive my ignorance，electroplating 嘅時候係會用一啲牽涉有 nickel 嘅部件，咁先至會滲到落去嘅，係咪呀？

答：係，係，係。

問：Okay，得。即係你哋嘅結論總之就係話唔係因為啲部件...

答：唔係，唔係。

問：...含咗一啲超越 British Standard 嘅 nickel，...

答：唔係，唔係。

問：...不過你就如實就照講，喺個報告裏？

答：唔係，唔係。

主席：唔係，我唔係好明，我想問清楚啲啫，就係我明你頭先所講嘅嘢，但係呢個 electroplating 呢一個部件嘅時候，唔係成個嘢已經變咗做一個部件，你明我意思嘛？

答：係。

主席：當然你有一嚿嘢，你可能話「呢嚿嘢，呢個 alloy 我要有幾多 percentage of 乜，幾多個 percentage of nickel。」整呢嚿嘢嘅時候，整完呢嚿嘢嘅時候，你唔賣得㗎嘛，你未賣得住，你要 plate 咗佢，先至可以可賣出去㗎嘛，所以呢個 electroplating 其實係咪 part and parcel of 成嚿嘢，當然我明白嗰個 alloy 嗰個 composition 係唔同，不過 as 一個 consumer，我係一個 ultimate 嘅 consumer，我唔 care 你究竟係個 alloy 有問題，抑或個 electroplating 有問題。

答：其實响美國嚟講，佢有個 NSF 53 嘅，NSF 53 嚟講，佢就係有嗰啲 fittings 嗰個 maximum single component 嘅 concentration，嗰一個佢就每一個部件去 test 嘅，unfortunately 我哋現時嚟講，我哋就冇呢個 NSF 53 呢個標準响度，我哋現時所用嗰一個就係 British Standard。

而 British Standard 嚟講，係 refer to 嗰啲 copper alloy 嘅啫，所以 alloy，佢用呢個 alloy，譬如 nickel 係有兩個 per cent 或者 3 個 per cent 嘅，佢符合咗，佢做咗之後，嗰個水喉頭，我哋就冇一個咁嘅 acceptance test，你美國就有 NSF，如果佢係要跟 NSF 53 就有，佢係成個去 test 嘅，成個做 leaching test，去睇佢 lead 幾多、nickel 幾多、copper 幾多、chromium 幾多、cadmium 幾多，佢會有嘅，但係我哋現時係冇嘅。

所以呢個係將來嚟講，我都同水務署啲人都傾過下，會唔會第二時嚟講，我哋需要係做番一啲咁嘅，establish 一啲 standard，類似 NSF 53，so that 成個配件，法官係講得好啱嘅，係成個整體嚟睇，唔係整體嘅原材料嘅，個原材料冇事，但係你外來 chromium plating 嗰陣時加咗啲嘢落去，睇唔到㗎喇。

問：所以呢一個，如果我哋睇番14061，你面前C19.6嘅14061，佢裏面嗰啲short-term measures，即係嗰個Task Force嘅minutes裏面，第3.2段嗰啲short-term measures，嗰度話"Proper use of filter certified under" NSF 53，你係咪就係指呢個NSF 53？呢個係一個美國用嘅standard。

答：NSF就有好多個standard嘅，好多個嘅，呢個NSF 53就係certify啲filter嘅，都...

問：但係都係呢一種嘅standard，呢個...

答：呢種嘅，美國嗰個foundation嚟嘅。

問：所以你頭先所講話美國係比較你可以話係咩嘢話，幼細啲嘅一種testing？

答：係，係，係。

問：佢唔係淨係test你總體...

答：佢有好多個嘅。

問：唔係，佢唔係淨係睇你嗰啲individual嘅component，佢會--如果佢under British Standard，淨係個水喉頭itself過咗關...

答：個材料啫，材料啫。

問：咁就過咗關喇？

答：係喇。

問：但係...

答：啲copper pipe或者alloy咁，the NSF，佢有不同嘅NSF 61、NSF 53，係有啲係講啲水喉頭，有啲係講水喉頭之外嘅fitting都有嘅，譬如啲閘掣、錶咁都有嘅，水喉頭呀咁，佢有section 9、section 8嘅，有唔同嘅standard嘅。

問：又恕我無知，問你一句，水喉頭本身我當佢係含超量嘅nickel，我當你而家Task Force嘅結論就係話釋出嗰啲nickel其實係來自electroplating嘅時候，electroplating嗰啲料本身含幾多nickel都有冇限制？因為如果嗰度有限制，嗰度唔好超咗咪得囉，

你滲極都唔會超㗎，係咪呢？可唔可以咁諗？

答：呢個我就唔係可以作到呢個專家證人，我唔係 electroplating 嘅專家。

問：好，得，明白，了解，唔該晒。

石先生：我冇其他嘅問題。

主席：唔該。

<u>李柱銘先生盤問</u>

問：好喇，都係問下你抽水辦嗰度，頭先你講得好清楚，你同意 Prof Fawell 講嘅，佢話如果你係想驗嗰個用戶係開--喺呢個廚房度開嗰啲隔夜水嚟煲，跟住嚟飲嘅，係咁嘅情況下，你就會覺得應該抽嗰個隔夜水嘅水辦，啱唔啱？

答：如果佢係有咁嘅習慣，係開嗰時，佢係需要知道佢隔咗一夜水嗰啲鉛係幾多，我係覺得值得去化驗嘅。

問：Prof Lee 佢就整咗一個 protocol，佢就話係隔夜水嘅，但係佢一開就 0 秒鐘，即係一開就係㗎喇，真真正正隔夜水，咁就攞一個 sample，跟住 20 秒又攞一個，40 秒、60 秒、80 秒，然後就一齊咁嚟睇個 average，你知道佢咁做嘅？

答：知，知。

問：我哋睇番啲結果，佢就話佢同意你嘅睇法嘅，佢話有時 0 秒鐘嗰個未必係最多鉛嘅，因為佢有時譬如喺嗰個 meter room 嗰度，因為嗰度好多嗰啲彎、嗰啲角就藏咗好多鉛喺啲水裏面，...

答：係，啱。

問：...所以去到 20 嗰度，即係 20 至到 39 嗰度，就可能仲多過 0 秒至到 19 秒嗰度，你同意吖嘛，係咪呀？

答：因為佢攞個 sample size 係好細嘅，佢攞係攞 50 mL，好少嘅，我

哋嗰時都同佢討論過，我話「你攞咁少，你睇到好少嘢嘅咋喎咁樣」。

問：攞 1 個 litre 就係正確嘅？

答：美國就用 1 個 litre，但係 Prof Lee 佢就唔係攞 1 litre 嘅，佢係攞少過 1 個 litre，佢攞 50 mL 嘅啫。

問：佢攞...

答：水務署攞 250 mL。

問：佢因為佢水個量係少咗，但係佢就分開五次咁去攞？

答：係。

主席：佢 0 嗰時都係 250 嘅。

李柱銘先生：250。

主席：係呀，係 20 嗰陣時，20、40、60 先至 50 啫。

答：佢跟住就少嘅，...

石先生：到最屘就...

答：...因為我哋都畀過啲意見佢嘅，當時 Prof Lee，我哋都畀過意見，我話「你 50 太少。」佢臨尾就改咗係 250 嘅。

問：即係頭嗰個？

答：係。

石先生：尾都係。

答：尾都係，係咪呀？

問：尾都係。

主席：頭尾都係。

石先生：頭尾都係。

問：因為佢當初係 propose 50 mL 嘅咋。

答：我哋--因為覺得係有用嘅，因為佢真係做到，佢話其實係 0 至 19 嗰度係反而係嗰個含鉛量大致嚟講，仲少過 20 秒至 39 秒嗰度。

問：係。

主席：唔係一定嘅，我記得好似。

李柱銘先生：唔係，佢有六十幾個 per cent...

石先生：有啲例子，有啲例子。

主席：係，係，係，啱，啱，啱，啱喇，你講得啱，係，係，啱。

問：第二嗰個有六十幾個 per cent，第一個只係三十幾個 per cent 嘅啫，所以加埋佢就好穩陣，啱唔啱呀？即係用 0 秒同埋 20 秒嗰兩個樣本，就即係最勁嗰啲就喺晒嗰度，你同唔同意？

答：唔。

問：我對佢就有個批評，雖然佢係專家，我就話如果你攞 0 同 20 秒嗰個咪已經係--當然係過後孔明，睇番轉頭，用番佢呢一個 protocol，睇番嗰啲結果，睇番轉頭，我就話 0 秒係有用嘅，雖然係三十幾個 per

cent 啫，最濃，但係 20 秒至 39 秒，譬如話勁嘅，因為佢有六十幾個 per cent 係證明咗係最濃嘅。攞完兩個就夠囉喎，事後孔明，睇番落去，即係 40 秒開始、60 秒開始、80 秒嗰啲根本就好低、好低㗎喇。

答：係，係，係。

問：我話如果你真係想攞個最濃嘅，係咪淨係攞頭兩個咪得囉，就唔使加埋三、四、五落去，就沖淡咗佢，你明我意思嘛？你同唔同意我呢個睇法？

答：因為佢咁樣嘅，一條 pipe 嚟講，如果佢係 stagnation，佢停咗喺嗰度，佢譬如攞頭嗰度，就即係話佢開頭將呢截水湧咗咁多出嚟，好喇，跟住又停一停，佢停一停，佢唔係一路--佢好似跟住就再放水，一路放，...

問：再放，係喇。

答：...一路放，啲水一路一路行嘅，一路一路行，其實佢嘅意思即係攞成條 pipe 嘅不同部分個水個鉛嘅，佢係咁嘅意思嘅。

問：啱，啱，啱。

答：所以我就話--我先頭同大狀都傾過，有好多外國嘅做法，就係 first draw、second draw、third draw，其實 Prof Lee 佢都係想睇一條喉管嘅不同嘅截嘅，佢幾多秒、幾多秒，佢係睇唔同嘅截嘅啫，咁就好視乎你喇，呢個唔一定啱嘅。

因為其實你係幾多 per cent，就睇下嗰啲 joints 响個位置嘅啫，因為如果你入到啲公屋嗰度，嗰啲 joints 係轉彎，越轉得彎多，嗰啲地方就好多啲 joints，好多 joints 就好多 lead 出嚟，但係 whereas 有啲地方係好直嘅 pipe 就冇乜 lead，你嗰度你成橛都可能冇嘢嘅，所以其實好 site-specific 嘅，我可以講，好 site-specific。

佢只係攞一個例子啫，我唔 dispute 佢呢個例子嘅。但係如果真係 real situation 嚟講，你走去第二間公司，呢個 percentage 就唔一定啱。

問：但係公屋，大致嚟講，因為佢都唔係好大間，間間咁上下大嘅啫。

答：係，係，我呢個承認。

問：大致上就大家都諗到，因為喺個 meter room 嗰度就好多彎轉，所以大家諗住嗰度就多鉛，你講得啱，大家同意嘅，所以佢就認為去咗 20 秒至到 39 秒嗰度，應該就包括埋 meter room 嗰度咁樣樣，所以變咗係最勁就係頭兩個 sample，佢亦同你講得啱嘅，佢話因為你目的就係想睇下嗰啲水，開水喉出嚟嗰啲水含鉛嘅程度係點，佢咪要 go for maximum，就係咁樣，你同意㗎嘛，呢點？

答：係，係。

問：所以我個睇法就係既然你 go for maximum，你攞咗 maximum 咪得囉，就唔使再整個三、四、五嗰啲，變咗就淡㗎喇，你加埋佢除 5，咪淡咗囉，我就係咁樣嘅邏輯。

答：或者我嘅睇法係咁，如果你係攞唔同嘅 sample，其實就會話畀你聽响成條喉管裏面嗰啲鉛嘅分佈係點樣嘅。

問：啱。

答：你撈唔撈埋佢，其實最後你個目的係點，我成日講嚟講去，你睇下目的係想點者，如果我想睇一個人佢飲兩 litre 水或者 3 litre 水個情況點，我就撈佢兩、三 litre，但係如果我話我係飲一啖水嚟講，你可能講緊係 50 mL 嘅水，你就會睇好少嘅 sample，你話「我開水龍頭，我煲杯咖啡嘅，我煲杯咖啡可能係二、三十 mL 嘅啫，我攞可能攞個 sample 上去只要二、三十 mL，我就攞二、三十 mL，一啖水。」係咪呀？可能一陣間嘅水，我睇呢個 sample，你係想睇下呢啖水嗰個鉛係幾多，所以好睇乎佢想睇啲咩結果嘅。

問：好，一個嗰啲水煲咁大個嗰啲，有幾多個...

答：呢啲水煲嚟講，其實你講緊係一、兩 litre，幾 litre 嘅啫。

問：一、兩 litre。

答：如果一個普通嘅嚟講，係最多係講緊係 5 litre 嘅水嘅啫，頂多 5 litre。

問：如果 5 litre 水，就未去到嗰個 meter room 嗰度嘅？

答：未到嘅，未到嘅。

問：要幾多至到呢，大概？

答：如果康晴，我哋講，我哋個 meter room，嗰度大約係 18 litre 水嘅。

問：18 litre 就去到嗰度？

答：係，18 litre 水嘅。

問：Okay，咁即係要幾多秒鐘至去到嗰度？

答：我哋如果一--而家睇佢個 flushing rate 幾多，我當時响個康晴嗰度，我個 flushing rate 就係 1 分鐘，我就攞 5 litre 嘅，但係我知道 Prof Lee 佢就可能--即係視乎你個水龍頭係大小，開幾大。

問：佢開盡，佢開盡。

答：Lead and Copper Rule 就要求要係開盡嘅。

問：開盡嘅。

答：但係我康晴，我 witness 佢哋係--水務署攞水辦嗰時我都叫佢開盡嘅，開盡，我當時度過，係 5 litre per minute 嘅，per minute 嘅，但係我知道 Prof Lee 佢可能去到有啲 10 litre per minute 都唔出奇，所以你就睇下，如果你話 18 litre 水，好可能你講緊係 5 litre per minute，...

主席：唔止。

答：...要成三、四分鐘先行得晒嘅。

主席：Prof Lee 嘅--佢就有個 average，0.26 litre per second，work out，好似唔知十五點幾嘅。

答：係呀，佢有十幾 litre 嘅。

主席：係，十五點幾嘅，我記得就係。

答：係，係，係，佢有超過 10 litre 嘅，但係我响康晴嗰度，我自己度過，係 5 litre 嘅。

主席：不過 Prof Lee 都係 average，因為個個單位都唔同。

答：係呀，唔同嘅，你睇下個水龍頭，其實睇個水龍頭嘅，有啲水龍頭一開，即係相等我哋花灑咁樣，有 10 litre per minute，有 15 litre per minute，有啲 9 litre per minute，睇你個水龍頭有幾大，我諗就冇一個標準嘅。

問：但係就大家都知道科學上，如果飲咗嗰啲含鉛嘅水，就 accumulative，個後果就係，係咪？

答：（沒有可聽到的回答）

問：所以你又唔會話沖啖番佢，所以就冇事咁㗎嘛。

答：係，係，係。

問：所以如你話嗰個人求其攞咗啲煲咗--入個水煲度，煲完，跟住就--可能佢跟住飲--平時飲水，我哋叫做凍滾水，就係喺嗰度嚟，或者係再整番熱佢，飲咖啡咁，或者有啲 BB，可能喺嗰度就沖奶粉，咁又得嘅。所以變咗係我哋而家睇緊就係可能係對人嘅健康嘅問題，因為啲水含咗鉛，或者跟住佢攞嚟，甚至係煲飯，都係用番嗰啲，都係有問題，所以就係睇含鉛最重嗰度，個目的就係嗰度，係咪？

答：（沒有可聽到的回答）

問：我又睇一睇你嘅口供就講得好清楚，同埋我覺得係好公道，就係既然出面有嘈，出面有人提議就一定要隔夜水，你覺得隔夜水又啱喎，因為睇下你個目的係咩嘢之嘛。

答：係呀，係呀，係。

問：但係陳健民先生佢嘅意見，你知㗎，係咪呀？

答：係，係，我知，我知。

問：因為我哋就聽咗好耐，佢就話打死都係唔要隔夜水嘅...

主席：你唔使問佢陳健民點諗佢嘅，佢話咗畀你聽點諗，你仲...

答：我係獨立嘅，我係獨立嘅 Task Force，我亦都係水諮會，佢有佢嘅講法，佢有佢嘅講法，我亦都唔係話佢錯得晒，但係我亦都有我--我先頭講咗我嘅諗法嘅。

問：啱，啱。

答：我都唔需要重複。

問：即係睇你點樣用吖嘛，係咪呀？

答：係，睇你點樣用啫。

問：主席亦引導我即係唔需要，有唔同嘅意見擺出嚟。你嘅意見點解後來就冇人用嘅呢？

答：咁樣...

問：我係想知道究竟發生咩嘢事，本來就好清楚嘅，兩樣都要，係咪？其實嗰個 Task Force 都同意，兩樣都要，整整下就淨係用一個，我就想知道呢度點解會咁？

答：或者容許我解釋一下...

問：我就係想你解釋。

答：因為個 Task Force，最主要我哋個 Task Force 其實個目的係去搵到嗰三條水鏈佢嘅含鉛嘅來由嘅啫，就並不是做個 sampling 嘅 protocol 嘅，並不是嘅，所以佢 take note of 我呢個咁嘅 recommendation，因為我哋最後嚟講，都係搵到原來係 leaded solder 係個 main source，所以究竟點樣攞 sample 呢個係其實我哋响做緊 Task Force 嘅同時，水務署係一路攞緊水辦嘅，佢嘅工作同我哋嘅 Task Force 係冇關係嘅，佢有佢哋去攞水辦嘅。

佢唔 take note 我嗰啲嘢，我亦都問過佢哋有咩嘢嘅意見，佢哋覺得佢當時講，响 Task Force，我哋係有攞 stagnation sample，亦都有攞 flushed sample，我哋有做過嘅。

In fact，响 7 月 29 號至到 31 號，水務署係响呢個樂晴樓、滿晴樓同埋康晴樓三個單位，同埋有一個係 pantry 嗰度係攞咗

stagnation sample，攞咗四十八小時嘅，亦都做 flushing sample，就係話 flush 咗之後，三十分鐘，嗰個水辦個情況，就睇下啲鉛係點變化，我哋係有做嘅。

呢個亦都係因為當時嚟講，我哋都諗住我哋要 make 一啲 recommendation 畀個 public，話畀人聽究竟應該唔應該做 flushed sample，flush 有冇好處，我哋要話畀人聽，同埋 stagnation 係咪真係時間越長，嗰啲鉛係越多，我哋做過嘅，我哋响 Task Force 係做過嘅。

我哋發覺啲時間--我哋做咗四十八小時嘅，唔係六小時，我哋係由零至四十八小時，就睇住啲鉛一路一一路咁升高嘅，亦都睇咗 flush 嚟講，一 flush，in fact，三十--我哋 flush 咗三十分鐘，其實發覺一分鐘、兩分鐘已經跌到好低，跌到好低，我哋有做過嘅，呢個係我哋 Task 個本份嘅。

至於水務署佢係咁多條屋邨，係要話畀人聽做水辦，呢個係同我哋嘅 task 其實係冇關係嘅，我可以咁講，係冇關係嘅。

問：好，你呢個好詳細嘅答案，好感激你。因為你係專家，所以你講晒畀我哋聽，好有益嘅，okay。

答：希望喇，希望。

問：其中你又睇到，頭先你話一分鐘就差唔多冇晒...

答：跌得好緊要，跌到差唔多 80 個 per cent 嘅，個鉛係跌 80 per cent 咁滯嘅。

問：我而家...

答：呢個响美國裏面亦都有同樣嘅結果嘅。

問：我睇到啲數，我諗唔需要逐個文件畀你睇。

答：Okay。

問：即係大意上，就睇到有一個係--如果 0 秒鐘，即係 0 分鐘，一開頭，驗到係 34.7 嘅 milligrams，你記得呢個數字吖嘛。一分鐘之後就跌到 6 嘅，你記唔記得呢個數字？

答：係，係。

問：有個圖咁跌落嚟㗎嘛？

答：係，跌得好快嘅。

問：咁樣，而家就當你兩個水辦都要，first draw 同埋沖咗兩分鐘，兩個都要，如果個目的係想睇下啲 component 本身係 copper 嘅，可能有啲 copper alloy 嘅，睇下佢含鉛又點，可能要做 leaching test 咁樣，你都要知道嗰條水喉有冇問題先㗎？

答：係。

問：有兩個方法，一個你就唔理咁多，求其 at random，見水喉，搵一條就拆咗佢先，另外一個做法就係 test water 先，test 下有冇問題先，然後就揀嗰條水喉，就拆開條水喉，你同唔同意，咁睇法？

答：係，係，係。

問：佢就係做第二個方法，係咪？

答：係。

問：第二個方法其實係相當準確嘅，因為大家都知道，你哋亦好早知道，街入嚟嗰啲水，入到去公屋裏面嗰啲水，入到嚟，上到個 tank 上面，roof tank 上面都冇問題嘅。

答：係，啱，啱，啱。

問：直落都冇問題，應該，係咪？

答：係，啱，啱。

問：係打橫就出事喇？

答：係，係。

問：所以有問題就係由打橫去到個水龍頭嗰度就出事，當然嗰度就經過好多嘢喇。

答：係喇，係喇，係喇。

問：而 Prof Lee 亦有好多例子證明喺個水喉嗰度開出嚟，就算 first draw 都係定點零零零嘅，冇事嘅，detect 唔到嗰啲鉛嘅，你知道呢度喇？

答：呢個知，知，yes。

問：所以如果我住喺公屋，我而家開個水喉，一開，你哋搵人去驗，係 000，咁就一百分，係咪呀？即係出面啲水冇畀個屋裏面打橫嗰啲水喉裏面嗰啲含鉛嘅焊料嗰啲嘢搞「彎」佢喇？

答：係。

問：出到嚟都仲係正嘅，okay。

答：係。

問：可能佢用啲 mechanical 嘅做法，唔用 soldering，係咪？

答：係。

問：好喇，但係...

答：或者佢用啲 unleaded solder 都得嘅。

問：都得，係。

答：Unleaded solder 都得嘅。

問：都得嘅，好喇。但係如果係喺個水龍頭開出嚟驗，雖然合所謂世衛嗰 10 個 micrograms per litre，所謂，因為大家明白嘅，但係可能 8 喎咁，咁即係有問題㗎喎，其實，係咪呀？

答：係。

問：其實 2 都可能有問題㗎喎，梗有啲嘢㗎，唔係，你冇理由 2㗎，係咪呀？

答：係。

問：如果佢係想話「好喇，我而家想搵條水喉出嚟，睇一睇佢究竟係咩嘢事先。」因為可能係嗰個 component 本身嘅 copper alloy 嘅問題，可能係佢啲積咗嗰啲邋遢嘅 deposit 有問題，係咪？

答：係。

問：你就梗係搵一條經過測驗水辦，發現佢有問題嗰條水喉，成套攞出嚟，係咪？

答：係。

問：然後分件攞嚟驗，啱唔啱？

答：係。

問：佢哋係咁驗嘅？

答：係。

問：驗咗三條，後來四條，係咪呀？

答：呢個亦都係我哋 Task Force 個工作範疇，我哋就係攞咗三條水鏈，就係呢三條水鏈其實就係應該有兩條應該都有事嘅，或者 even 三條都有事。所以我哋就係要--因為要知道佢有冇事，呢個就係 investigation，所以我就响呢度就拆咗一百三十四個部件出嚟係浸嘅，我哋浸係浸二十四小時，唔係浸六個鐘頭。我哋正如 Martin 你講，我哋就要睇下响咁長時間之後，佢滲到幾多出嚟，呢個係我哋 investigation，我哋會咁做嘅。

問：你情願多啲時間，穩陣啲吖嘛？

答：係，冇錯。

問：雖然用水嘅時候未必會咁耐嘅？

答：冇錯，係，我哋唔會話二十四，當然呢個時候我哋都 recommend 人，「如果你超過二十四小時，你啲水最好都係 flush 佢。你去咗旅行，旅行一個禮拜，你真係最好 flush 佢，有冇事，即係就算唔係有鉛，你可能有細菌。」我哋都建議係咁做嘅。

問：咁樣所以如果你攞到--譬如呀，譬如唔好學陳健民咁樣就淨係要 flush 嘅 sample，譬如係每次都學你哋咁樣，就兩個 sample，一個就隔夜水嘅 sample，一個就 flush 咗之後，即係攞個 average 嘅 sample，兩個都擺咗喺度嘅話，如果任何人想知道「我而家想攞條水喉出嚟驗一驗。」我拆邊條水喉呢？個水辦有用㗎喎。

答：係。

問：First draw 係有用喎，係咪？最 maximum 吖嘛。

答：係。

問：但係如果你冇咗嗰度，因為冇 keep 咗嗰個 first draw 嘅 sample，咁就好難用水辦嚟鑑定究竟嗰條水喉有冇問題喎？

答：但係有一樣嘢，我始終話 first draw 係只係睇到水龍頭褪落去大約係三、四米個水管嘅嘢啫，但係你嘅水錶--其實我哋上次個經驗，你嘅水錶同埋你閘掣嘅位就最多 deposit 响嗰度嘅，嗰度好可能係有問題，而且我哋而家攞嘅水好多時唔係啲叫做 in ion form，即係話離子狀態嘅，可能係 in particulate form，嗰啲一粒細細嘢，可能已經超過 10 個 microgram，嗰度積聚嗰啲係可--嗰啲係一定遠離--一定你 first draw 係睇唔到嘅，睇唔到嘅，所以其實點解我哋今次做 Task Force 呢，我哋就每個部件都攞，我哋攞晒成--我哋係直情由天台個水箱一路落到去水龍頭，我哋都攞，包括上面啲好粗嘅喉管我哋都攞，幼嘅喉管又攞，我哋其實就想睇下邊度地方有，我哋發覺真係有啲地方，譬如係水錶嗰啲地方係好容易積聚咗一啲嘢嘅，我哋都有經驗係積聚咗啲嘢，嗰啲地方係可以好高嘅。

問：我同意，所以你想搵一條水喉出嚟，而係拆出嚟驗，你就兩樣 sample 都要，flush 嘅 sample 同埋 first draw 嘅 sample 都要，係咪呢？

答：First draw，我諗如果係，你就 draw 多幾下，因為 first draw 都唔夠嘅，first draw 唔夠。

問：First draw 起碼就嗰度近住水龍頭嗰橛。

答：係，近水龍頭，如果我近水龍頭嗰截嘢係好靚嘅，就冇事㗎喎，美國就有咁嘅 case，靚嘅係冇事，原來發覺後面嗰截先有出事咋。

問：啱，啱，所以你講得啱嘅，前又要，後又要吖嘛？

答：係，係，如果你真係要咁做，係要咁做，但係當然呢個係一個好長同埋好 tedious 嘅 process，所以好可能如果個 investigation 或者用第二啲方法都未定嘅，譬如佢哋响啲咁嘅 joint 位嚟講，用啲 XRF 係驗下有冇鉛，呢個都係一個方法嘅，因為如果你要 destructive，要斬開嚟，你就 destructive，...

問：係，好麻煩嘅。

答：...呢個就未必咁 practical，因為人哋用緊水㗎嘛，你可能要用啲不同嘅方法，我覺得不同方法。

問：用嗰個係 XRF 嗰個方法係咪好準確㗎？

答：XRF 係睇表面嘅，都有個好好嘅數據嘅，因為當然，我可以講得，如果你有條喉管，你唔拆開佢，你就咁表面睇個 XRF，就睇表面，其實我哋要睇就係睇佢內膽。

問：裏面。

答：你唔斬開佢，你睇唔到個內膽，但係焊接嘅過程，佢好多時就會--啲鉛都會响出面滲出嚟嘅，你由呢度，我覺得係有個 good indication of 係幾多 lead，當然佢係睇表面嘅，如果你再盡，就要括咗啲 sample 去化驗室嗰度做，咁就會準啲。

問：但係當我哋已經--即係你哋已經覺得而家呢個最嚴重嘅地方嘅來處，鉛嘅來源--來處，就係用咗 lead 嘅 soldering 吖嘛？

答：係。

問：Lead 嘅 soldering 喺出面都可以 detect 到㗎嘛，...

答：應該都得。

問：...所以 for 呢一個咁嘅目的嚟驗嗰啲水喉有冇事係用呢一個 XRF，其實係相當準確嘅？

答：都有 indication，我覺得唔錯㗎喇，唔錯㗎喇。

問：咁樣...

答：係快速--同埋快速嘅。

問：另外一個方法就係貼啲紙喺度，嗰個又掂唔掂呢？你唔會 recommend？

答：No，no，no，no。

主席：嗰個唔掂係因為咩嘢原因，因為唔夠 specific 吖，抑或咩嘢呢？

答：嗰啲唔準嘅。

主席：唔準嘅？

答：唔準嘅。

問：即係過唔到你嗰關？

答：唔準嘅，係，唔準，XRF，XRF 其實都係大約嘅啫，最準都係刮啲 sample...

問：拆出嚟。

答：...返去做 digestion，去驗就最準。

問：啱，啱，啱，啱。

答：XRF 都係表面，佢睇個 surface layer，其實可以咁講，响嗰個 solder 裏面，嗰啲鉛唔係好 even 分佈，就算响啲 alloy -- copper alloy 裏面，啲鉛都唔係好 even 分佈，有時响表面，有時响裏面，你表面冇，你睇唔到㗎囉喎，唔係好 even 嘅。

問：如果係因為用焊料，我就明，因為我睇過嗰啲過程喺出面咁樣整，整完之後咁整落去咁樣。

答：係，係，係。

問：如果唔係由 soldering 嗰度嚟，就點樣會喺度嘅呢？如果唔同 soldering 冇關係嘅話。

答：大致上嚟講，而家我哋嘅結論就係 solder joint，因為佢第一，solder joint 佢個 water contact areas 就大，同埋响一條水鏈入面，佢嘅數量係多，所以呢個我哋嘅結論，呢個係主要 component，但係响 copper alloy 嚟講，譬如啲 fitting、水喉頭、閘掣、水錶嗰啲嚟講，佢因為嗰啲--我哋有所謂叫做有個 galvanic corrosion 個問題，就使啲鉛係釋出嚟嘅，佢都會釋出嚟嘅。

問：哦，釋出嚟嘅。

答：有一個叫 galvanic corrosion，係叫做--嗰個咩嘢偶合式嘅咩嘢腐蝕咁嘅名。

主席：係呀，總之係 copper 同埋 lead...

答：Copper 同 lead，係喇。

主席：...啲電子走嚟走去。

答：係，有啲電子，係，係，係，電子走嚟--係一個大家唔同嘅 electrochemical 個 potential 就使到有啲 preferentially 嗰啲嘢畀咗啲 electron 佢，佢就落咗水，跳咗落水，嗰啲就係鉛嚟㗎喇，嗰啲係 in ion form，但係有時個 ion 就 deposit 响個 inner surface 裏面，就成為一啲嘅粒子，啲 deposit，如果啲水喉一沖得快嗰陣時，就會甩咗佢出嚟嘅，甩咗，或者會積咗响嗰啲咁嘅 filter 度，或者係積咗啲水錶，啲轉彎位，所以我哋就發覺啲 elbow 地方係特別多嘅，水錶位又好多嘅，嗰啲地方就係因為容易有啲彎位，就積咗啲 lead 嘅 particle 响度，你一開大水掣嗰時，「逢」咁就出咗嚟㗎喇。

問：反而開細就唔會出嚟添？

答：係，水細好啲，我覺得細好啲嘅，細好啲嘅。

問：但係飲咗落肚或者食咗落肚都杰㗎喇？

答：係，係，係。就算你係 particle 好，ion 又好，落到個胃，我哋個胃酸係--個 pH 係 1 嘅，好酸嘅，一定溶晒嘅。

問：所以幫助佢溶咗？

答：一定溶晒。

問：溶咗，就吸咗入啲血度？

答：係喇，冇錯喇，你無論食--你食一嚿鉛落去個肚裏面，啲鉛都出晒嚟

嘅，唔好食鉛。

問：因為胃酸--即係如果冇胃酸就唔使驚？

答：唔係，冇胃酸--但係我哋嘅胃係好酸嘅。

主席：有陣時唔係，有陣時你食魚食咗落去，釣魚嗰陣時候，釣魚，用鉛，有陣時你蒸魚蒸埋添呀。

李柱銘先生：主席，你唔好嚇我，我最鍾意食魚。

答：係呀，我哋舊時係用鉛嚟釣魚㗎，啱。

李柱銘先生：我仲要食魚頭添，千祈唔好畀我老婆知道，okay。

答：當時--唔係，我哋以前用啲鉛筆都係鉛嘅，有含鉛嘅，我哋咬鉛筆頭嘅，我哋細個嗰時都咬鉛筆頭嘅，我哋係吸咗好多鉛嘅。

問：你冇乜事喎，吸鉛。

主席：一定冇事喇，係咪呀？香港大學 PhD 一定冇事。

答：我諗呢度在座好多人都食過鉛筆頭嘅，都冇事嘅，Martin 你都咁咩嘢喇。

問：可能有事，因為我唔記得咗。

答：我哋當年，我哋當年嘅鉛筆係有含鉛嘅，真係含鉛嘅，我哋當時係用 leaded petrol 嘅，空氣中有鉛嘅，我哋如果...

問：而家啲鉛筆冇事㗎？

黎先生：而家石墨嚟。

石先生：用 graphite 之嘛，而家。

李柱銘先生：哦，而家鉛筆冇事。

答：鉛筆，而家冇㗎喇，而家冇㗎喇，以前係有㗎，我哋好多鉛㗎其實，我哋空氣中係有鉛係好耐嘅，我哋去到成九幾年先至 ban 咗呢個 leaded petrol 嘅咋。

問：哦，okay，咁可能...

答：即係我哋其實有鉛嗰個時候好長時間嘅，我哋唔 aware，亦都唔係好知道個危害性，即係 put it this way。

問：如果鉛筆冇鉛，我今晚可能返去試下。

主席：仲有冇問題問呀？

李柱銘先生：有，有。

問：而家你知道水務署佢就咁咁樣定嘅，即係定一個公屋邨係咪受影響嘅屋邨或者唔受影響嘅屋邨，即係鉛，佢就收到水辦，如果有一個超過佢哋認為係世衛嗰個標準，即係 10 個 micrograms per litre，有一個水辦都好，佢哋就成個屋邨當佢係 affected，你知道佢係咁做吖嘛？

答：係。

問：如果呢個係...

答：呢個係好保守嘅做法㗎喇。

問：好保守，好小心，okay。

答：好保守嘅做法，美國、英國唔係咁樣嘅，唔係咁做嘅。

問：好喇，但係調番轉頭，如果佢收到好多水辦，冇一個係過 10 嘅，佢哋呢個成條邨都唔係受影響㗎喇，你知道佢哋係咁做？

答：係，係，冇錯。

問：但係去到 9，甚至 9.9，因為佢一定要 draw 條 line somewhere，咁 9.9 嗰啲數目冇事嘅，佢哋係咁樣做法嘅。而家問題就係，好喇，因為你抽水辦點都係有限㗎，因為錢嘅限制、人力嘅限制，你冇理由八百個--一座樓宇，公屋嗰度，大概係八百個單位，你冇理由八百個都做，係咪呀？

答：係。

問：你梗係抽樣㗎喇，咁抽咗樣都係相當少嘅個數量，係咪呀？

答：係，係。

問：而家，去到而家，佢而家政府就話十一個屋邨就係受影響嘅，所以佢就做咗應該做嘅措施，譬如驗血嗰啲嘢，你明我意思嘛？

答：係，我知，我知。

問：其他嗰啲百幾個就因為佢哋畀佢編咗做不受影響，就冇呢啲嘢個囉喎，完全冇，當 okay，但係你身為一個專家，因為佢驗嘅時候，用個世衛嗰個咁嘅標準嘅用法，同埋 Prof Fawell 就話呢度用法唔啱，呢度去到 5 都得㗎，唔使 10，甚至我盤問過，佢話去到 2 都唔係唔得㗎喎。

好喇，咁嘅時候，如果你係 9，如果 8、7 個 micrograms per litre，仲沖咗兩分鐘之後，有時仲沖咗五分鐘之後，有咩嘢你諗--係咪有信心，如果所謂咁嘅情況之下，係冇一個水辦喺某一個屋邨裏面驗到係超過 10 個 micrograms per litre 嘅，所以就定咗佢做 unaffected。

而家裏面仲有啲人喺度住，有細路仔嘅，你敢唔敢話畀佢聽「你呢個真係冇問題㗎喇。」你敢唔敢話畀佢聽呢？

答：我明你嘅意思嘅，我明你意思。

問：即係有問題，你覺得？

答：我明你意思。

問：當然你可以教佢哋「你小心，你個廚房每日開，超過一個時間，一開就一定係兩分鐘，沖咗佢先，開大水喉添。」但係有時又有問題，如果你話開大水喉兩分鐘，可能就嗰啲嘢走出嚟，一粒粒走出嚟，遲啲，係咪呀？

答：唔。

問：即係咁又有問題。如果好似你講細水喉，可能就唔會沖嗰啲一粒粒嘢出嚟，我明白係有困難嘅，你點樣都有困難，冇一個全美嘅方法嘅，係咪呀？

答：係。

問：所以佢哋叫人哋就係沖一分鐘至兩分鐘，咁又唔係好清楚，一分至兩分，我又未試過開個水喉，睇住個錶，開咗個水喉，開大個水喉，唔用啲水一分鐘係好耐㗎喎應該，係咪呀？兩分鐘就更加耐，你問啲人，就算用問卷，啲人以為一分鐘，其實未有耐到一分鐘都可能，或者...

答：所以我都响有啲場合，教人哋就用鋅盆，一個普通大嘅鋅盆就 20 litre，中型嘅鋅盆就大約 15 litre，大約你話我大嘅鋅盆就大約係一半個鋅盆，或者細鋅盆，一鋅盆嘅水就夠㗎喇，即係...

問：你呢個方法好，即係起碼睇到吖嘛。

答：我就會教人咁做嘅，大鋅盆就 20 升嘅，有啲孖鋅㗎嘛，即係有啲鋅盆係兩個鋅盆嘅，成個，有大有細，如果大嗰啲，20 litre，細嗰啲 15 litre 嘅，你大約係一個細嘅鋅盆或者半個大鋅盆，我覺得都夠㗎喇。

問：你覺得夠。

答：你 flush 咗咁上下，我覺得其實嗰個鉛嘅含鉛係可以接受嘅。

問：你呢個做法就準確好多，容易，人哋睇到。

答：因為冇人戴住個錶去扭水喉嘅，但係我就叫啲人就啲水就唔好啦咗佢。

問：你喺個 basin 度更加容易。

答：個 basin，你用咗佢，你就攞去洗菜又--唔係，洗嘢又好，淋花又好，洗碗又好，whatever 都唔緊要嘅。

問：洗菜就唔係咁好？

答：你沾上去嘅都係有限嘅啫，好少嘅，你講緊係幾 mL 嘅啫，幾 mL 唔怕嘅。我哋可能吸得空氣都可能吸咗㗎喇，都唔怕嘅，其實我哋响大致嘅環境裏面都好多嘢㗎喇，我哋唔好過量，都接受得嚟嘅。

問：你知唔知道政府因為呢個鉛水嘅問題一出嚟之後，我諗睇報紙或者睇電視都睇到嘅，係我哋嘅政務司司長就好緊張，喺舊年 7 月初嘅時候，佢就開過一個記者招待會嘅，佢話「我好重視呢件事」。跨部門嘅會議，你知道㗎嘛？

答：我知道，但係我唔知道詳情，我冇咁嘅水平，我未去到個級數嘅，我唔知嘅。

問：好不幸...

答：我未去到嗰個級數係會知道啲詳情嘅。

問：我可以話畀你聽，喺我哋而家聽證據差唔多聽到完，你呢個級數肯定主席唔會畀你好低。咁樣，所以你就冇去過嗰啲 meeting？

答：我冇去過。

問：但係 Task Force 你就去嘅？

答：你係其中一個人吖嘛？

問：係，係。

答：你 Task Force 嗰度，直到而家為止，你可唔可以話畀我哋聽你嘅理解，你嘅理解，Task Force 後來唔用，即係抽水辦唔用兩個，淨係用一個，係咪因為佢哋...

主席：唔係 Task Force，水務署。

李柱銘先生：水務署，水務署。

問：水務署就決定就淨係用一個 flush 咗嘅水辦，就唔用兩個，佢係咪解釋過，目的就想話畀市民聽點樣處理嗰啲隔夜水，要開個水喉啡咗幾耐先啱，就係呢個目的，但係頭先我問你，其實可以用另外一個目的嘅，就係用嗰啲水辦嚟睇下嗰啲部位，嗰啲部分，component 係咪合乎 BS，British Standard，睇到個水質，然後開始決定點樣做㗎嘛，其實係有呢個用途，係咪？

答：我想問一問咁，或者我答你嘅問題，就係話水務署，佢哋現時嚟講，因為第一，佢基於佢有咁多條屋邨，有咁多個 water sample 要攞，同埋佢哋嘅目的，我都認同佢嘅目的，就話係要睇下個 quality of water supply，佢係供個水 on 一個 average basis，用咁嘅 basis，佢要好快咁知道咁多條屋邨有咩嘢問題，所以我認同佢哋做嘅方法嘅，即係陳健民嘅方法我係認同佢嘅。

但係至於我哋 Task Force，Task Force，我哋嘅目的亦都唔係去研究下點樣攞 sample 法，所以亦都同 Task Force 冇關係，只不過我作為一個水諮會嘅主席，我會畀水務署參考，因為出面，正如話有咁多種聲音，咁多做法，我哋攞啲 sample 去做 benchmarking 啫，但係响實際環境下，如果我要 investigate，真係要 investigation，我同意係要做一啲 stagnation test，即如我哋現時做個 Task Force，我哋都要 stagnation test，我同意呢個做法嘅。

但係如果就係陳健民或者水務署恆常佢做法，因為佢哋咁多條屋邨，因為佢仲有困難，就係如果你做 stagnation test，佢要約定個住戶，隔晚唔好用水，有好多安排佢係做唔到，呢個我同意嘅，所以我同意嘅。但係如果你話「我真係要 investigate 某條 pipeline，有問題嘅。」我同意係要做啲 stagnation test，我同意嘅。

問：但係你嘅理解，就係佢哋就因為要時間嘅限制，要急，又驚住啲居民唔肯合作...

答：呢個都係一個原因，係一個好主要嘅原因嚟嘅。

問：佢哋咁話畀你聽？

答：係，我知嘅，我都知道佢，因為我都同佢哋有接觸嘅，我知道佢，雖然呢個唔係 Task Force 嘅責任，但係我同陳健民佢哋都有好多交往嘅，我知嘅。

問：但係佢水務署啲同事其實就係同埋房署嗰度就大家合作嘅，上去攞水辦，因為佢哋入咗去間屋度，唔知佢去邊，但係房署啲人知道。

答：我都知嘅，我都知嘅。

問：譬如如果佢入到間屋度，好彩，譬如嗰個住戶係遲起身嘅，譬如 10 點鐘至起身嘅，如果 11 點去到，咁樣唔會嘈醒佢，佢起咗身，但係佢啱啱就預備煮飯，可能嗰啲食水喉--嗰啲廚房水都未用嘅，咁咪 first draw 囉，完全唔會阻到佢嘅，係咪呀？

答：係。

問：其實可以呢啲方法嚟補救㗎嘛？

答：係，係。

問：但係佢哋...

答：我諗個別係可以安排嘅，但係 on 一個 big scale 嚟講，如果考慮到個 scale of 嗰個 sampling 嚟講，我諗如果要安排呢啲，可能到而家都未做完，我覺得。

問：咁又唔會。

答：因為佢當時嚟講，我知道個輿論壓力係好大，係要好短時間要話畀人聽呢十一條屋邨係有冇問題嘅。

問：但係個輿論壓力呢個又係重要喇，因為照我嘅理解，就係因為水務署唔肯做隔夜水，就不停咁畀人哋將住，你有冇聽過呢度？

答：有。

問：不停，同埋夜晚去啲街坊度開會，都不停咁畀人將住。

答：我都知道，我都知道，雖然我...

問：所以你嗰個係充滿智慧嘅，你嗰個答案係，即係起碼安撫民心都要做嘅，係咪呀？

答：係。

問：同埋做埋，咁咪好囉，咪等佢哋安心，係咪呀？

答：係。

問：你到而家為止，你而家譬如嚟我屋企做，即係開咗水喉開大佢，兩分鐘之後，我真係唔知，我點敢信啫，係咪呀？呢個問題吖嘛。

答：係。

問：Okay，就...

李柱銘先生：可唔可以畀少少時間？

問：頭先你講，你有一份 paper 嘅，就叫做"Proposed mitigation of lead contamination in tap water"，講嗰份 paper，你係交咗畀水務署長嘅，係咪？

答：係。

問：你知唔知道有咩嘢跟進嘅，有冇？

答：我知道佢就將我呢份 paper 就係 circulate 咗畀佢啲同事，就叫佢哋 study 嘅。

問：係，你讀過出嚟，你有讀過出嚟。

答：跟住就响個 Task Force meeting 讀出嚟。

問：跟住有咩嘢跟進呢？

答：跟住就冇嘢做到㗎喇，就冇嘢做到㗎喇。

問：跟住冇嘢做到，你又唔知道佢有冇自己又再討論，喺個水務署裏面？

答：我哋咁樣嘅，我哋 8 月 27 號，水務署長係約見咗我哋去傾嘅，8 月 27 號，水務署長約咗我...

問：8月27...

答：...同埋前主席何建宗教授同埋我哋嘅一個會員係Richard Cheung教授，仲有個Poly U嘅一個教授，同埋Jimmy Yu，係有幾個香港嗰啲水質嘅專家就係討論咗。其實我哋嗰陣時討論係討論個WHO個guideline個sampling protocol同埋應唔應該--因為我亦都建議過係用啲orthophosphate，dose orthophosphate係咪可以含--係咪practical响香港做，我哋有討論過嘅，所以我諗署長都係因應我呢個recommendation去call呢個meeting，就係想討論下究竟現時我哋跟，用個WHO guideline係咪appropriate，我哋嘅sampling protocol係咪啱，譬如出面咁做，我有咁嘅建議，美國就咁做，我哋都討論過嘅。

我亦都解釋畀署長聽話我認同水務署現時個做法，但係我話畀佢聽現時美國有咁做，亦都出面有啲人咁做，咁樣，但係我亦都話畀佢聽first draw係有佢嘅唔好處，亦都有佢嘅好處，有佢嘅唔好處，好視乎你嘅目的係乜嘢啫，我哋有開過會傾過嘅。

問：但係你後來亦知道我哋呢個委員會就搵咗兩個專家，Prof Fawell同埋Prof Lee，做咗一個專家嘅臨時嘅報告，就好清楚就話要做first draw嘅，係咪？

答：係。

問：你知唔知道點解雖然咁清楚嘅推薦，水務署都冇跟呢，知唔知？

答：呢兩個報告係before --即係係好後期㗎喇，好後期㗎喇。

問：係喇，係喇，但係佢都冇做喎。

答：我嗰個recommendation係7月27號嘅，我同水務署開會個專家--嗰班開會係8月27號嘅，係好早傾咗㗎喇，Fawell同埋Prof Lee嗰個係好後期，好後期㗎喇。

問：你知唔知道雖然係後期，但係水務署都唔聽嘅？

答：我唔方便同佢答，我唔方便同佢答，真係，sorry。

問：Okay，okay，okay。頭先我聽你嘅口供，你亦同意其實世衛而家嗰個所謂嘅標準，10個micrograms per litre嘅標準，其實冇呢個--呢個唔係一個健康嘅標準嚟嘅，衛生，係咪呀？

答：係。

問：呢個只係希望你做到呢個標準咁解嘅？

答：係，一個 provisional guideline，始終係一個 provisional guideline 嚟。

問：即係起碼希望你做到呢度？

答：係喇，係喇。

問：但係如果好似 Prof Fawell 講話你如果可以做得好啲，5 嘅，點解唔做呢？你同意㗎嘛，呢個睇法？

答：呢個我自己個人嘅見解，呢個其實係一個要共同討論嘅，因為呢個係好大嘅社會代價嘅，因為呢個一定係好大嘅社會代價，係要共同討論，唔係我話要咁做，或者某人話要咁做嘅，因為如果你要做--當時點解世衛話「10，點解你唔做呀？」咁樣，就係如果你做到 5，個社會代價係好大嘅。

問：啱，啱。

答：因為你個 treatment cost 係大好多，你嘅喉管要換晒。

問：啱，啱，啱。

答：你嘅 treatment cost 係做好多，呢個係社會代價，係好多人要共同要賦予，所以就要一個叫做公眾討論，我諗唔係話我同你响呢度傾下可以傾得到嘅。

問：當然，當然。喺瑞士，可能要公投添。

答：係喇，要公投，你要做到 5，係個社會代價係好大嘅。

問：香港就冇呢個問題，頭先石大律師就問你，因為香港就做到 000 嘅，如果唔係水喉有問題，係咪呀？

答：因為現時嚟講，其實我哋用嗰啲 copper alloy 嚟講，copper alloy 其實係有 4 至到 8 或者 4 至到 6 個 per cent 嘅 lead 嘅，都有嘅，所以單單我哋嗰時--我做過數學模擬，都分析過，如果我哋撇除晒，冇晒所有嘅 leaded solder，我淨係啲 copper alloy，copper alloy 都唔少㗎，一條橫嘅鏈嚟講，可能有個水錶，有個閘掣，有幾

個閘掣、水龍頭，有五、六個嘅，五、六個呢啲嚟講，佢都有啲鉛滲出，都唔會0嘅，做唔到0嘅。

問：Okay，做唔到0，冇問題，唔會去到2咁高㗎嘛？

答：有㗎，會㗎。

問：會唔會呀？

答：有㗎，我嘅數學模擬，發覺如果你係...

問：合乎BS喎，要全部？

答：係，當然，當然。會可能有--即係我初略嘅計法，就2、3個microgram都有嘅，唔出奇嘅，有嘅。

問：但係5就唔會喇？

答：咁又唔會咁高，唔會咁高。

問：所以Prof Fawell佢就話5，佢話香港可以做到㗎嘛？

答：係。

問：如果你香港仲監硬keep住個10，你冇理由㗎嘛，你根本已經做到晒喇，係咪呀？

答：係。

問：係咪呀？

答：係。

問：以後求其超過5都冇問題，5至9.9都冇問題，咁就唔啱，變咗我哋退步，你同意呢個睇法吖嘛？

答：我諗咁喇，如果你話去到10，marginal有個uncertainty嚟講，呢個係應該檢討嘅，即係話你唔通9.999，你就話「冇事，我唔理。」呢個我覺得--我好初步咁同佢哋傾過，佢哋有個諗法，就係如果係去到margin，譬如5以上，可能佢哋會覆檢嘅，佢哋會覆檢嘅，我哋9嚟講，你梗有sampling error，係咪呀？你攞辦，你今次攞辦同聽日攞辦可能唔一樣，所以係會覆檢嘅，我嘅理解，佢哋係會覆檢

嘅。

問：Okay，仲有一點，我就諗唔通嘅，我想問一問你，因為我哋有啲係水辦係沖咗兩分鐘嘅，都係由5至9嘅，譬如6、7、8、9嗰啲算係高傑喇嘛，沖咗兩分鐘，但係你再驗，呢個沖咗兩分鐘傑喎，但係再驗就first draw添，就反而就冇傑喎，咁有咩嘢解釋呢？

答：Likely，likely嚟講，我話畀你聽particle，啲particle，佢甩一啲出嚟，你個flush嗰時，佢啲deposit係黐咗响表面，如果你沖一沖，沖咁啲出嚟，嗰次沖甩同埋今次唔沖甩，已經分別好大傑喇。

問：你諗就particle嘅問題？

答：Particle，多數係particle。

主席：Prof Fawell都係咁講。

答：係咪呀？

主席：係，唔。

答：Particle嘅，呢個我都好早都同佢哋講嘅，before Fawell嘅time，我都係咁講嘅。

主席：係，都係咁講。

答：咁吻合喇，我同佢嘅見法都係。

問：我想問一問你係計數嘅問題，我啲數就唔掂嘅，我就畀番嗰個--或者我今次畀啲文件你睇。

李柱銘先生：唔該畀少少時間我。

問：呢個文件係C19.6 tab 134，第一版就係13952。

答：一...

問：13952，唔就該你睇一睇嗰個13965版，13965，你望底下，去到最底下，你睇到呢個圖，3.2嗰個"Flushing Test"嗰個圖，呢個圖你記得喇，頭先我問咗你嘅，其實。

答：係，係，係。

問：好喇，你再揭一版，呢一版都要睇住，後面嗰版就係13967，又有兩個table，底下嗰個，你就睇到第一行，打橫嘅，就flushing time就係at 0 minute，一路你打橫過到尾二，右邊尾二嗰度，"Result"就34.7個micrograms per litre，睇到喇嘛？

答：係，係。

問：如果一分鐘--跟住嗰行，一分鐘又點呢？就跌到去6，係咪？

答：係。

問：好喇，你睇番轉頭，頭先嗰版，嗰個就睇到個上面。

答：係。

問：嗰個34.7，而家差唔多35嗰度，一跌跌落嚟，去到5上面就6喇，一分鐘，可唔可以計番轉頭嘅呢？計番轉頭就係而家係6吖，如果係嗰個0分鐘嘅時候，即係first draw，隔夜水係應該去到幾高，然後沖咗一分鐘至有7或者8或者9咁，而家係6，本來就34.7，沖完一分鐘，就變咗6，可唔可以計到如果係9，我想睇下跌到9，一分鐘沖咗，係9，一開頭嘅時候係高到幾多，計唔計到㗎？

答：計唔到嘅。

問：計唔到？

答：冇得計嘅，冇得計嘅。

問：冇得計？

答：冇得計。

問：點解呢？

答：正如你講，佢甩唔甩出嚟，我點--好 random 嘅，呢個係一個 random process 嚟嘅，即係呢個時候嚟講，我可以話畀你聽，如果係 34.7，香港又好，外國又好，我哋發覺 flush 一分鐘之後，通常嚟講，都係會得番 10 to 15 per cent 嘅啫，呢個係好正常嘅做法。

但係你話 extrapolate，如果一分鐘之後有 9，extrapolate 番去 0 分鐘嗰時幾多，可能大致上，你估--我諗可以估，即係話你當如果係 9 的話，就...

問：再多啲。

答：...如果我係話當係 20 per cent，20 per cent，即係得番 20 per cent 啫，我咪 9 嗰陣時，我咪計番，如果係 0 分鐘嗰時咪去到譬如係除 2，四十幾囉。

問：四十幾，但係就你...

答：四十幾個 micrograms per litre。

問：咁但係...

答：45 個 micrograms per litre，即係大致--呢個我覺得唔準嘅。

問：唔準。

答：我只係話 base on 一啲咁嘅 extrapolation 啫，但係我覺得呢個係冇準嘅，我唔覺得係準嘅。

問：因為如果係原本點解有咁高嘅含鉛，如果係有一粒嘢跌咗落去，咁就要跌兩粒嘢出嚟喇？

答：係喇。呢個嗰啲 deposit 甩出嚟係好 random process 嘅，你如果開個水喉大啲，你都可能 flush 多啲出嚟，所以我哋發覺以前如果我哋經過--我嘅經驗就係你今日攞同聽日個數都唔同嘅，唔同嘅即係，所以我唔可以話畀你聽係咪咁多，但係如果你話用 10 to 15 per cent，15 to 20 per cent 嘅 reduction --即係得番咁多，我會講四十零喇，咁樣嘅，即係我咁可以估計啫，但係呢個我覺得係唔准嘅。

問：好，好，好，明白。你又講過 orthophosphate 嗰度，你覺得譬如而家啲公屋，政府就話佢係 unaffected，但係啲居民就覺得未必喎咁，咁如...

主席：未必咩嘢話？

李柱銘先生：未必真係 unaffected。

問：尤其是有啲 9、8 嗰啲咁嘅例子出咗嚟，用呢個得唔得嘅呢？

答：响美國同英國，用 orthophosphate 就好普遍嘅，而且佢哋都發覺好 effective，但係呢個我亦都攞咗出嚟畀水務署討論過嘅。

問：你都攞過出嚟。

答：佢亦都討論過嘅，因為呢個係 one of 我個 recommendation 嚟嘅，亦都討論過嘅，但係佢哋嘅睇法，就話英國、美國可能個氣溫低，嗰個 orthophosphate 就可能對個水質冇乜大影響，而我哋香港嚟講，可能有影響。

點解呢？就係因為如果氣溫高嗰時候，orthophosphate 可以造成嗰條水管裏面係會 bacteria 嘅滋生，因為我哋反而 concern about bacteria 滋生，譬如係啲 Legionnaires' disease 或者其他嘅大腸桿菌，呢個就得不償失，所以佢哋會覺得。

同埋仲有一樣嘢，就話如果我條喉管係冇事嘅，點解你要畀咁多 phosphate 我食呢咁樣，因為你一攞落去，就全香港都有晒，因為 orthophosphate 係落去嗰個濾水廠個出水口嘅，唔係話你個水箱滴咗落去，就唔係咁嘅，呢個當然有另外一種方法做，有啲另外嘅方法做，但係 orthophosphate 响美國嘅做法、英國嘅做法，就係响個濾水廠個出水口嗰度落去嘅，就係落 1.5 ppm to 2.5 ppm 咁嘅數落去嘅。所以有啲人話「我條喉管冇事，你又要監我食咁多 phosphate，咁唔啱嘅。」我覺得呢個係啱嘅。

但係美國唔同，因為美國佢好多 lead pipe，英國係好多 lead pipe，佢落呢個係好 effective 去將嗰個 lead 降低，但係我哋香港冇 lead pipe，所以我覺得唔需要做嘅，我都同意嘅。

問：如果嗰個食咗 phosphate 落去，有啲咩嘢...

答：Phosphate food grade 嚟嘅啫，其實冇嘢嘅，即係磷質啫，磷質，但係有一樣嘢，就話你個污水廠，你就要 treat 咗啲 phosphate，因為唔係呢，你就會造成 eutrophication，即係話營養化，個水體可能會有啲 red tide 嘅出現，亦都有代價，有 environmental consequence 嘅，因為你啲磷落咗去水體度，就喺個水體裏面個營養化咗，營養化咗就會好容易滋生嗰啲 algal bloom，即係 red tide 紅潮嗰啲就係咁嚟㗎喇，氮、磷出多，就會...

問：水喉都有㗎？

答：吓？

問：水喉都會出呢啲？

答：會㗎，因為你食咗水之後，啲水就變咗污水，污水就落咗污水廠，污水處理唔好，就落咗水體，因為我哋而家食任何嘅水，最後都係變污水，污水咪去污水廠，污水就要處理佢，如果佢處理唔好，就落咗海，海就會造成紅潮，呢個係一個好大，亦都我哋要 debate 得好好，要小心諗嘅，唔係話好輕易要做嘅。

問：Okay，你話喺美國、英國嗰啲，就喺個濾水廠嗰度擠落去，你都有提過有啲其他辦法嘅？

答：有嘅，有嘅。

問：咁可以譬如喺個天台個水箱度咪得囉。

答：嗰啲就唔係用 orthophosphate，有啲第二啲方法嘅，但係我知道水務署係研究緊，同埋房署都研究緊，有咩嘢啲 mitigation measure，我知道佢係研究緊嘅。

問：其實譬如你話可能就會熱就會--因為香港嘅天氣熱啲，可能會有咩嘢，可能咩嘢，可能就一定有可能㗎喇，但係你知唔知道佢哋有冇做過實驗，係證明到真係會係唔掂呢？

答：我知道真正嘅實驗就冇做。

問：應該要做實驗嘅，係咪？

答：我諗房署同埋水務署係研究緊不同嘅方法嘅，我知道佢係研究緊不同嘅方法。

問：因為譬如有啲人好想賣嗰啲 product 畀你，你咪叫佢做個實驗畀你睇下囉。

答：係，係，係。

問：係可以咁㗎嘛？

答：係，係。

問：梗係畀錢嘅，佢做埋喇，係咪？

主席：梗係唔係喇，咁簡單。

問：你話仲有其他方法係咩嘢方法嘅，可以解決呢個問題？

答：有啲就係用啲 epoxy coating，响嗰個喉管嘅內層，亦都有啲用啲 silicate coating，嗰啲就係個別嘅水喉鏈，响譬如瑞士嚟講，有啲咁嘅產品，就係佢响個水箱就落一啲咁嘅 silicate 嘅 product，即係啲硅，硅，silicate 即係硅，落落去嗰個水管，佢慢慢咁樣 coat 一浸嘢响個喉管內膽，就等啲 lead 就唔會滲出嚟嘅，就呢個有做，就個別嘅水鏈就可以咁做，但係呢個就係一啲短暫嘅方法，長久個方法，我諗可能香港人都希望係換晒啲水喉嘅。

問：即係長久嘅方法，嗰啲公屋裏面要換晒水喉㗎喎，長久嘅方法？

答：我諗水務署同埋房署係諗緊嘅嘢嘅，諗緊，我唔知佢哋嘅進度點樣。

問：如果佢做嘅話，你應該十一個屋邨，你做啲、唔做啲又係好大反感，啲市民一定係反對，因為做晒十一個邨，其他嗰啲話「我哋係咪咁 safe㗎？」又有問題㗎喎。

答：係。

主席：佢答唔到㗎嘛，呢啲。

答：我唔知道水務署同埋房...

問：得，係，係，係。

答：呢個我亦都不便幫佢答嘅。

主席：係呀，答唔到，答唔到嗰啲唔好問。

答：我唔知道。

問：好，咁樣就因為--呢個問題你未必答到嘅。

李柱銘先生：不過主席，我諗你明我點解要問嘅，因為--我或者講咗先，因為如果我而家唔提出嚟，到到我哋嘅 submission，如果 take 真係咁樣講嘅時候，可能有人會反對嘅，「你都冇問過出嚟」。

主席：例如呢？

李柱銘先生：例如--我而家譬如我而家睇到，因為幾個證人都話你用咩嘢方法抽水辦就得到有咩嘢後果。

主席：係呀。

李柱銘先生：我哋而家就懷疑會唔會政府因為想慳錢或者各個理由...

主席：你問佢呀？唔使問佢喇。

李柱銘先生：唔係，我可唔可以...

主席：唔係，你 submission 講得㗎喇。

李柱銘先生：好，好。即係唔需要話一定要 call 一個人出嚟，okay，得。

石先生：唔係，同埋陳博士唔係代表政府。

主席：係呀，佢唔係。

石先生：我理解你要 put 畀政府嘅人，陳博士唔係政府嘅人嚟㗎嘛，都 put 錯人。

主席：係呀，係呀，係呀，唔係，唔使，唔使。

答：我唔可以代表佢答嘅，我唔可以代表佢答。

石先生：如果要 put，一早 put 咗喇。

李柱銘先生：得，得，得。唔係，我主要就係咁樣，其實主要就唔係淨係問佢咁簡單，唔問佢冇...

主席：我知，我明，唔使。

李柱銘先生：即係我陳詞可以咁樣講？

主席：可以。

李柱銘先生：咁我冇嘢喇。

主席：好，唔該晒。

問：唔該你。

主席：請坐。

王先生：主席，我有一條覆問。

主席：問喇。

王先生補問

問：陳博士，你頭先提到有一個 8 月 27 號有個專家會議嘅。

答：8 月 27。

問：8 月 27 號，你可唔可以同我哋講一講個專家會議個結論係咩嘢呢？

答：其實我哋係討論咗幾樣嘢，第一個就係話 WHO 個 guideline，第二樣就係個 sampling protocol，第三就係嗰啲咁嘅落啲 orthophosphate 嗰啲嘢，最主要係呢幾樣嘅。個結論就係我哋認為現時嚟講，我哋都係有一個準則，呢個係現時嘅準則，我哋 best available guideline 我哋做嘅，所以水務署佢都覺得係會跟嘅，跟呢個 guideline 嘅，我哋都冇乜異議嘅。

因為如果你唔用呢個 guideline，我哋用乜嘢呢？我哋唔可以零嘅，係咪 arbitrary 嗰個數吖？如果你話 8，人哋問你點解唔 7 呢，唔 6 呢咁樣，所以現時嚟講，係冇一個即係叫 international guideline，所以唯一現時 international guideline，而係最 stringent，現時都係 WHO 嘅，WHO 係最嚴謹嘅 guideline，所以我哋响呢方面係冇再有異議嘅。

至於個 sampling protocol 嚟講，我哋都討論過 first draw、flushed sample 立立雜雜，我都唔再重複。我哋都有個咁嘅結論，我亦都覺得各有各嘅做法，各有各嘅好處或者唔好處，呢個我哋都討論過嘅。我都正如講，我都同意水務署現時佢嘅 sampling 嘅方法，我同意嘅，given 個 time 同埋個目的係做咁樣，我同意嘅。

至於個 orthophosphate，先頭我哋講過，亦都係因為你 orthophosphate 响香港未必一定實踐得好，同埋仲要真係要做，我哋都要做好多 test，先至可以確定，因為亦都有好多嘅 environmental consequences 嘅，呢個係最主要我哋嘅目的講嗰個結論嘅，係 8 月 27 號嘅。

問：Okay，唔該。

王先生：主席，我冇其他問題。

主席問

問：我有個問題，我想問番你 8 月 27 號第二個 issue，我明你講咩嘢嘅，given 當時水務署個 time constraint，但係個 purpose，如果你話畀我聽係驗個 quality of water supplied to 嗰啲 housing estates，我同意你嘅講法，其實你哋專家嘅講法，如果你哋嗰個所謂 flush 二至五分鐘，其實基本上就係水務署平時驗水，喺佢哋個 sampling protocol 裏面都已經寫咗喺度㗎喇，就係嗰個方法之嘛。

答：係，ISO 5667A。

問：係喇，嗰個方法其實你--佢其實水務署嗰個 sampling protocol，佢話唔唔只兩至五分鐘添，如果 necessary，係要仲長啲添，如果你個 purpose 係要驗 water supplied to 嗰個 housing estate 嘅話，因為正如你頭先所講，你可能 sump tank、roof tank，跟住你可能經過好多樣嘢先至出到嚟，可能五分鐘都出唔到嚟，睇下你喺邊度攞。

答：我唔係好明，因為...

問：唔係，即係佢個 sampling protocol 就話如果你要驗啲 quality of water as supplied。

答：係，at supply。

問：As supplied。

答：As supplied，係。

問：就兩至五分鐘嘅，"or longer if necessary"，我記得我睇咗嘅就係咁樣，不過唔好理佢"longer"先，因為其實個目的就係"as supplied"，即係換句話嚟講，你要驗嗰啲水其實去到個 connection point 嘅 quality，啱唔啱先？

答：啱。

問：就係個 internal distribution system 係完全唔影響你嗰啲 as supplied 嗰啲水。

答：啱，啱。

問：啱喇嘛？

答：啱，啱。

問：係喇，所以其實嗰個--即係始終都係返番去頭先陳博士你所講，你嘅 purpose 係愛嚟做咩嘢，啱喇嘛？

答：啱，啱。

問：Given 嗰個時候，如果你個 purpose 係話「我要知道個 general quality of water as supplied」，你就 flush 喇，by all means，flush。

答：係，係。

問：But 如果你嘅 purpose 係想 investigate 究竟個 internal distribution system...

答：係，啱，啱。

問：...有冇受到鉛嘅影響，咁就另外一回事喇。

答：係。

主席：唔該，好。我冇嘢問你，陳博士，好多謝你嚟今次呢一個調查委員會幫助我哋，唔該晒你。

答：Okay，okay，多謝。我可以離開喇？

主席：可以離開，係呀，係呀，唔該晒。

石先生：主席，調查委員會各方傳召--似乎係委員會自己傳召嘅事實同埋專家證人就已經告一段落，已經傳召完。

主席：好呀，或者我而家講一講我哋個 directions 跟住點樣樣，就房署我上一次問過，其實你哋嗰啲 main contract 係冇中文㗎嘛，係咪？淨係得英文嘅之嘛，啱唔啱？

何先生：係，confirm。

主席：Written submission，written submission 就係除咗 Commission 嘅 counsel 個 written submission 之外，其他所有 parties，就請你哋喺 2016 年嘅 3 月 10 號。今日係 29 號？

石先生：29 號。

主席：即係你哋有充裕嘅時間，3 月 10 號嘅 4 點鐘之前係 file，就 Commission counsel 嘅 final submissions 就係 2016 年嘅 3 月 14 號 4 點鐘 file，submission 就係...

石先生：Oral submission？

主席：吓？

石先生：主席，你跟住話係 oral submission？

主席：唔係，我講埋啲長短先，就係 Commission counsel 嘅 submission 係 maximum 係一百五十頁，A4 size，14 font，1.5 spacing，margin minimum 1 吋。其他所有人一樣，不過--唔係，應該個 size，A4 size，14 font，1.5 spacing，minimum margin 1 吋就全部人都係咁樣樣。

房署同埋 WSD，即係水務署、房署，同埋呢一個李大律師嘅苦主大聯盟都可以 file 一百個 pages，呢個 maximum 啫，我冇話要你一定 file 一百個 pages 嘅，okay？你少，我係歡迎嘅，succinct，okay？

李柱銘先生：我都想少，慳啲紙。

主席：其他所有嘅人士就係 50 pages，okay。呢啲就係包晒所有嘅嘢㗎喇，footnotes 諸如此類全部包晒，appendixes，諸如此類，全部一律包晒，footnotes 就如非必要，就請勿加落去下低，okay。就如果你哋有 legal authorities 嘅話，就請你喺開頭嗰陣時候就 list 你嗰啲 legal authorities 出嚟，你譬如邊個 case，邊個 against 乜嘢乜嘢、citations。同埋唔該喺側邊，用唔好多過五句係講晒五個 sentences 去 summarise 你個 legal principles。

其實冇乜嘅啫，我相信唔係好多嘅啫，legal principles 應

該，應該可能係零嘅添。

李柱銘先生：應該五句可以好長。

主席：呢個 maximum 啫，如果你一句就更加好，okay。Oral submissions，Oral submissions 就會係喺 15 號開始，就係聽三日，首先就會係水務署就行先，你嘅時間係有個半鐘。跟住就係何標記，就係四十五分鐘。跟住就係金日 Golden Day，就係四十五分鐘。跟住就係保華，四十五分鐘。

跟住第二日，就係 16 號，就係瑞安，四十五分鐘。China State 又係四十五分鐘。有利、明合同埋伍克明加埋都係四十五分鐘。苦主大聯盟，我畀你哋一個鐘，有冇問題，應該冇問題喇，okay 喇，係呀。

3 月 17 日就係房署，房署又係一個半鐘。Commission 就係三個鐘。因為你哋最多嘢講。

Prosperity，我諗唔使喇，我諗唔需要。

石先生：仲有林德深、莫海光同埋蕭健煌。

主席：係喎，我哋會出--如果係咁樣樣嘅話，就佢哋係喺邊一個--如果係--因為你第一日就其實係可以擺埋瑞安上去嘅，係咪？因為首先就係水務署個半鐘，第一日。

石先生：跟住何標記，跟住 Golden Day。

主席：跟住何標記四十五分鐘，金日四十五分鐘，都係個半鐘啫，跟住保華同埋瑞安可以擺埋上去同一日，係咪？

石先生：即係我哋將瑞安 move up 去到 day one 嘅？

主席：係喇，瑞安上去 day one。跟住 China State、有利、明合、伍克明再加蕭健煌同埋呢個莫海光。

石先生：莫海光，係，仲有林德深。

主席：林德深，都得，可以加埋嘅，不過--係喇，我哋嗰日就係 China State、有利、蕭健煌、莫海光、林德深，每人都係四十五分鐘，另外就係苦主大聯盟就一小時。因為我估計蕭健煌同埋莫海光未必會講

到四十五分鐘咁長嘅，林德深都未必嘅，如果佢哋講嘅話，可能唔講添。17號照舊都係房署同埋Commission。

石先生:同埋如果overflow嘅話,我哋第三日應該有個buffer嘅時間,都可以...

主席：可以嘅。

李柱銘先生：主席，講到呢度，因為我17同18有個Court of Appeal嘅。

主席：17、18有Court of Appeal。

李柱銘先生：可唔可以我講先呢，16號？

主席：16號你想講先？

李柱銘先生：係。

主席：得，得，冇問題。

李柱銘先生：因為我驚flow over。

主席：唔緊要，你想講先咪講先。

李柱銘先生：好，唔該，唔該。

李頌然先生：主席，剛啱Mr Lee話佢17號有Court of Appeal，佢想改16號，其實16號我哋成team三個counsel都唔得，因為都係有上訴庭嘅案件要處理，17號係我全日都okay嘅。

主席：唔得喎，唔就喎，因為你同保華--你鍾意，你就同保華調。

李頌然先生：16號下晝呢？

主席：16號下晝，得，冇問題。

李頌然先生：我估計我上訴朝早會做晒嘅。

主席：得，16號下晝做有利、明合，得，可以。我哋不如咁，16號朝頭早第一個就係Mr Lee，跟住就係瑞安--唔係，對唔住，瑞安已經上咗去，就係呢個China State，跟住就係蕭健煌、莫海光加林德深，

如果佢哋畀嘅話。跟住就晏晝就係有利、明合、伍克明，如果蕭健煌哋嗰啲可以 overflow 去到晏晝嘅啫。

李柱銘先生：係咪都係 10 點至四點半？

主席：你想唔想早啲？

李柱銘先生：唔需要。

主席：我可以早啲㗎，有冇人想早啲？

李柱銘先生：我唔緊要，不過就冇呢個需要。

主席：冇，就繼續喇，10 點喇。

石先生：不過 for the avoidance of doubt，張達欽先生係同 Golden Day 係 group 埋一齊。

主席：一齊，係，撈埋一齊，啱。冇喇嘛？仲有冇？

李頌然先生：主席，都係 for the avoidance of doubt，我就代表三個 parties，但係個 submission 嘅長短都係當一個 party 咁去計，定係有少少 leeway 可以畀我哋...

主席：有啲咩嘢分別呢？冇分別？

李頌然先生：因為我哋預計 Simon Ng 嗰邊同有利、明合會係有啲 extra，即係多啲嘅嘢講，我只不過唔係話而家我哋 foresee 到一定會超越而家呢個咁嘅限制。

主席：五十個 pages，你唔夠呀？

李頌然先生：五十會唔會係--我哋之前咪有個 interim submission 嘅。

主席：係呀。

李頌然先生：嗰個就唔需要再去補充，其實夠嘅，夠。

主席：嗰個...

石先生：之前其實有利佢 as main contractor，已經講咗一大堆嘢。

李頌然先生：哦，咁 okay，okay。

主席：有咗嗰啲，就唔使再講㗎喇，我哋已經知道喇嘛，我而家講緊 extra。

石先生：By the same token，有利會包埋佢哋嘅 licensed plumber。

李頌然先生：知道。

主席：你已經有咗嗰啲咪唔使講囉。

李頌然先生：好，好，唔該。

李柱銘先生：主席，仲有一啲，就係我哋 file，咁畀唔畀其他人？

主席：你就係呢個唔使畀其他人嘅，你 file 嚟我呢度，我同一時間收晒，4點鐘，因為係3月10號，你 file 畀我個 secretary，我哋收晒所有嘅嘢之後，先至同一時間放出嚟嘅。

李柱銘先生：哦，okay。

主席：Okay，咁所以又係一樣，大家唔准抄大家。

李柱銘先生：好。

主席：冇得抄大家。仲有冇問題？

李柱銘先生：冇問題。

主席：冇問題，就如果有問題，個別人士有問題，就寫信入嚟畀我哋 secretary，如果有啲咩嘢特別嘅事想要攞 direction 嘅，如果唔係嘅話，我哋就15號見。好，唔該晒。

2016年2月29日

下午4時40分聆訊押後

Monday, 29 February 2016

(10.06 am)

(Transcript of simultaneous interpretation
except where otherwise specified)

MR CHEUNG YIP KUI (on former affirmation)

Cross-examination by MR SHIEH (continued)

MR SHIEH: Mr Cheung, on Friday we were discussing one particular subject, and that is the Kitemark, BSI, how WSD dealt with that.

The subject was brought up because, if you remember, I asked you -- the context is this. I asked you that certain components were used, certain fittings were used in Kai Ching and Kwai Luen, which had not been declared in the annex. But those were on the approved list of WSD, and then those fittings released lead, to the extent that it's over the British Standard, and I asked you why the fittings on your approved list have released lead exceeding the British Standard.

To use a neutral term, you said there's room for improvement regarding the list.

So that's the context of our discussion.

Now, you would accept three categories: lab test, and WRAS from the UK, and you reminded us that you would count the issue date, one year.

A. No. We would look at the WRAS expiry date in the Ga.

Q. So it's the same, if someone gives you a WRAS cert, you certified acceptance, up to the validity period of the cert?

A. Correct.

Q. Up to five years.

A. Correct, that's also the time limit of WRAS.

Q. So there would be no situation whereby WRAS validity would be for seven years and you only certified that for five years, and you count from a certain date, for five years.

A. Right.

Q. So if somebody gave you a cert issued five years ago, you wouldn't accept it, but if it was issued three years ago, you can give two years.

A. Correct.

Q. Kitemark, BSI Kitemark, it's an ongoing surveillance, so there's no validity period. But you have an understanding with BSI: if a manufacturer provides a certificate which is all still a valid Kitemark on the website, then you can give them three years of general acceptance?

A. Yes, that's the understanding with BSI.

Q. On Friday, before we finished for the day, I asked you why there was a potential gap, because for the surveillance, general auditing done by BSI, it's

an ongoing exercise. They would not say, "I will do it once every three years." So today, they may issue a Kitemark certificate, the manufacturer produces the Kitemark certificate to the WSD; the WSD checks and sees that it's on the list, and then you give three years, say until 2019. But in 2017 the BSI would, say, do some audit on the manufacturers, the production lines, the systems and plant, and then they would say something is wrong and then the Kitemark certificate might be withdrawn.

So in 2017, that might happen, and therefore that particular product of the manufacturer, the Kitemark certificate would no longer be valid. But in 2016, you have already issued a general acceptance for three years, up to 2019, so in 2018-2019, you would still be relying on the 2016 Kitemark certificate for the general acceptance that you gave in 2016. So there's a mismatch. The Ga covers a period, for that particular component or fitting, which for that particular time would not be holding a Kitemark certificate.

Do you accept that? What can you do to address that gap?

A. Kitemark is more -- it's generally adopted by international corporations, conglomerates. The products that we look at are common fittings used by the trade.

Most of the issue dates are for a long period. Kitemark is based on continuous monitoring, and they would keep the quality control system of the manufacturer under surveillance, to see whether it's up to British Standard. So the chance of sudden withdrawal of Kitemark would be rare.

According to the mechanism, as you have said, there is a chance for what you have described. We have asked BSI why they would not set a time limit of three years -- because whatever we do, what you said could still happen.

Let's say form 46 is issued today, and we will approve the use of the fitting, because it's on the list, but I cannot check the fitting up to the date of installation. We must have a pragmatic mechanism for the trade to adopt. So today I give you approval, but before installation it's not on the list -- I can't check that. BSI will be doing the surveillance and monitoring. If there are complaints in the market, saying that certain products are problematic, we will do verification and we will take it up with BSI.

According to the Ga system, if the product is non-compliant, we can withdraw the Ga. If you look at, say, valves, it's a short validity period of three years, and there is a mechanism for us to review whether

it's still in compliance with BSI.

Q. So you may say that, as an underlying catch-all mechanism, they have to comply with BS. But if there is something wrong, because of the gap, they will say in mitigation that they have complied with everything at the time of submission and approval.

I have one more question for you. It's paragraph 27, page 13792. You mention water sampling and test, water test near the connection points, and the purpose is to prevent contamination caused by backflow, and "testing at the inside service ... is to check the effectiveness of the cleansing and disinfection of the inside service."

Then you have an annex 2. It's at page 13802.

Mr Chan Kin Man has said something about this, but I just want to cross-check:

"(In English) As a routine procedure, samples are taken for testing from consumer taps on random basis ..."

We are not talking about any connection point. It's from the taps. We know that before the incident, the test at the connection point would be for eight parameters, and here, again, we are talking about pre-incident practice, in relation to tests for inside service.

"(In English) ... from consumer taps on random basis for checking microbial safety and general chemical quality ..."

It is said here, "(In English) consumer taps on random basis", and then it says:

"(In English) ... and consumer taps at fixed strategic locations to verify the chemical quality of treated water in compliance with the Guidelines including lead and other heavy metals ..."

Now, you are talking about two separate tests on the quality of water in the inside service.

A. Right.

Q. The first part, "testing from consumer taps on random basis", this is not a metal test but a test for microbial safety and general quality.

A. The random sampling, testing was done by Mr Chan Kin Man's division. We are only responsible for newly completed inside service, and what you mentioned was not included. Newly installed service is not included. This refers to water sampling tests done by the Water Quality Division. Our division was not involved.

Q. This is not referring to tests done before moving in. This refers to tests at strategic locations. These are all done after moving in. As you understand, whether for tests done randomly or at strategic locations, they

are not done inside, in the units. They might refer to public toilets or toilets in shopping malls?

A. Yes. We refer to accessible areas.

MR SHIEH: I have no further questions.

CHAIRMAN: Any other questions for Mr Cheung?

MR HO: Chairman, I just put down a marker. I have no questions.

CHAIRMAN: All right.

No further questions?

Thank you very much. You may now leave.

(The witness withdrew)

DR WONG: Chairman, our next witness will be Mr Chau Sai Wai.

Chairman, with regards to the Commission of Inquiry, we would like to provide supplementary information and we would like to provide the supplementary statement of Chau Sai Wai.

Let me read out his first statement now.

MR CHAU SAI WAI (affirmed)

CHAIRMAN: Please be seated.

Examination-in-chief by DR WONG

DR WONG: Mr Chau, your witness statement is tabled in front of you. I will read it out.

(Statement read in English)

Mr Chau, can you see your signature?

A. Yes.

Q. Can you confirm the content of your witness statement?

A. Yes.

Q. Are you willing to accept this witness statement for the purpose of this Inquiry?

A. Yes.

DR WONG: I have no additional questions. We have one more supplementary statement but it's not ready yet. It's not signed yet.

CHAIRMAN: You can just read it out.

DR WONG: (Chinese spoken) ... stand down?

CHAIRMAN: Please read out the supplementary statement.

DR WONG: Can we stand down for five minutes?

CHAIRMAN: Yes. Let's take a break for 20 minutes.

(10.56 am)

(A short adjournment)

(11.19 am)

DR WONG: Chairman, I would like to read out the 2nd witness statement.

(2nd statement read in English)

Mr Chau, can you confirm the 2nd witness statement as true to the best of your knowledge?

A. Yes.

DR WONG: Chairman, I have no further questions.

Cross-examination by MR KHAW

MR KHAW: Mr Chau, please go back to your first witness statement, C21. The first paragraph was on your working background. Starting from July 2015, for around half a year, you were the acting assistant director; right?

A. Yes.

Q. And somewhat unfortunately the incident happened.

A. Well, it was an experience for me.

Q. You became the acting assistant director. In terms of background, how long did you work at the Development Branch?

A. I was there for a few years, and at the early stages I was a senior engineer in asset management. Subsequently, I was sent to the New Territories region as chief engineer, and in July or August 2014 I returned to the Development Division 1, under the Development Branch. The branch comprises of the Development Divisions 1 and 2 and the Water Science Division. In July or August 2014, I returned to Development Division 1. I was responsible for asset management, water loss management, and we are promoting a resource management network. I've been involved in water conservation as well.

In July, due to the lead in water incident, some staff had to be redeployed to the task force, so as such there was a vacancy and someone had to stand in during

that period.

Q. Please slow down a little bit.

On the ACRQWS, according to the records, did you join ACRQWS in around April 2014 on behalf of the Water Supplies Department?

A. No, not as far as I can remember.

Q. All right. We will look at that later.

In your 1st witness statement, I understand that the WSD has a Development Branch as well as a Customer Services Branch, and the Development Branch is also involved in customer services; right?

A. The Water Science Division would take care of water quality and the Customer Services Division would also be involved in water quality, as they conduct customer relations, so there is some kind of interaction or co-ordination involved.

Q. More specifically, I would like to look at paragraph 7 in your witness statement. The Technical Support Unit of the Customer Services Branch was mentioned. We have taken in the witness statements of other WSD staff, and one of the duties of the Technical Support Unit is to review the British Standards. Would the Technical Support Unit co-ordinate with the Development Branch?

A. Not very often, as I know.

Q. Would the Development Branch be responsible for issues

like following the updates in the British Standards?

A. Not very often. We talk about the British Standards when we talk about plumbing facilities, and we have a New Works Branch which is also involved. They have to develop new works, and the British Standards would be involved. Under the New Works Branch, we have a design division which would take care of these standards.

Q. In the second paragraph of your witness statement, you talked about functions of the Development Divisions, and the scope of responsibilities is quite wide.

One key duty is the Water Science Division -- now, in paragraph 12 of your statement. Before paragraph 12, you mentioned other disciplines such as civil engineering disciplines, M&E engineering discipline, and some R&D work was involved, apart from these two special departments, for general research and development work, or the interactions or updates in international standards.

A. Basically, we want to solve the challenges faced by the WSD. Sometimes we face stumbling blocks and I used to take care of resource management networks and we would learn from overseas experts who are experienced.

Q. In paragraph 12 you said:

"(In English) On top of the above, WSD also keeps itself updated on the latest technology and enriches its

knowledge of overseas developments and international practices ...", and so on.

We understand that international experience is important so you have to make updates from time to time. Subsequently, you said you would look at international magazines, journals and publications, and these cover various topics including water quality, water conservation, et cetera.

You said you would send some staff to read international magazines and journals, in order to enrich or update themselves on the knowledge. Would the work be taken up by staff in the Water Science Division?

A. These journals and publications cover a lot of topics.

Our General Services Division would distribute these or circulate these journals and publications and we would keep copies in our library well.

Q. You said you would circulate these publications. Would there be any dedicated division or staff who specialises in this scope of work or would your officers simply scan through these publications when they arrive?

A. Yes, that's basically the case.

Q. On the topic of water quality, if international publications are available, staff from different divisions could read them, as long as they have time; right?

A. Yes, that's basically the case. As I mentioned in my witness statement, in 1993, there's the issue with cryptosporidium in the US, and we drew up contingency plans subsequently. I understand that the literature review can help the WSD improve its service. As I have said in the statement, we also used a zebrafish. Water Science Division colleagues, given limited resources, would also do their best to update their scientific knowledge, to safeguard water safety.

Q. Was there a rule that after reading the journals and publications, some colleagues would have to make a report?

A. No, not that I'm aware of. The colleagues in the Water Science Division would be responsible for reading these publications.

Q. Your statement also referred to a number of incidents, including the one in Scotland. You have explained clearly in the statement why WSD was not particularly aware of that incident.

In your 2nd statement, you also refer to the same issue.

Let me refer you to paragraph 25 of your statement. You here referred to:

"(Partially in English) WSD's internet research identified the Scotland incident and hence, at the time

of the preparation of the booklet 'Hong Kong's Water Supply -- Reducing Lead in Drinking Water' issued by the Hong Kong government ... to enable the public to have handy information on relevant topics, WSD duly informed the public that 'based on the experience of other countries, excessive lead in water can be caused by the inadvertent or illegal use of substandard pipes and fittings'."

In this regard, I have a question.

From the time the lead in water incident was exposed, until August, when the booklet was issued WSD conducted internet research. Why did you do it?

A. Well, after the incident was exposed, the public were concerned. They were worried. So there was the idea to provide some information to the public, as soon as possible. That's why we searched served some internet sites, for the purpose of information research. The purpose was to prepare a booklet for public information.

Q. If you look at the booklet and also your statement -- so you were concerned whether you would like to find out whether there were similar incidents in other countries. Was that one of the reasons for the internet research?

A. Well, we wanted to get more information, and also we wanted to know how other countries had been dealing with the same issues, so as to provide more information to

the Hong Kong public.

Q. In August, when you published the booklet, the Commission was not yet in session, so the Commission had not yet referred to the Scotland incident. Were you surprised that there was such an incident in Scotland, because up to that point the WSD had not been aware of the Scottish incident?

A. I was not personally involved in the internet research, but when the Commission mentioned the incident, in November, then we focused on the reason why we were not aware of the incident at then time.

Q. Then you thought there would be a need for the WSD to explain why it had no awareness of the incident?

A. Yes. We had to look at what happened.

Q. In your statement, you set out some incidents internationally. You were aware of information issued by the high-level international bodies, such as the WHO, and you also got some information from international journals. Just by coincidence, this Scottish incident was not reported.

Now we know the Scottish incident had to do with the use of leaded solder. These international incidents should have been matters of concern to the WSD; do you agree?

A. Well, the WSD has been paying attention to incidents in

other countries. We have a system to safeguard water quality.

We would do the best with the resources available to us, and in the main we would monitor what the WHO has to say, because the WHO is an authority. For major incidents, we would like to get some relevant information from the WHO.

After this incident, we have enhanced our communication with the WHO. Our Water Quality Branch has been trying to step up liaison with the West Pacific regional office of the WHO. We understand that circulation of information is much more quicker than what it was in 1999 or 2007. So we would be able to get in touch with international bodies and have access to international literature.

In the recent Michigan event, it was made known much more quickly to us. We cannot conduct a very thorough information research covering all places in the world, but if we are aware of a major incident, then we have to first of all decide and consider whether it's relevant to Hong Kong.

For example, in the Michigan incident, they are still using lead pipes and they have switched to a different water source, without dealing with the corrosion problem. They were affected mainly because

they are still using lead pipes. So we have to ask ourselves whether we have the same background situation, whether we are still using lead pipes. I'm not a chemist. I have never been working in the Customer Services Division or Water Science Division, so I'm talking just about my personal understanding. When we identify an incident elsewhere, we will have to ask ourselves and consider whether it's a relevant incident in the Hong Kong context. They have been using unlined GI pipes. In the past, we used unlined GI pipes. The major problem was discoloration of water.

So we will try to identify incidents outside Hong Kong, and secondly we will have to consider whether the incident there provide something relevant to the Hong Kong situation.

Q. After the incident, I think you would agree that the WSD's research or -- making yourself more aware of international incidents, more should be done.

A. We learn from experience. We would step up our co-operation with international bodies such as the WHO. As the director has said in the Commission's hearing, colleagues would be reminded to pay more attention to overseas incidents, and other witnesses such as Prof Fawell have made recommendations on monitoring.

Those I think are good recommendations and I believe

the WSD would consider them very seriously.

Q. Let me turn to a different issue. It's paragraphs 19 and 20 of your statement. It's about cleansing and disinfection of inside service. You refer to the period before August 2012, eight parameters were tested for water samples taken at the connection point, for the purpose of checking water quality at the connection point. Then, subsequent to the Tamar incident, you issued another circular letter on cleansing and disinfection of inside service and taking of water samples.

That's not a compulsory measure, when it comes to the checking of water samples from the inside service.

So you take water samples from the inside service, and it's not compulsory. Then in paragraph 20 you explained that although this is not a condition precedent to effecting water supply, you do encourage relevant parties to do it.

Did your department consider that apart from the connection point, you should take water samples from the inside service, as a matter of compulsory measure, not optional, that is -- was there any discussion of such a possible requirement?

A. Well, I am not familiar with this aspect. In my past work experience, I was not very involved in the Customer

Services Branch or Water Science Division. I think in Mr Lam's statement --

Q. Well, actually, we have asked Mr Lam similar questions. I just want you to clarify these two paragraphs of your statement.

A. Well, I was trying to say that we would pay attention to local incidents as well. If there's a local incident, we would try to find solutions and look for improvements, and I was just saying that there's such a mechanism.

Q. Paragraph 43 of your statement. You refer to paper No. 7, and the background of paper No. 7 is:

"(In English) Based on the literature research ... lead pipes and leaded-solder copper pipes were widely used in the UK and USA during their development stages ..."

Please take a look at paper No. 7. It's Y1, page 7.

Before you prepared your witness statement, you should have asked your colleagues responsible for preparing paper No. 7 and you should have asked for more information from him.

Now, in paragraph 9 on page 7, it says:

"(In English) In the UK and USA, the most common problem is the presence of lead in water since during their development stage, lead pipes and lead-soldered

copper pipes were widely used."

Apparently, these are the two most causes of lead in water.

"(In English) Based on the literature research at that time, lead pipes and leaded-solder copper pipes were widely used in the UK and USA ... consequently the most common problem was the presence of lead in water at the material time. In contrast, the use of leaded pipes was banned in Hong Kong since as early as 1938, followed by the ban of leaded solder in 1987."

Then you said:

"(In English) Further, before the ban of unlined GI pipes in December 1995, unlined GI pipes were commonly used in Hong Kong for fresh water inside service in the then existing buildings."

Now I have a question for you.

You know that the HA and HD had started using copper pipes on a large-scale basis in public housing estates since around 2002, and according to witnesses from the HA and HD, since the 1980s, copper pipes have commonly been used in Hong Kong's public housing estates?

A. I'm not very sure about that.

Q. You said:

"(In English) Given the different historical backgrounds, the risk of presence of lead in water in

the UK and USA had no direct application to Hong Kong."

So if you are not sure that copper pipes have commonly been used since the 1980s --

A. Well, let me add something. In paragraph 43, since the 1970s, copper pipes could be used in Hong Kong, but all along they have not been very popular. Mr Wong, the assistant director, also said that up until the 1990s, copper pipes were not commonly used, except in upmarket developments, and compression joints were commonly used and solder was seldom used for jointing.

Q. You said that you are not sure whether copper pipes have been commonly used since the 1980s?

A. Yes. I was not in the Customer Services Branch, because the CS Branch would be more familiar with the historical development of pipes.

Q. When we consider whether the UK and USA experience are applicable to Hong Kong, you would look at the number of years used -- how common copper pipes are used? These are key considerations; right?

A. Before 1986, according to literature and some of my colleagues, copper pipes were commonly used. At that time, in Hong Kong, unlined GI pipes were normally used. So the situation is different.

Q. If solder -- for pipes that require solder joints -- let's not consider whether they were popular, but they

were used in Hong Kong and they have been used for more than ten years?

CHAIRMAN: Can you repeat that part, please?

MR KHAW: The use of solder joints in Hong Kong, they have been used since more than ten years ago?

A. I am not aware of that.

Q. In your final line in the paragraph, you said:

"(In English) Given the different historical backgrounds, the risk of presence of lead in water in the UK and USA had no direct application to Hong Kong."

So, when paper No. 7 was drafted, did the WSD have any discussions that, or did you only make such deduction when you prepared this witness statement?

A. I have discussed the issue with the colleague who drafted this paper, so that's my understanding.

Q. That's what he said to you; right?

A. Yes.

Q. Now please look at C21, page 18998. We have talked to a few witnesses from the WSD. I would like to test your knowledge on this.

Please look at tab 179, page 18998. These are "(in English) Minutes of the First Working Group Meeting on the Development and Implementation of Water Safety Plan for WSD".

Let's look at the attendance list. You attended the

meeting?

A. Correct.

Q. You were the senior engineer of New Territories West (2). A lot of WSD staff attended.

A. Yes.

Q. The second-to-last person is "Mr CL Leung"; do you see that?

A. Yes.

Q. What's his full name?

A. Leung Chung Lap.

Q. Is he the present assistant director, Michael Leung?

A. Yes.

Q. He was an engineer at that time?

A. Yes.

Q. Now he heads the Development Branch?

A. Yes.

Q. He used to be in the Prosecution Unit.

A. Right?

Q. "PU" stands for Prosecution Unit.

I know that Mr Leung is also the secretary of the task force.

A. Mm.

Q. Now let's look at page 19000, paragraph 3.8:

"E/PU [Mr Leung] asked whether the WSP [water safety plan] would include systems within private premises.

The chairman responded that the consumer service issue would be covered in the master plan and the Water Science Division would cover the monitoring of indirect supply. [The senior engineer, Mr Li] supplemented that WSD had indirect control of the systems after the connection points under Waterworks Ordinance."

So do you have any recollection of any discussions on whether the WSD would include the systems?

A. It has been more than ten years since 2005. It's hard to recall what was discussed at that time. But this paper had been mentioned during the Inquiry.

Now, first of all, I have no recollection, and second, I've been involved in the lead in water incident for quite some time. At that time, what SE/NTW(1) said was that the WSD indirect control of the systems after the connection points, and subsequently it was covered in annex 4 of the WSP.

So annex 4 covered the indirect control or regulatory control. In other words, the WSD would be able to control the quality of the internal plumbing system under the Waterworks Ordinance.

Together with the previous line, it says "(In English) would cover the monitoring of indirect supply". So we are talking about two separate levels. On the one hand, we have standards or British Standards

established under the WWO. First of all, we have an LP and an AP to ensure that the buildings completed comply with BS, and when the building is completed, the user or consumer would be responsible for maintaining the inside service.

So we have two key areas of work. One is to take samples. The Water Science Division is very busy, and there are 160,000 units or households all over Hong Kong, and 160,000 samples are taken to monitor the quality, and through the Quality Water Supply Scheme for Buildings we hope the users can maintain the inside service.

So the WSD is paying attention to the usage of water all over Hong Kong.

Q. Now, the "indirect control" mentioned here, generally speaking, under the WWO and WWR, such indirect control refers to various regulations on the pipes and fittings, and licensed plumbers might be involved?

A. Yes, the indirect control refers to a mechanism, and the ultimate goal is to ensure water quality. The idea of the water safety plan is to safeguard water quality.

Q. Now let's talk about the legal basis. Yes, that's about the legal basis. At the beginning, I asked you about the ACRQWS. Please look at bundle G2.

CHAIRMAN: I would like to come back to paragraph 43, the

last line. Leaded pipes have been banned in Hong Kong since 1938.

A. In the UK, they weren't banned until the 1970s.

CHAIRMAN: They might still be used in the UK and USA.

A. Yes.

CHAIRMAN: They are still common.

A. Right.

CHAIRMAN: Let's not talk about leaded pipes. The use of leaded solder is common to both jurisdictions?

A. In terms of legislation, ourselves and the UK have banned it in around 1987, and in the USA the legislation came into play in around 1988. But the prevalence or usage is different.

CHAIRMAN: Now I'm referring to leaded solder. You cannot say that the situation in the UK and USA is irrelevant to Hong Kong.

A. Yes.

CHAIRMAN: If you refer to pipes, that might apply.

The problems are common to the UK and the USA as well as in Hong Kong, in terms of leaded solder. We all follow the same British Standard and we all banned it in around 1987, and they were still used in Scotland after the year 2000. If it's banned everywhere, then the situation should be the same, but subsequently you can still see it in England and Wales.

So you cannot say that the risk of presence of lead in water in the UK and USA have no direct application to Hong Kong.

A. I think, when this document was drafted --

CHAIRMAN: Now, you wrote this in 2001; right?

A. Yes. As we might have said, the focus was on the discoloration of water. In the past, they commonly used copper pipes and leaded solder.

CHAIRMAN: Well, this was also common in Hong Kong. I know at first, compression was more commonly used, but there was also the use of leaded solder.

A. But the Housing Department --

CHAIRMAN: Well, it was common in private projects.

A. I was told that they used compression joints more generally.

CHAIRMAN: We know that the VTC has been teaching the use of solder for quite some time.

It doesn't matter. You may continue. But I would say that the last sentence --

A. Yes, I understand your point, that we did have similar.

WITNESS: Rules at that time.

CHAIRMAN: We were not born in 1938, but the WSD, as an institution --

A. Well, we have a history of more than 160 years.

CHAIRMAN: -- you cannot say that as an institution you have

lost that piece of information in your memory.

MR KHAW: Let's look at G2, page 910. It's the Advisory Committee, a meeting in September 2014. You can see the list of those present. I think we see your name.

A. I thought you were talking about April 2014.

Q. Sorry, I didn't make myself clear. Starting from April 2014, you began to be attending ACRQWS?

A. I was transferred to division 1 in 2014. In the past, the chief engineer of the Development Division 1 was not required to attend this, but I was new to the post so I attended the meeting.

Q. Did you attend any other ACRQWS meetings?

A. Yes, afterwards.

Q. After this period?

A. Yes.

Q. After the lead in water incident, there was some discussion that the ACRQWS about related issues and matters.

Let's look at a recent meeting. C19.6, page 14111. We don't have the minutes of the ACRQWS, but do you have any impression of this paper? We did ask Mr Wong some questions about this, and also the 5th meeting of the task force.

A. Yes.

Q. Perhaps we can now turn to page 14057. I know you are

not a member of the task force, but please look at this 5th meeting of the task force, held on 26 August 2015.

Your colleague, Mr CL Wong, attended that meeting.

At page 14061, point 3.2:

"(Partially in English) The secretary [that is Mr Leung Chung Lap] presented the paper titled 'Proposed mitigation of lead contamination in tap water' prepared by the ... [ACRQWS]. The paper set out the overseas experiences in tackling lead contamination problem and proposed a number of measures, [including]

Short-term measures.

(a) Flushing ...

(b) Proper use of filter ...

(c) Standardising the water sampling methods."

We have found the paper, the relevant paper, page 14111. Let's look at the first two paragraphs. Following the questions raised by some legislators, then you have to look at the water safety problem, and then the third sentence:

"(In English) As more and more water samples taken by the WSD and the Democratic Party were found to have lead concentrations exceeding the WHO guideline for lead, public housing residents have demanded the government to extend the water testing programme and to test the blood lead levels ..."

The second paragraph:

"(In English) In view of the recent panic and unrest about drinking water safety, the government has set up two special task forces to investigate the causes for the excessive lead in drinking water and to review the quality control procedures in relation to the installation of fresh water system in public housing estates, respectively. While the task forces are working independently to produce a report ... the ACRQWS wishes to offer some advice to the director of WSD under its terms of reference on mitigation of lead contamination in tap water. This advice is independent of any findings to be announced by the task forces."

Do you have any recollection that in attending the ACRQWS meeting, this paper was discussed?

A. I have no such recollection.

Q. If we look at the meetings of the ACRQWS around August 2015 after the incident, did you attend any ACRQWS meeting during that period?

A. Yes, but I cannot recall the details.

Q. Can you recall that during the meetings, there was some discussion on the taking of water samples?

A. Well, I don't have any clear recollection. I suspect that this meeting was never formally submitted to the ACRQWS, but I'm not sure.

Q. After the lead in water incident, there had been quite a number of ACRQWS meetings. Did you attend all of them?

A. I don't think so.

Q. But you have no recollection of this document?

A. No.

MR KHAW: I have no further questions.

CHAIRMAN: Other questions?

Cross-examination by MR HO

MR HO: I have a question. Mr Chau, please go to paragraph 45. Look at paragraph 45 of your statement. You refer to paper No. 7. Again, in this paragraph, another part of the paper, not the parts you refer to in your paragraph 43 -- please look at paper No. 7. It's reference G2/978. I think it's also in Y1.

A. Which paragraph?

Q. Paper No. 7, starting from paragraph 12. It's G2/981. A moment ago, Mr Khaw asked you questions about paragraphs 8 and 9. Now we are on paragraph 12. It's on another topic, "(In English) Strategies to reach the situation that people can drink water direct from taps". Paragraph 12 is about increasing people's confidence to drink water direct from their taps.

There are a number of strategies under the subheadings. For example, the subheading of

paragraph 13, "(In English) Continue efforts in upkeeping existing distribution systems". It's the water distribution systems.

Then paragraph 14, "(In English) Adopt plumbing designs to enhance water quality". Line 3 of paragraph 14:

"(In English) High quality corrosion-resistant pipes and fittings should continue to be required in plumbing systems."

(Chinese spoken).

"Furthermore, the use of pneumatic pumping systems for example can minimise the number of water storage tanks ..."

So there will not be a need to use so many water storage tanks, and still you can minimise water quality problems.

Also the next subheading, "(In English) Educate the public". Then paragraph 15, the paper states:

"(Partially in English) Publicity ... will also be useful to ... strengthen public confidence in water quality and to combat prejudice against drinking water directly from taps."

So you want people not to resist the idea of drinking water directly from taps.

Then paragraph 16, another strategy:

"(In English) Encourage the inclusion of renovation of plumbing systems into the building maintenance programme".

(Chinese spoken).

"(In English) As leaking plumbing systems can cause corrosion of reinforcement bars in reinforced concrete structures, peeling off of external/internal finishes or electric shortcircuiting, they do pose potential safety concerns."

So it talks about the need for renovation programme within the building maintenance scheme. The focus was still on corrosion, and corrosion could cause potential safety concerns, such as the corrosion of reinforcement bars. It may also cause shortcircuiting.

Because of such safety concerns, you would like to enhance building safety and maintenance programme. The focus was about corrosion-related problems; can you see that?

A. Mm.

Q. Then let's move on to the top of paragraph 18:

"(In English) Add a new requirement on building management to carry out periodical checking and submit inspection report."

My understanding is what follows is what you have stated in your statement, paragraph 45. That is whether

the consumers should get some licensed plumbers or registered plumbing contractors to arrange for periodical checking, and they should be required to submit inspection reports.

Paragraphs 18 and 19 covered such discussions; right?

A. I'm not sure what your final question is.

Q. In paragraph 15, you said the paper requires consumers to commission licensed plumbers or registered plumbing contractors to conduct regular checking and submit inspection reports.

This idea was mentioned in paragraphs 18 and 19 of the paper.

A. For paper No. 7, I wasn't the author. I am not extremely familiar with the paper, but as mentioned in the paper, the ultimate goal is to safeguard the quality of water in the inside service for consumers. At that time, the problem was discoloration, so there were issued with the maintenance of inside service, so we conducted an interim research to see if other countries ran into the same problem, and we offered some strategies. Eventually, we came up with the Quality Water Supply Scheme for Buildings, and the property owner is required to inspect and clean the inside service periodically.

Q. Yes, we have heard those and we understand the details of the Quality Water Supply Scheme for Buildings. That's what you said in paragraph 45 of your witness statement.

I am just trying to bring you back to what you wrote. If you are unsure of what was discussed in the paper, then I won't press on.

A. I'm not very familiar. I know the objective of the paper and the desired results but I don't know the details.

Q. All right. That's all right.

Now I would like to look at paragraphs 18 and 19, and then that will be it. In paragraph 19, you said:

"(In English) To ensure that the internal plumbing systems are in a good and clean condition, it may be considered desirable to follow a practice similar to that in Singapore by requiring consumers or their agents to employ licensed plumbers or registered plumbing contractors to arrange for periodical checking and submit inspection reports to WSD."

So, according to the paper, consumers or their agents are invited to employ licensed plumbers or registered plumbing contractors to arrange for periodic checking and submit reports, and it says:

"(In English) The [LPs] or registered plumbing

contractors will carry out remedial action whenever defects are found and a water analyst will confirm by water sampling and testing ..."

How did you understand the word "defects"? Did it refer to water quality risks such as corrosion, the reinforcement bars might rust and there might be shortcircuits? Do you think these are the risks addressed in this paragraph?

A. I'm not very sure, but I think the main objective was to ensure water quality. I think the objective of the whole paper is to ensure water quality, the prevention of discoloration, and so on.

So the objective here should be to tackle discoloration.

Q. If that's the case, the focus of the entire paper is on discoloration or cleaning of the water tanks, or risks such as shortcircuiting and corrosion, which might affect the reinforcement bars or the structure?

A. I believe the focus is on water quality. That's my interpretation. I did not read this paper in detail.

MR HO: Thank you very much.

I will leave my questions in later parts.

CHAIRMAN: Thank you very much, Mr Chau.

DR WONG: Chairman, Dr Chan Hon Fai will only arrive at 2.30, so let's wait until then. He submitted a witness

statement. We have passed it on to the Secretariat.

CHAIRMAN: Which bundle is it in?

DR WONG: C21, the last document.

CHAIRMAN: Which tab is it in?

MR SHIEH: Page 19120.

CHAIRMAN: Please be seated.

It's not very long; right?

DR WONG: Only two pages.

CHAIRMAN: Please make your oath.

MR PAUL HO KEY WEI (sworn)

Examination-in-chief by DR WONG

DR WONG: Good morning, Mr Ho. I will now read out your witness statement. It has two pages. You can look at the screen and a copy will be given to you.

(Statement read in English)

Can you confirm the contents of your statement as true and honest?

A. Yes.

Q. Are you willing to accept this statement as primary evidence?

A. Yes.

DR WONG: I have no further questions.

Cross-examination by MR SHIEH

MR SHIEH: I would like to look at the minutes. W1/482. Do you see that? Under "AOB". Please look at the computer

display.

A. Yes.

Q. In your witness statement, you mentioned your concern and the reason for such concern. You said the concern was not due to any specific incident. It was because, in the year 2004, you noticed an increase in number of applications for no objection.

A. "No objection" letters, not --

Q. "No objection" letters, what were those letters for?

A. As I understand, for general approvals, the five major types of fittings are covered.

Q. Like terminal fittings; right?

A. Yes. For other parts, "no objection" letters were required.

Q. For pipes --

A. And other parts, anything outside of the five major categories required "no objection" letters.

Q. So they were based on the requirements in WWO form 46? They had to be filled in; right?

A. Yes, generally that's true.

Q. So the reason for obtaining the "no objection" letters were for the annex of the form?

A. Generally speaking -- well, we are talking about suppliers. The applicants were suppliers. They are not customers. The LP would ask for documents from the

supplier.

Q. So the suppliers would get a "no objection" letter, and when the licensed plumber wants to fill in the form, then he would ask for some documentary proof that the WSD has no objection. Why there were so many more applications for "no objection" letters in 2004? Do you know that in 2003-2004, for public housing projects, they started to allow the use of copper pipes? Did you know that?

A. No.

Q. But you only knew that there were more applications, around 2004?

A. Actually, we have been receiving applications all the time, but there was a sudden surge -- 1994, 1995, 2000, there were more applications for lined GI pipes.

Q. (Chinese spoken).

A. Then there was a switch to copper pipes.

Q. So you knew there were two jointing methods for copper pipes: mechanical compression, and also soldering. You knew these two methods. How did you know the methods?

A. Generally, it's in the BS.

Q. You also knew that for soldering, the solder must be lead-free. You knew that; right? So, when you worked in the WSD at that time, you knew that?

A. Yes.

Q. That's why, in the regular meetings with VTC, under "AOB" you raised this concern, and you wanted to remind the VTC to teach their trainees and students?

A. I wanted to know whether the VTC was teaching their students on a continuous basis to use lead-free soldering material. Because according to them, they said they had been teaching their students to do that. That is, to use lead-free solder. And I thought it was okay.

Q. Because you said you reminded the VTC -- you knew they were teaching their students this, but you wanted to remind them. I think it was for the purpose of taking care of the future, because we have looked at the contents of their programmes. They had done that, they had taught their students to do that.

So the VTC had been doing that, and you trusted them to continue to do that? Is that all students have been taught to use?

A. That is not because of what I have said.

Q. Paragraph 6, page 19121:

"(In English) Unlike those VTC students, existing LPs and the trade were well aware that solder materials must be lead-free. LPs would have known about it through their training with VTC and like institutions and it is a common knowledge amongst the trade."

I would like to explore some issues with you here. It is not a criticism of any kind. You raised it under "AOB", so you raised it notwithstanding that it was not an agenda item. I just want to look at the basis of your statement in paragraph 6. So I would ask whether you were too optimistic.

A. Optimistic about what?

Q. You said existing LPs and the trade were well aware of that. Maybe you were too optimistic?

A. We all know lead is not good. We all know lead is not good, and when lead comes into contact with water, there will be contamination, and contamination of water is against the Waterworks Ordinance. For people who have been working in the trade for so long, and WSD people are in the business of enforcing the Waterworks Ordinance, how come people would not think that leaded solder would contaminate the water?

Q. I just want to say that for those LPs who were qualified under the grandfathering mechanism, you may be too optimistic.

CHAIRMAN: Let me ask you about paragraph 6. Are you talking about the situation in 2004 or in 2016?

A. I can't follow that.

I am talking about what happened in 2004.

CHAIRMAN: Your paragraph 6 has been referred to by counsel.

Are you talking about what you saw in 2004 or 2016?

A. We were talking about 2004. In 2004, I said something, as you can find in the paragraph, and the question was why I saw no need to remind other people, and I would say that water contamination is covered by the Waterworks Ordinance.

For people who have been working in the trade for so long, and even for WSD colleagues, there's no reason why they would not be aware of the lead contamination of water.

MR SHIEH: Well, someone has said that it might be good for longevity; it may extend your life span. It's been said by someone.

A. Well, I would say common sense can tell us that lead is not good. For example, lead in petrol, lead in paint have problems.

So, for those who have been working in the trade for so long, and for those people in the WSD responsible for enforcement of the Ordinance, there was no reason that they would not be aware of the problems caused by lead in the system. So there would be no need to remind others.

Q. In an ideal world, everyone would be familiar with the Waterworks Ordinance, and if you had worked in the trade or in the department for some time, you would have known

the requirements in the Ordinance. But in reality, many LPs, many licensed plumbers, did not receive any training provided by the VTC, because the licensed plumber system has been around for so long, and some got qualified not through the VTC training.

A. (Nodded head).

Q. So prior to 2004, those licensed plumbers who were trained by the VTC, you were optimistic, because you knew what the VTC taught them. But there were LPs who were not taught by the VTC. They might start as apprentices. They were qualified under the grandfathering arrangement.

A. (Chinese spoken).

Q. (Chinese spoken).

A. The WSD taught them, I think.

CHAIRMAN: (Chinese spoken).

A. Then the WSD didn't want to teach these plumbers. That's why VTC came in.

CHAIRMAN: Right.

A. So you are saying that the department didn't teach them how to do it?

Q. Some licensed plumbers have said they don't know how to do soldering. They have said that they have never learned to use solder, because they just use mechanical jointing. So different periods, different things were

taught, and LPs come from very different backgrounds.

A. So you think that they don't know how to do it?

Q. That's what we have heard. But they are licensed.

A. But if you don't know it and still do the work, it's strange. So you are saying they do it, whether they have the knowledge or not?

Q. Yes.

A. I have no comment on that.

Q. Okay.

A. You should know what you are doing. You cannot just pretend to know and do it simply because you are licensed.

Q. Yes.

A. In that case, I have no comment.

Q. Of course, I'm not going to look at each and every licensed plumber with you.

A. The licensed plumber system has evolved over time.

Q. Right.

A. And the newcomers will gradually replace old-timers.

Q. Right.

A. Well, yes, they may be experienced. They rely on their experience. If you pretend to be an expert, even though you don't know anything, then I don't know how I can comment.

Q. I think you are a so-called strict thinker. You have

this curious idea that you should only do things that you know how to do it. In 2004, did you have this idea that some people would hold a licence, they may be bosses, they would be looking at bigger things such as alignment of pipes, and when it comes to solder, either they had not been taught about the use of it or they did not have any knowledge?

A. If you do something on which you have no knowledge, I just think that you shouldn't do it.

Q. I'm not talking about whether there's a duty for the party to familiarise with certain things, and if there's something wrong has been done, there would be disciplinary action.

But setting aside whether it should be done or not, the question is whether someone has done that.

A. I accept that this is not an ideal world, and you have black sheep in any trade.

Q. If we accept that this is an imperfect world, at that time, in 2004, what's your idea of the right thing to do?

A. Well, if they are intent on doing this, then giving them reminders -- how many reminders would change their mind?

Q. For those who are bent on doing this, then reminders would be of no use. But there are people who are not intentionally doing this. They may be doing this due to

ignorance. So a friendly reminder would alert these people who have no real hands-on experience, and then they would be more alert to certain things. If there was such a reminder, do you think that if there was such a reminder, you would be able to help these people who might be ignorant, who might be a bit -- well, not very vigilant?

A. Are we talking about these people who have committed the wrongs just because of the lack of reminders?

Q. They did these things because they were not reminded -- no, that's not what they said.

But looking to the past, in the future they probably don't need a lot of reminders because everyone would have heard about it.

Now, it's impossible for us to ask whether they would have done the same if they were reminded.

A. These were hypothetical questions which I cannot answer.

Q. This is not a criticism of yourself.

A. I am not sure if you are referring to the necessity of such reminders. My understanding is that they have been in the trade for such a long time. The WSD and the trade, in theory, they should know the WSD's requirements, and that is the water cannot be contaminated.

Under the circumstances, I expect them to understand

the requirement. And apart from that, there are a lot of other contaminants.

You only asked me about lead because of the lead in water incident, but water contains lot of heavy metals. So are you going to ask if I had reminded them on all these elements or metals? So I don't quite follow the line of questioning.

Basically, they should have understood the WSD's requirements. Both WSD staff and the trade should know it. Lead is only one of the contaminants. So they should know.

Q. So, during that time, you merely ensured that VTC would teach what needs to be taught, and in the past your stance is that you expect the trade practitioners to follow normal practice? Some people might dodge the requirements or the law, and it's useless to remind them. They have to pay if they do anything illegal.

A. If they breach the Waterworks Ordinance, they have to face consequences.

Q. Let's go back to the year 2004. At that time, were you aware of the mode of operation of licensed plumbers? Let me give you some examples. Some might be the owner of plumbing companies. Some might work for others. Some of them might work for others but would sign off as licensed plumbers. Some LPs might be responsible for

in-house plumbing.

So did you have a rough understanding of the modes of operation of different LPs?

A. This is similar to engineers; I can be an owner, I can be a contractor, and so on. I think this is a common practice.

Q. So you know that licensed plumbers have different modes of operation; right?

A. I think their scope of work is not as specific as you said.

Q. So, with a licence, I can have different modes of operation. As an LP, I can work for another company and so on. So you were aware of the different possible modes of operation; right?

A. Yes. From a common-sense perspective, people are mobile; they don't have to stay in the same trade as their area of study.

Q. All right. For the next two meetings -- I'm not going to show you the meetings -- but there were two follow-up meetings with VTC.

You discussed materials that apply for on site testing. Your goal was not to legislate -- or you are not trying to introduce the testing for lead in the material. You were merely trying to introduce that element in the teaching materials and you wanted the

students to be trained; right?

A. I think, in terms of education, they have to know about the negative or adverse impacts as well.

Q. So you proposed testing in the context of reminding VTC, and you suggested VTC to include these in their teaching materials. So that was the context; right?

A. We were discussing with VTC how LPs could be invited.

Q. Eventually, you found that no such handy materials existed?

A. VTC was the teaching institution, so at that time I asked VTC to source some information, and around one year later, in the second reading, their answer was they looked all around Hong Kong and they could not find anything.

So, after that, I decided to visit the website of WRAS in the UK, and with WRAS I feel the education package would be more complete. But even without it, that's acceptable as well.

Q. So you are aware that the presence of lead would be taught?

A. Correct.

MR SHIEH: That's all for this topic.

Questioning by THE COMMISSIONERS

CHAIRMAN: In 2004, a lot of suppliers visited the WSD. So were you responsible for meeting them?

A. They would usually write a letter, together with catalogues, and they would ask if this can be used for the inside service. I looked at some copper pipes and copper fitting catalogues. Some parts were sold in a set, and compression fittings were included. Sometimes they had no answer, so solder might may be required.

So I raised this to VTC, to make sure VTC would teach them these things.

CHAIRMAN: And, in the catalogue, does it say that if you are to do soldering, you have to follow certain specifications?

A. Yes. It was sometimes mentioned, but not always.

Normally speaking, if they use compression joints, soldering might not be required.

CHAIRMAN: Right, and some parts are integral or embedded with lead, then we don't have to do anything about them.

A. Right. Usually, this is a question of workmanship, so usually they wouldn't do it; they wouldn't talk about it.

CHAIRMAN: So, when you met VTC, you would bring up this issue with them?

A. And soldering is applied on site. For other parts, you look at parameters such as water seepage or leakage and so on. Soldering is the job of the LP, so you have to

remind VTC whether you educated them on this, on the use of unleaded solder. As you know, if lead is present, the water quality might be affected.

CHAIRMAN: In your opinion, you remembered 864 part 2 of the form; right?

A. If I'm correct, 864 was included.

CHAIRMAN: So you had a mental idea of what you would say before you approached them; right?

A. Yes. I had to find out what VTC is teaching. Now, the WSD doesn't teach LPs to solder, but specifically to use unleaded solder. So I specifically asked VTC this question.

CHAIRMAN: So, in other words, at that time, your worry or concern was on whether people were using unleaded solder?

A. We relayed our waterworks requirements on VTC. Lead-free solder must be used. We were not asking VTC to conduct soldering for the households. Lead-free was specifically mentioned.

CHAIRMAN: As an LP, if you are to check your workers to see if they contain LPs, you can use test papers and so on?

A. Is there any way you can test it? The LP himself must conduct undertaking. Now, the licensed plumber is not the actual person doing the groundwork, but he has to pass information on to the workers. They have to know

how serious the situation is.

CHAIRMAN: Apart from yourself, was your senior engineer aware of it?

A. We were not --

CHAIRMAN: Your supervisor should know; right? The senior engineer. You were not the only person attending the meetings.

A. Everyone enforcing the Waterworks Ordinance should know about contamination in inside service.

CHAIRMAN: All right. I have no other questions.

COMMISSIONER LAI: I have a question for you. When the supplier provided new information to you, did they mention how to use or apply it?

A. No.

The supplier, during the project stage, some clients might come in and ask for water connection, and they have to make declarations. But that's not the job of the supplier. So they wouldn't tell me where they would be used.

CHAIRMAN: I think what Mr Lai meant -- the supplier wouldn't just submit copper pipes; they might submit other parts as well?

A. Yes. It's very random. They submit whatever they want, and we just conduct assessment according to the raw material.

COMMISSIONER LAI: What about for testing? Would you use test papers? Would you approach the suppliers? Would the supplier provide any extra information?

A. I expect VTC to come up with their own search. They would find out more. So I didn't consider consulting our supplier.

CHAIRMAN: All right. Thank you.

Any questions?

Thank you very much, Mr Ho. You may now leave.

(The witness withdrew)

Let's continue at 2.30. Thank you.

(12.59 pm)

(The luncheon adjournment)

(2.33 pm)

DR WONG: I call Dr Chan Hon Fai.

DR CHAN HON FAI (affirmed)

CHAIRMAN: Please take a seat.

Examination-in-chief by DR WONG

DR WONG: Dr Chan, you have prepared a witness statement for the Commission. I am going to read out your statement and see whether you have anything to confirm or add.

(Statement read in English)

Dr Chan, this is your witness statement. Can you confirm that it's true, if the contents are true?

A. Yes.

Q. Are you willing to adopt this as your evidence in examination-in-chief?

A. Yes, I do.

DR WONG: I have no other questions, Chairman.

Cross-examination by MR SHIEH

MR SHIEH: Dr Chan, I represent the Commission.

Although this is public record, can you briefly introduce your academic background to us?

A. I obtained from the University of Hong Kong a bachelor of science degree. My major is physics. From the same university, I have obtained a master of philosophy degree. The major area of research is physics. Also from the University of Hong Kong, I have obtained a doctor of philosophy degree. My research is physics in upper atmosphere. So that's my academic qualifications.

Q. I understand your career, your research, is about environmental pollution and the science about pollution.

A. Yes.

Q. That would include water pollution, I suppose? So you have served and hold certain public positions, public office.

A. In water pollution, I am chairman of the ACRQWS, and from 1999 and 2000 I was also the chairman of the committee on environmental science.

Q. You were also a teacher?

A. Yes.

Q. With regard to the task force of the WSD, chaired by the deputy director, Mr Wong Chung Leung, and also there were two experts of the Commission giving evidence, on the whole they agreed to the conclusions reached by the task force. On two points, they have made certain comments, but that would not affect the overall assessment.

Have you read the two experts' reports?

A. Yes.

Q. With regard to the task force, the conclusions and the content of the report, there are no material differences with the reports of the two experts, so I won't be going to the details and asking you to look at the individual paragraphs, and so on and so forth. But I would like to explore certain issues in the report with you, that is concerning water resources.

The document I am talking about is the task force 5th meeting. C19.6, page 14057. It's the 5th meeting of the task force. Do you see the title, "5th Meeting of Task Force"? And in the heading, "Minutes of meeting".

Present include Mr CL Wong, deputy director. You are the second one in the list. Then, as we go down, we

have Mr Chan Kin Man, chief chemist of the WSD, in the middle, and also Michael Leung, secretary to the task force, Mr Michael Leung.

Please go to paragraph 3.2, page 14061. Paragraph 3.2 of the minutes, under "Any other business":

"(In English) The secretary [the assistant director] presented the paper titled 'Proposed mitigation of lead contamination in tap water' prepared by the Advisory Committee ... The paper set out the overseas experiences in tackling lead contamination problem and proposed a number of measures, inter alia,

Short-term measures.

(a) Flushing for at least one minute prior to drawing water ...

(b) Proper use of filter certified under the NSF/ANSI 53 standard.

(c) Standardising the water sampling methods.

Medium-term measures.

(a) Exploring the dosing of orthophosphate.

(b) Enhancement of Quality Water Supply Schemes for Buildings -- Fresh Water.

(c) Strengthening education to the public and property management agents.

3.3. Members were invited to propose measures to

prevent recurrence of similar incidents in future."

The paper is mentioned, presented by the secretary to the task force, "(In English) Proposed mitigation of lead contamination in water". It's an attachment to the meeting minutes. Let's look at the paper. 14111.

It's in the same bundle, page 14111. "Proposed mitigation of lead contamination in tap water"; can you see that? In the upper right-hand corner is something in manuscript, "Paragraph 3.2 of minutes of 5th meeting". So it's referring to the minutes and it's the same paper, titled "Proposed mitigation of lead contamination in tap water".

You know this paper?

A. I wrote it.

Q. So I don't need to read out the relevant paragraphs?

A. I know what's in there.

Q. You can see there are some references to studies conducted elsewhere. Let's proceed to page 14117, "Recommendations". Paragraph 3:

"(In English) WSD should standardise and educate the public on the proper sampling methods ..."

You wrote this as well; right?

A. Yes.

Q. After reading what I want you to read, I have a question for you. You wrote this paper for the Advisory

Committee. What about the underlying research on overseas practices; did you do it yourself?

A. Yes.

I'm going to supplement. I also circulated this paper to members of the Advisory Committee on Water Resources and Quality of Water Supply before submitted to the director.

Although there's no title, no minutes saying members discussed this paper in a certain meeting and endorsed it, but we know that for committees like this, very often you do it by circulation. So you may have circulated a draft to invite comments. If there's no comment, then it would become an official paper of the Advisory Committee and will be issued in the name of ACRQWS?

A. Well, time was short. I only circulated this over a weekend to members, and they all gave their consent.

Q. When you sat down to have a meeting, many non-members could be there to sit in?

A. Well, mainly there are people from the WSD. Of course, members of the Advisory Committee would attend the meeting, but there are also people from the WSD.

Q. If you surf the internet, you can see that from 2014 to 2016 is your term. A number of people are appointed as members of the ACRQWS, so your circulation would be to

the group of members.

From time to time, there will be people from the WSD to sit in, to participate. Technically, they will not be members of the Advisory Committee; right?

A. Correct.

Q. And you wouldn't be circulating any paper to them?

A. I would only be circulating the paper to unofficial members.

Q. So there were people from the WSD sitting in, but there was no formal discussion on this paper during the meeting, because they are not on your circulation list, they would not have received this through email; that won't be owed to you, right?

A. Right.

Q. So that's the provenance of this paper. Let's remember this is the 5th meeting of the task force. The secretary presented this paper to members.

Do you recall, at this meeting, when it approached the end, under "AOB", what's the discussion like upon the presentation of this paper? I want you to be a bit focused.

You know the meeting may last up to 7.30, and then at the very end you might be given two papers, to invite comments, and members would just pick up the documents and leave. So it would be officially tabled like that.

Or is it that everyone would be sitting down and looking at the recommendations, there would be a discussion, they would try to reach consensus?

According to your recollection, what actually happened to this paper at that meeting?

A. For this paper, I gave it to the director of Water Supplies, Mr Enoch Lam. As chairman of the Advisory Committee on water resources and quality water supplies, I do have an obligation to advise. On this important issue, I do have the obligation to advise the director of Water Supplies, so I gave the paper to the director.

My understanding is that the paper was circulated to his colleagues. At the 5th meeting, the chairman distributed the paper. The paper was copied to all the members attending the meeting.

Q. You are talking about the 5th meeting?

A. Yes.

All the members present at the meeting were given a copy. The chairman requested me to read out the recommendations. The understanding was that, as you can see, in this paper, I referred to the different countries and the responses that they had to the lead incidents, and I made some recommendations. The director or the deputy director thought that these recommendations were relevant to the task force.

Q. You mean the chairman of the task force, the deputy director, Mr Wong?

A. Yes. He asked me to read out the recommendations, and I did, and there wasn't much of a discussion.

Q. So the recommendations were under 3, the bold letters, long-term, short-term, and so on.

A. Yes. It wasn't done in a rush. It was in the middle of the meeting that I read out the recommendations. Nothing was done in a hurry. I read them out properly. There wasn't much discussion because these were straightforward recommendations.

There was previous evidence to show that the task force was there to look at the situation. We got water samples from three water supply links. These recommendations would be helpful.

As far as the members of the public are concerned, the chairman, Mr Wong, asked me to read out the recommendations for members' consideration. At that time, maybe the members didn't have enough time to digest everything and it was just for their consideration.

On 25 September, in our PowerPoint presentation, some of the recommendations were made available to the members of the public, like the flushing of the tap water.

Q. So you mean recommending the public to flush the water?

A. Yes, and also the filter, how they should use the filter system, we did have some recommendations. At the meet-the-press session on 25 September, we did say that.

Q. You mean the task force, before the final report was released?

A. Yes.

Q. Thank you. I think you have addressed a lot of the questions that I intended to put to you.

There was a part that mentioned the recommended sampling method. You have seen, you must have seen, a lot of sampling protocols in different places, and they do have laws in the US. There is the Lead and Copper Rule. You said there is no universal protocol because different places have their own unique methodologies.

In your recommendation, you mentioned towards the end:

"(In English) We recommend that both pre-flush ... and post-flush samples ... should be drawn from the kitchen taps and that ICPMS should be used for analysis in a HOKLAS accredited laboratory."

So the Advisory Committee's recommendation is to flush -- unflush for six hours, and also flushed samples should be taken. In some cases, they adopt the flushed

sampling protocol; some unflushed.

How did you arrive at your protocol?

A. As you said, different places have their unique methodologies. As I said in the media, when you conduct the sampling, it is important to ascertain the purposes of the sampling.

This is important. If you blindly follow the US model, they require six hours of stagnation, then they take the first draw, 1 litre, and then they compare this with 15 micrograms per litre.

In the UK, they have random daytime sampling, any time they just collect the samples, and compare these with the WHO. In Canada, it is also different.

But at that time, when I wrote the recommendations, I talked with members of the Advisory Committee. We may not have to follow the other jurisdictions in the sampling, because they serve different purposes. This sampling methodology caused a lot of controversies. Some political parties conducted sampling through different methods, and the Water Supplies Department used the 5567 model. Some parties used the Lead and Copper Rule and complied with the WHO and things were very confusing.

So given the resources committed, we should adopt both methods. And I'm not talking about compliance.

For the Water Supplies Department, they use ISO 5567 for compliance purposes, compliance with the WHO.

On 27 August, the director of Water Supplies had a meeting with us. I explained this to him. For the WHO, 10 micrograms per litre, they do have a lot of justification. They base it on provisional intake, before they arrived at the 10 micrograms.

So based on these reasons, if you take a first-draw sample, then it would be too conservative and it is not sufficiently representative.

So this flushed sample of the WSD, I agree with that, but I told the WSD that if people use other methods, we should use some standardised method. Some may collect 30, 40, 50, using some model, and I get 10 or 20 using our method. So we have to benchmark the system for the same tap. We can adopt a pre-flush and flush methodology, and we can compare the data.

I'm not saying that I subscribe to first-draw methodology. I said before, the first-draw sample does have some disadvantages, because they just look at the 4 metres of water in the tap and the leaching of lead there. Further down the pipe, there is no evidence at all in the test.

So, even if they say it's okay in the US for the first draw, but the water contains lead; they use leaded

pipes. They cannot see further, beyond the 4 metres. So first draw, we may not see the whole picture. On many occasions, I did say this to the director. But my thinking is that since there are different methodologies, we should benchmark the test.

Q. So your thinking is that you may think that certain methodology is good, since there are alternatives, you should cover both, so that the reader would understand the basis that you use and they can interpret the results.

Say, for instance, you think that first draw may not be sufficiently representative and is too conservative. This is one possibility. But you might want to find out the worst-case scenario, those who want to find out the worst-case scenario, they can conduct their own analysis, and at least with an added step you don't have to interpret this for them; they can interpret the situation for themselves.

A. Depending on the purposes, I don't want to see a situation where people get the perception that we are trying to keep down the lead concentration and that's why we flush. That's the wrong message. If we flush the tap in order to keep down the lead concentration, people would say, "You are doing this on purpose." If I can do a pre-flush and also flush, then we can have

all the data there. People now, they are doing it like this, and the WSD is doing it this way. That's my purpose.

Q. In fairness, you said for first-draw methodology, the lead further down the pipe may not be picked up. You have read Prof Lee's report. They have a number of draws: 20, first draw, 40, and so on. In a way, he has detected the phenomenon that you mentioned. Maybe they get to pick up the lead at the second draw, and not so much the first draw, and that may be accumulating at the meter room; it would take some time to come.

A. The service pipe, they may have changed to copper pipe, but further down, they are still using leaded pipes, and the first draw may not be able to pick up the lead concentration. So, in the US, there is a lot of criticisms of the first-draw sampling. So it all depends on the purpose. Do you want to cover from the tap to 3 to 4 metres down the pipe? If you want to look at the entire pipe, first draw may not be sufficient; you may need second and third draws, but if you want to look at the average lead concentration on a particular day, then a flushed sample might be more appropriate. Or in the UK they have random daytime sampling, any time they collect the sample, and that would be more representative of the situation.

Q. The world over, there is no fixed time when people first consume water. The first draw may not pick up the lead. I believe when your flush or flush it, you may not be able to be accurate.

So, there is no methodology for you to look at the situation.

A. It all depends on the habit of water consumption. That's one thing.

Q. You must have read Prof Fawell's report. The WHO -- he was involved in putting together the WHO standard.

He said if you look at the 10 microgram, at the beginning, it was the provisional weekly value, and that was 10. In 2011, the expert committee withdrew the provisional weekly intake, because there was no threshold, because Prof Fawell said that the 10 wasn't based on the provisional weekly intake; it was based on performance-based?

A. Or practicality.

Q. Analytical achievability and treatment performance.

A. Right.

Q. It was based on this that arrived at 10?

A. Yes, there was a recommendation of less than 10, but that simply wasn't achievable. If we treat it under 10, then it would not be achievable.

Q. It is difficult to reduce it to less than 10?

A. That's why they maintained it at 10, the administrative guideline.

Q. That's a compromise.

A. Right.

Q. In some system, if they use leaded pipes, at least that environment, it would be difficult to achieve low lead levels. In Hong Kong, we have banned leaded pipes, the starting point is not to keep down the lead concentration but not to allow the concentration to increase.

Prof Fawell said whether the 10 should apply to Hong Kong would depend on the Hong Kong situation, and in Hong Kong we have not been using leaded pipes for a long time. You have no dispute on this?

A. No. Scientifically, there's no threshold. That's true. Even if it is under 10, children's IQ can be adversely affected.

Q. Therefore, that suggestion was withdrawn?

A. Yes. They wanted to keep it as low as practicable.

Q. So they are forced to accept 10, not that they would like it. They just couldn't keep it lower than that. It's about the analytical achievability. In some less advanced countries, they still use lead pipes, so they have to stick to 10.

Prof Fawell also suggested that for Hong Kong, we

deserve better. It's a complimentary remark, because we banned the use of lead pipes in the 1930s, so Prof Fawell was actually saying it would not be the right starting point, to pledge for 10 micrograms.

You talk about sampling. The taking of sampling and the methodology would be dependent on the purposes. If you want to detect whether the fittings contain lead.

A. But then, with stagnation, the investigative mode as practised in Europe, you should go for stagnation test. You would magnify the reading to a detectable level and you would know how bad it is. That is the investigative mode, so you use stagnation. Whether it's six hours or not -- well, there are different practices in Europe. For investigative purposes, you should go for stagnation test, but it's not six hours in Europe.

Q. All right, let's leave aside the length of time. So you know there's a problem. You want to know whether this problem exists for these estates. It's more specific. It's a targeted approach, you have identified a problem and you just want to investigate, to look out whether there's a problem for those estates.

There's one more point that I would like to raise. I believe you are familiar with the task force reports. You have mentioned this in your witness statement. For some components, it's found that nickel was released.

But the conclusion of the task force is that because of the electroplating, the nickel was released into water, which can be flushed away in just one or two seconds. So you cut out the components for the leaching tests; that's why you found nickel in water?

A. Yes.

Q. Are there relevant British Standards concerning nickel content in components?

A. I'm not very familiar with British Standards. As far as nickel is concerned, there are some British Standards specifying the level of lead and nickel, and also some values for copper alloy products.

Q. In the task force report, you found the leaching of nickel, but it can be flushed in one or two seconds, and then it was due to electroplating. Does it mean that some components contain excessive nickel, or is it due to electroplating, an additional process which has nothing to do with the component?

A. According to the British Standards, there is a maximum value for nickel in copper alloy, and now we have these components. In the leaching tests, we have not found any problem with nickel, apart from the end of the tap, we found that it's only at the end of the tap. It's due to electroplating. Nickel found there was because of the tip of the end of the tap, and nickel got into the

wall of that tip. It's not because the component contains excessive nickel but it was introduced due to an additional process? Since it's only the tip, a very small part of the tap, so it should not be a big concern because it can be flushed away in a very short time.

Q. Forgive my ignorance, Dr Chan. You are saying in electroplating, something containing nickel would be used?

A. Right.

Q. So it's not because of the component containing nickel in excess of British Standards, but it's due to another reason?

CHAIRMAN: I don't quite understand. Maybe I should seek some clarifications here. I understand what you have said. But electroplating of the component concerned -- should the entire thing be regarded as a component? For example, you can say that for this alloy, you should have a certain percentage of this and a certain percentage of nickel, and after it's done, it's not yet to be so. You have to do the electroplating first, before it can be so.

So the electroplating is part and parcel of the manufacture, although I know the alloy composition may be different, but let's say I'm the ultimate consumer. I don't care whether the problem comes from the alloy or

from the electroplating.

A. In the US, there's NSF 53. For fittings, they have a maximum single component concentration value. It would be a test on each and every component.

But we don't have NSF 53 as our standard. We have British Standards. British Standards refer to the copper alloy. If they use this alloy, with 2 or 3 per cent nickel, if this is in compliance, then after this is used to produce or manufacture a tap, then we don't have another test. But under NSF 53, the entire component produced will be tested for nickel, for copper, for chromium, for cadmium. But we don't have it now.

I have already talked to people in the WSD: maybe in the future we need to do something -- or establish some standards similar to NSF 53, so that the component taken as a whole should be tested; we should not just look at the raw material.

But in the chromium plating, you have added something which you may have missed.

Q. 14061. C19.6, page 14061, "Short-term measures", in the task force minutes, paragraph 3.2. Paragraph (b):

"(In English) Proper use of filter certified under the NSF/ANSI 53 ..."

Are you talking about the same standard?

A. This is for the certification of fitters.

Q. But you are talking about similar standards?

A. Yes, it's the same US foundation.

Q. You said the US is more refined in the tests. They don't just test the individual components. If under the British Standards --

A. They would just look at the material. It's just copper alloy. We have NSF 53 and other standards, some on taps, some on fittings other than taps, such as valves, meters. They have section 9, section 8, different sections.

Q. Forgive my ignorance again. Let's say the tap doesn't contain excessive lead, and according to the task force conclusion, the nickel comes from electroplating. What about the material used in electroplating? Is there any standard on nickel content? If there's a standard, then there's no way you would end up with excessive nickel.

A. Well, I'm not an electroplating expert so I don't have any comment to offer.

MR SHIEH: I have no further question.

Cross-examination by MR LEE

MR LEE: I want to ask you some questions about water sampling.

Prof Fawell said, if you want to test for lead in the kitchen, and if you use stagnant water and boil it

for drinking, then you should test the sample which has been standing overnight.

A. It's a worthy task, to test for the lead in stagnant water.

Q. Prof Lee said, when he turns on the tap, if the standing water is stagnant water, he would take a sample, and after 20 seconds another sample, after 40 seconds, 60 seconds and 80 seconds he would take further samples, and then take the average. You know the methodology?

A. (Nodded head).

Q. He agrees with you, sometimes at zero seconds the lead content may not be the highest among the samples. Because of the bends and the elbows, there is stagnant water, so the 20 to 39, the content will be higher than that in the period from zero to 19.

A. But he only took 50 mL, a small amount. We told him that he would not be able to find much. In the US, they would take 1 litre. Prof Lee only took 50 mL. The WSD took 250 mL.

Q. So the amount of water is smaller but they would take a number of samples?

CHAIRMAN: Well, at zero seconds, they would take 250. But then 50 mL at 20, 40 and 60 seconds.

A. We offered him this comment, that the amount was too small, and then he decided to take 250 mL. At first, he

proposed 50 mL.

MR LEE: He said it would serve a good purpose. From zero to 19 seconds, the lead content, on average, on the whole, would be lower than the content for the period 20 to 39.

CHAIRMAN: Not necessarily.

MR LEE: The first one is just 30-odd per cent and then the second, 60-odd per cent. So zero seconds, 20 seconds. Two samples would be taken. And you can find the highest levels for the two samples.

He is an expert, and I said, now with hindsight, using at this protocol, looking at the findings -- looking back, we will say that the sample at zero seconds would be useful. 20 to 39 -- well, 60 -- odd per cent had the highest level.

So with hindsight we would say taking the two samples would be sufficient -- 40-second, 60-second, 80-second samples would give you very low levels, and if you want to have the highest level detected, you can just take the first two, because if you take the third, the fourth and the fifth and then average the levels, it would be lower?

A. If you take the first draw, you will just take -- just flush out this amount of water (demonstrating), and after you stop, and then you would have released some

more water, the water would be moving in the pipe, so it's actually taking water from different parts of the pipe and trying to find out the lead content of the water body there.

In other countries, there are first draw, second draw and third draw. Prof Lee also wanted to look at the level in different parts of the pipe. This may or may not be the right thing to do. It would depend on the location of the joints. If there are a lot of bends, you have a lot of joints at the bends, you have a lot of lead. But if a very straight pipe, there's no lead. So for this entire stretch, there may be no problem. So it's really site-specific. I don't dispute his sample that he's cited. But if you go to another location, the percentages would not stand.

Q. In public housing estates, the units are not big. In the meter rooms, there are so many bends, and they thought that there would be more lead concentration. So these figures, between 20 and 39 seconds, they would cover the meter room as well. So the highest concentration would be in the first two samples.

Your purpose is to find out about the concentration of lead in the water from the tap. You agree with that?

A. Yes.

Q. Since you go for the maximum, it would be okay for you

to get the maximum. You don't need to have the third, fourth and fifth, because that would dilute the samples. If you take them all together and divide by five, then it would be diluted. That's my logic.

A. If you take different samples, then you wouldn't know about the distribution of the lead in the pipes. Whether you lump them together, it all depends on your purpose. If I want to find out if someone drains 2 litres of water or 3 litres of water, then I would run 2 or 3 litres. But if you turn on the tap and you boil water for coffee, that would be just 20-30 mL, then I would just collect samples of 20-30 mL, a short run of the tap. Then you would know how much lead is there in this water.

Q. What about a kettle, a kettle of water?

A. That's 1 or 2 litres. At most, there would be just 5 litres.

Q. 5 litres? That wouldn't take us to the meter room. How much would it be?

A. Hong Ching, the meter room, it is 18 litres of water.

Q. So how many seconds do we need?

A. It depends on the flushing rate. At Hong Ching estate, the flushing rate was 5 litres per minute. I know Prof Lee -- it depends on how big you turn the tap on. The Lead and Copper Rule, you have to turn it full-on, but

in Hong Ching the WSD collected the sample -- I told them to turn it full-on. There's 2 litres per minute. I understand Prof Lee, in some cases it reached 10 litres per minute. So 18 litres of water, you may need 5 litres per minute, and it would take about 3 to 4 minutes to cover the entire stretch.

CHAIRMAN: Prof Lee has averaged 0.26 litres per second, so it works out to be something like 15-point-something.

A. Yes, more than 10 litres per minute. In Hong Ching, it was 5 litres.

CHAIRMAN: But Prof Lee took an average because different units would be different?

A. It all depends on the tap. If you turn on the tap, like a shower, sometimes 10 litres per minute, some 9, some 8; there's no standard, per se.

MR LEE: We understand that, scientifically, if you drink water that contains lead, it would be cumulative, so you wouldn't dilute the concentration. If someone boils the water in the kettle and then he consumes the water after it's gone cold, or if he makes coffee with the water, or some babies maybe are drinking the milk from that water.

So what we are looking at is the harm to human health. Some people would be using that water for making rice. So we have to look at the maximum lead concentration in the water.

In your statement, you made it very clear, and at least you're being fair, that since there are other controversies out there, some suggested it should be stagnant water, you said it all depends on the purposes; stagnant water might be good in the sampling. You know Mr Chan Kin Man's comments. He said we shouldn't use stagnant water.

CHAIRMAN: You don't have to put this to him, how Mr Chan Kin Man thinks --

A. I am sitting on the Advisory Committee. Mr Chan has his own opinion. I wouldn't say he is entirely wrong. As I have said, I have already stated my thinking: it all depends on the purposes.

MR LEE: So the judge tells me I don't have to go into this. Why is it that your opinion wasn't adopted? You made it very clear you should go for both. The task force wasn't agreed that we should go for both. But we ended up having one instead of two. Why?

A. Let me explain.

Q. Yes, this is what I am looking for.

A. In the task force, the whole purpose is to look at the three supply chains and identify the sources of lead. We were not trying to come up with the sampling protocol. They took note of my recommendations, and eventually we found that leaded solder was the main

source.

As to how the sampling should be conducted, the WSD has been collecting water samples, as the task force was getting on with its work. They didn't take note of my words. I asked them for their comments. At the task force, we did collect stagnation sample as well as flushed sample. From 29 to 31 July, the WSD collected from Lok Ching, Mun Ching, Hong Ching, three units, and also pantry stagnation sample for 48 hours. Flushing samples, they flushed the water and they collected 30-minute water samples to look at the changes, and we did do that.

At that time, we would like to make recommendations to the members of the public. Should we use the flushed sample and should we use stagnation? Does it mean that the longer the water stagnates, the more lead there will be? We did do this at the task force. We covered 48 hours, zero to 48 hours, and we saw the lead content concentration go up.

For flushing, we flush for 30 minutes, and one minute or two minutes, the level has dropped significantly. We did do this. This is part of the task force work. For the WSD, they collected the samples; it's got nothing to do with the task force.

Q. Thank you for the detailed reply. You are the expert.

I think it is beneficial for you to give your input.

You said after one minute the lead has dropped?

A. Dropped by 80 per cent almost. In the US, they have similar results.

Q. I saw the statistics. I don't have to show you all the documents. There was one that showed that zero seconds, at the beginning, they had 34.7 milligrams, and after one minute it dropped down to 6. So there was a chart showing the significant drop.

If you have both sampling, first-draw and flushing for two minutes, if the purpose is to look at the components, the copper alloy components, to find out about the lead concentration, you conduct a leaching test, you have to find out about the problems with the pipes in the first place. There are two ways. First, you just do it at random; you would dismantle the pipes. Alternatively, you test the water first and then dismantle the pipes.

A. I agree.

Q. They went for the second method. The second method is pretty accurate. You knew at the very beginning that where the water runs into the roof tank, there is no problem. Down-pipe, no problem. But it's the branch pipes that gave rise to problems. So, in the branch pipe, it goes to the tap and there are problems there.

Of course the water runs through many things there. Prof Lee cited many examples to show that even for first draw, it is 0.00, there are no problems. You pick up nothing in the way of lead. You are aware of that?

A. Yes.

Q. For the PRH units, you turn on the tap, you took the sample, and you had 0.000 per cent. So the taps were not contaminated by the branch pipes, and water came out of the tap okay. Maybe they used mechanical jointing instead of soldering --

A. Or unleaded solder.

Q. Yes.

A. Unleaded solder also.

Q. Yes.

If, however, the water comes out of the tap, it may measure up to the 10 micrograms per litre of the WHO. They may hit 8. Indeed, there are problems. Or 2, there may be problems. There must be something wrong, for it to hit 2.

If you want to look at the pipes to find out whether there are any problems -- maybe there are problems with the copper alloy of the components. Maybe the problems lie with the accumulating deposits. And you want to take a pipe that was tested to be problematic. I think they have three or four pipes that were tested.

A. Yes, that's within the remit of the task force. We had three supply chains and there were two that were found to be problematic, or even all three of them were problematic. We needed investigation to find out, so 134 components were dismantled, and we soaked them for 24 hours, not six. Like Mr Lee said, over this period of time, we'd like want to find out how much was leached. In the investigation, we had to do it.

Q. The longer, the safer?

A. Yes. Now, when you used the water, you may not take so long. We recommend that, after 24 hours, it's best for them to flush the water. If you go on for a trip for a week, you should flush the water. If not lead, there may be bacteria, so it's best to flush it.

Q. Let's say we are not doing it like Chan Kin Man, we do it the way you suggest; we had two samples, the stagnant water sample and also the flushing water sample, we have both sampling methods. If somebody wants to find out which pipe should be dismantled for testing, then the sample results would be useful.

If you don't have that, if you don't keep the first-draw samples, then it would be hard to ascertain from the sampling whether the pipes are problematic.

A. Well, for first draw, you get the problems down 3 or 4 metres from the tap. There may be problems with the

meters and the valves; there are a lot of deposits there. They may give rise to problems.

The water sample that we collect is not in iron form. It may be in particular form. A small particle may go beyond 10 micrograms. The deposits there may not be picked up in the first draw. That's why the task force took out all the components. From the water tank, all the way to the tap, we take different components, including the very big pipes and also pipes with smaller diameters.

For example, the meter which is vulnerable to having deposits.

Q. So if you want to identify a pipe for test, you need both flushed and first-draw samples.

A. For first draw, you have to get more, the water close to the tap. That may be okay, but then some water goes behind, that portion may be problematic.

This is a very long and tedious process, so maybe some other investigative measures can be used. For example, XRF for joints, to test for lead, because if you have to go for destructive tests, it's not really practical, because people have to use the water supply system.

Q. XRF, is it very accurate?

A. It looks at the surface. It would give you very good

readings. If a pipe is not dismantled, if you look at the surface -- actually, we want to look into the inside. If you don't cut it open, you can't see the inside. But sometimes, during soldering, the leak would also get to the surface. So it gives you a good indication. Then you can also take out some minute samples for lab tests.

Q. The major source is leaded soldering, and you are saying that it can be detected from the outside of the pipe. So you use XRF and you think it's accurate?

A. Well, it's a good indication, and it's quick.

Q. What about using some sort of test paper?

A. No.

Q. You won't recommend it?

A. No.

CHAIRMAN: Why? Why doesn't that work? Not specific?

A. Well, not accurate.

MR LEE: It won't pass the tests you want?

A. XRF is also an approximate indication. Taking something out from the pipe would be more accurate. In the solder, lead is not distributed evenly. In the copper alloy, the lead is also not evenly distributed; sometimes on the surface, sometimes inside the alloy.

Q. If it's due to solder, I can see, I can understand why, because the solder is applied from the outside. But

what if it's not related to solder? Where does it come from?

A. The conclusion is that it's because of solder joints. The water contact area at the joints is bigger, and there are many joints in the system. So we conclude that this is the major component.

But for copper alloys in the meter, in the valves, there's a question of organic corrosion, or corrosion, copper -- galvanic corrosion.

CHAIRMAN: It's about the movement of electrons.

A. Yes, right. Because of the difference in potential, electron potential. So the lead will come into the water in iron form, and they will also form deposits. Then, when the water flows quickly, it will dislodge the particulates, the deposits. That's why there are more at the elbow areas and the meter, because of the bend and curve locations, and then the particles will gather. And when you turn on the tap full-on, it will be flushed away.

MR LEE: (Chinese spoken).

A. (Chinese spoken).

Q. But it's not okay to ingest these particles?

A. No. Our stomach has a pH value of 1. If you ingest lead, all the lead would be released into your body. Don't eat lead.

CHAIRMAN: You will sometimes use a lead as a weight in fishing and you may eat the lead.

A. In the past, a pencil also had lead, and if you bite the pencil you write with, then you have a problem.

MR LEE: You are not affected, I suppose?

A. I think many people have bitten the pencils. And you are still smart?

MR LEE: Maybe I have a problem. I can't remember a lot of things.

A. Yes, pencils at that time contained lead.

Q. Right.

A. Then we also used leaded petrol at that time? Now, no. There was a lot of lead in the air. We only banned leaded petrol in the 1990s. So it was for very long, long time that we had lead, and we were not aware of that and we were not knowledgeable about the hazards.

CHAIRMAN: Any further questions?

MR LEE: Yes. Now you know the WSD would designate estates as "affected estates" or "not affected estates". If they have a sample, the findings of which exceed 10 micrograms, the WHO standard, even if there's only one sample, then the entire estate would be called "an affected estate"?

A. That's a very conservative approach. It's not the normal approach.

Q. If none of the samples exceeds 10, then the entire estate is not an "affected estate". If it's 9 or 9.9 -- because they have to draw the line somewhere -- 9.9 is okay, that's the WSD's practice.

And now, because you can only take a limited number of samples, there's a constraint imposed by money and manpower, there are 800 flats in an estate, you can't test all the 800 and you have to take samples, and the number is small, the number of samples is small.

Now the government says there are 11 affected estates and all that would be done, such as blood tests; you know that? For the other 100 or so, they are called "not affected", nothing would be offered; they are okay.

You, as an expert, know they apply the WHO standard in this way, and Prof Fawell said we should go for 5, and on examination he said 2 might be okay. Now, if the findings are 9, 8, 7, after the water is flushed for two minutes or even five minutes, are you confident that if no sample in that particular estate exceeds 10 micrograms, and it's called "unaffected", and there are people living there, children living there -- are you confident to tell them, "You are okay"?

A. I know what you are suggesting.

Q. Do you agree that's a problem?

A. I understand what you are saying.

Q. You can ask them to be careful and, "You should flush the kitchen tap full-on for a few minutes, two minutes." But there are problems that you may flush some deposits from other parts of the system to the tap.

If you turn on the tap and it's not full-on, it's slow, you may not have the deposits flushed to your tap. So it's not okay.

So you advise people to flush it for one or two minutes. I never flush the tap while watching the time spent. It's a long time, to flush water for one minute.

A. A normal sink is 20 litres in volume, a medium size, 15 minutes. I would say you can just flush water up to one sinkful.

For big one, big sink, 20 litres, sometimes in the kitchen you have two sinks, the bigger one 20 litres, the smaller one 15 litres. So it's one small sink or half a big sink of water flush; that would be okay. Then lead would be at an acceptable level.

Q. (Chinese spoken).

A. Well, it's easier, because you don't time the flushing. You don't have to waste the water. If it's in the sink, you can use it to water your plants, wash your bowls and plates.

Q. What about washing vegetables?

A. If it's just a few millilitres of water on the surface

of vegetables, that's okay, because in the air you have a lot of substances, so that would be acceptable, washing vegetables would be acceptable.

Q. Do you know that after this incident was exposed, the Chief Secretary for Administration was very concerned. In mid-July last year, she convened a press conference -- and interdepartmental meeting; do you know that?

A. I don't have the details. I'm not at that level to know all the details. I won't be able to know the details from the evidence that we have gathered.

Q. You would be at a rather good level, although you did not attend those meetings, but you are a member of the task force.

A. Right.

Q. Up to this moment, can you tell us your understanding -- your understanding, only -- the task force did not adopt the two-sample approach?

CHAIRMAN: Not the task force, the WSD.

MR LEE: The WSD decided to use the flushed sample approach, not the two-sample approach.

So they would like to advise people how to flush stagnant water standing overnight, and then that could be used for another purpose. The samples taken from stagnant water would be able to tell you whether the

components are in compliance with the British Standards, and then you decide on further steps to take.

A. Perhaps I can answer your question in this way. There are so many housing estates, they have to take so many water samples, and I agree that their objective is to investigate into the quality of water supply on an average basis. They need to be able to tell very quickly the situation with different housing estates.

So I would say I subscribe to the methodology adopted by Mr Chan Kin Man. The task force was not in the business of devising the sampling methodology, but as chairman of the Advisory Committee, I offered advice to the WSD. In view of the different practices outside of the WSD, and that would be for benchmarking purposes, if there was no further investigation, I would agree that we should use stagnation tests very much like what the task force has done.

But Mr Chan Kin Man and the WSD had to deal with so many cases in so many estates. If they had to do stagnation tests, they would have to make prior arrangement with the residents, and there are so many of them; that may be a problem.

I agree that if you want to investigate into problems, you should do some stagnation tests.

Q. But your understanding is that because of the time

constraints, and they were also worried that the residents may not be co-operative?

A. Yes, that's one of the most important reasons.

Q. That's what they told you?

A. Yes, I know about it, because I had contact with them. This is not the responsibility of the task force, but I do talk with Mr Chan.

Q. The WSD and the HD do co-operate. When they collected the samples, the HD could guide them through the estate. If they entered the unit, if the residents get up late, by 11, for instance, he wouldn't be woken up and he would be ready for cooking, then you can take the first draw. You can make up for the deficiency with many, many different ways.

A. On a big scale, you have to consider the scale of the sampling. You may not be able to complete the sampling until now. There was really severe pressure from the media and they wanted to find out whether there were any problems with the 11 housing estates quick.

Q. That's important, the media pressure. I know that the WSD refused to collect stagnation tests and they were attacked. Are you aware of that?

A. Yes.

Q. And they were criticised severely. So you do have a lot of wisdom in your supply, because that would placate

public sentiments. If they do so, then people would be mollified.

If you come to my place and ask me to turn on the tap for two minutes, how can I trust the results?

With indulgence, Chairman.

A moment ago, you referred to a paper, "Proposed mitigation of lead contamination in tap water". You gave it to the director of Water Supplies. Any follow-up after that?

A. I understand that the paper was circulated to his colleague.

Q. Yes, you read that out.

A. At the task force meeting, it was read out.

Q. What next?

A. Nothing much happened thereafter. Nothing happened.

Q. Nothing happened, and you don't know whether there was any discussion among themselves?

A. On 27 August, the Director of Water Supplies met us. On 27 August, myself, former chairman, Prof Ho Kin Chung, Prof Richard Cheung and a PolyU professor and Jimmy Yu -- all these are experts on water -- they were invited to discuss the WHO Guidelines, the sampling protocol. I did recommend that orthophosphate was used.

Whether it was practical in Hong Kong, we did have some discussion. The director, on the basis of my

recommendations, called a meeting to discuss whether it is appropriate to follow the WHO Guidelines, whether our sampling protocol was correct. There are different suggestions that the US have examples. I explained to the director that I agree with the WSD's methodology, but I told them about the US protocol and other protocols.

I said that there are advantages and disadvantages with regard to first draw; it all depends on the purposes. We had a meeting to discuss this.

Q. You knew afterwards that we had two experts, Prof Fawell and Prof Lee, and they had the experts' report, and first draw should be conducted, according to the reports.

With this clear recommendation, why is that the WSD didn't follow?

A. The two reports came much later. It was 27 July and I had a meeting with the WSD on 27 August, and the two professors' reports came at a later stage.

Q. Even so, the WSD didn't take up the offer, the suggestion?

A. It's not right for me to answer on their behalf.

Q. I learned from your evidence that WHO has the standard of 10 micrograms per litre -- that's not a healthy standard, from a health point of view -- and they want

you to achieve this standard?

A. That's a provisional guide, that's the minimum you should achieve.

Q. But like Prof Fawell said, you could have done better; why not 5. You agree with that?

A. My personal view is that this is something that needs collective discussion, because there is a huge social price to pay for it. We do need to have collective discussions. It's not for anyone to say this.

Why the WHO mentioned 10 -- now, if we make it 5, the cost would be very high, the treatment cost would be very high, all the piping would have to be replaced, and there is a huge social cost. Everyone has to pay for it. And we do need to have public discussion. It's not for me and you to come to anything.

Q. There may be a need for referendum in Switzerland.

A. Yes, in Switzerland, where the social price is huge.

Q. In Hong Kong, we don't have any problems, because we can achieve 0.000 if it's not for the problems of the pipes.

A. The copper alloy, there is 4 to 6 per cent or 4 to 8 per cent of lead. I had mathematical modelling. If we disregard the leaded solder, if you just take the copper alloy, a horizontal branch, you have the meter, a number of valves, the faucet, the tap, and there are five or six points where there would be lead leaching

out. You cannot achieve zero at all.

Q. Maybe not zero, but it would not be as high as 2.

A. It may happen. My mathematical modelling shows --

Q. Up to BS standard?

A. Yes, of course. Maybe. My calculation is that there may be 2 or 3 micrograms.

Q. Definitely not 5?

A. Not as much as 5.

Q. Prof Fawell said 5 -- it is achievable in Hong Kong. If you make it 10, it doesn't make sense, because you achieve it lower. So 5 to 9.9 would be all right, and we are not doing it right, are we; do you agree with that?

A. Well, for 10, marginally, there is uncertainty. That should be reviewed.

Q. Are you saying 9.99, everything would be okay?

A. My preliminary discussion with them shows that if it is beyond 5, they would conduct a review. If it hits 9, there must be sampling errors. The samples that you collect today may be different from the samples you collect tomorrow. There will be a review.

Q. There is another point -- I don't think I can get my head around it. There are some samples that flush for two minutes. There's 6 to 9. After two minutes of flushing, it is still high, isn't it, after two minutes

of flushing? Then you have the first draw. In the first-draw sample, you pick up nothing. Can you explain why?

A. It is likely that it is because of the particles. If the particles come off, the deposits are attached to the surface. If you flush off the particles, then it would make a difference.

Q. You said you attribute this to the particles?

CHAIRMAN: Prof Fawell said the same.

A. Yes, it is the particles. I told them before Fawell.

CHAIRMAN: Yes, that's what they said.

A. So my views correspond with his.

MR LEE: Something to do with mathematics, you're good at mathematics. Let me show you some documents this time. Do bear with me, please.

C19.6, tab 134, page 13952.

A. Yes.

Q. Please refer to page 13965.

A. Yes.

Q. Down at the bottom, you see the chart, "Flushing Test". I put a question to you about this a moment ago.

Over the page, please look at this page, page 13967. There are two tables there. The bottom one, you get to see the flushing time at zero minutes, and across the line to the second-to-last result, 34.7 micrograms per

litre. One minute, it drops down to 6.

A. Yes.

Q. Back to the previous page, 35, then 6 for one minute, about that level. You can you work back from that, 6 now, at zero minutes, first draw, stagnant water. How high would it be and how long do you have to flush it before you get 7 or 8, that's 34.7, after one minute, drop to 6. If it drops to 9 after one minute, how high would it be at the beginning? Can you work it out?

A. No, it's hard to work it out.

Q. Why not?

A. As you said, whether the particles come off would take place randomly. It is a random process. If it's 34.7, in Hong Kong or elsewhere, you flush it for one minute. Normally, you would get 10 to 15 per cent and that's a normal phenomenon.

If you extrapolate from that, after one minute you get 9. If you extrapolate to zero minutes, how much do you get? I think you can guess the level. Let's say it's 9. Let's say 20 per cent, you end up with only 20 per cent, then you extrapolate from 9, and zero minutes, you divide it by 40-something micrograms per litre.

This is not accurate at all. All I can say is that you are just working on the basis of extrapolation, but

this is not accurate at all.

Q. If the initial level is so high, one or two particles might have come off.

A. It's a random process, when it comes to particles coming off. If the force is bigger, you would have more coming off. That's why you have different levels for samples taken on different dates. If, as you say, it would be reduced to 10 to 20 per cent, then I would say the initial level would be 40-something micrograms. But I would say it's not accurate.

Q. You also mention orthophosphate. For public rental housing estates, which the government says are unaffected, but not to the residents. The residents might not agree. Especially for those with findings of 8 or 9. Can it really work?

A. In the UK and the US, the use of orthophosphate has been proved to be effective. I have arranged this for the WSD to consider. It's in the recommendations, and there was some discussion. But they are of the view that the temperatures are lower in the US and the UK, so orthophosphate would not have an adverse effect on water quality, but that may not be true in Hong Kong. Orthophosphate can cause bacterial growth in the pipes. We are more concerned -- for example, Legionnaires' or E.coli -- and then it will end up getting worse.

Also, if the pipes are okay, then why am I forced to ingest phosphate? Because that would be a use at the waterworks, not at the tap positions. In the UK, in the US, at the discharge point, they would add 1.5 ppm or 2.5 ppm of orthophosphate, and some people would complain, "You are forcing me to take phosphate but my pipes are okay". But in the UK and US, there are many lead pipes. Using this chemical is effective in reducing lead. But we don't have lead pipes in Hong Kong, so I agree that we shouldn't do it in Hong Kong.

Q. What's the problem with ingesting phosphate?

A. Phosphate is okay -- it would cause red tide. It's a nutrient. There would be environmental problems. If phosphate is in the water, it's a nutrient for algal bloom, red tide.

Q. That can happen to the water supply?

A. Well, yes. After you use the water with phosphate, it will go to the sewage treatment plant and then it would be discharged. All the water we consume ends up in the sewage plant, and then it will be discharged into the sea and it may cause algal bloom. It's not something that we should do lightly.

Q. You said that in the US and the UK, they would add this chemical in the waterworks. But are there other

options? Can we add this in the rooftop water tanks?

A. That is not orthophosphate. The Housing Department and the Water Supplies Department are considering other mitigation measures.

Q. You said Hong Kong is hotter; it may cause problems.

A. Yes.

Q. Have they conducted any tests to prove that there will really be problems?

A. No, not real experiments.

Q. They should have done some?

A. I know the HD and the WSD are looking into different measures.

Q. Well, you can ask someone to do it for you. You just pay them to do it.

CHAIRMAN: It's not as simple as that.

MR LEE: What other options are there?

A. For example, we can use an epoxy coating for the inside service of pipes, or silicate coating. That's for individual water supply systems. In Switzerland, they would add silicate product in the water tank, silicon-based chemicals. Then there would be a coating to the inside service, so that lead cannot be leached. That can be used for individual water supply systems. But that's only for the short term.

Q. In the long term, Hong Kong people would like to have

the problematic pipes replaced, so that wouldn't have to be done for the PRH, the affected estates?

A. Yes, the WSD and the Housing Department are considering this. I don't know what they will do.

Q. There are 11 affected estates, and it would give rise to a lot of resentment if you do this for some but not for others?

CHAIRMAN: I don't think that's a question that he can answer. Don't ask questions that the expert cannot really answer.

MR LEE: Again, this is one question which you may or may not be able to answer, but I have to ask, because if I don't raise it now, when it comes to our submission and I say it, someone will object.

CHAIRMAN: Such as?

MR LEE: A number of witnesses have said the methodology of water sampling would yield different purposes, different results. I am concerned that the government is mindful of saving costs.

CHAIRMAN: You can say it in your submission.

MR SHIEH: Or you should put this to government people.

MR LEE: I'm not just interested in answering him this question.

I can do it in submissions.

All right, thank you.

Re-examination by DR WONG

DR WONG: I have a question.

Dr Chan, you talked about an expert meeting on 27 August. Can you tell us the conclusions of that meeting?

A. We discussed a number of things: the WHO Guidelines and our sampling protocols, and also adding orthophosphate in water. We considered the existing criteria the best available ones, and the WSD should follow the WHO Guidelines, because the question is, if not WHO, then what guidelines can you follow? It's arbitrary. If you say, "It's not 10, it's 8", then people would say, "Why not 7?" The WHO is the most stringent guideline. So there's no dispute about adopting the WHO Guidelines.

We have also talked about the flushed samples, the stagnation test. We know there are advantages and disadvantages of different protocols. I have said I agree to the sampling method of the WSD, given the time and the purposes they have in mind.

I have already talked about orthophosphate. Orthophosphate may not be very useful in Hong Kong, and even if we were to do it, we need to conduct some tests, bearing in mind the environmental consequences.

So that's what happened at the meeting on 27 August.

Questioning by THE COMMISSIONERS

CHAIRMAN: I want to ask a second issue, about the 27 August meeting. I know what you have told us.

So the conclusion was that because of the time constraints faced by the WSD -- Doctor, what about the purpose? If the purpose is to test the quality of water supplied to housing estates, I can agree with you. Flushing for two to five minutes is the one set out in the sampling protocol by the WSD. WSD's sampling protocol sets a longer flushing time. If necessary, longer time for flushing is done. If the purpose is to test the quality of water supplied to that particular housing estate -- as you have said, sump tank, roof tank, and then there are other components -- it may take five minutes for the water to pass through all those components, depending on where you take the sample.

A. I don't quite get it.

CHAIRMAN: The sampling protocol requires that if you want to test "(in English) the quality of water as supplied", you need to flush for two to five minutes, "(in English) or longer if necessary", if I remember correctly.

All right. Then let's not talk about flushing it for even longer. The purpose is to test the quality of water as supplied. You are testing the quality of the water at the connection point, and the internal distribution system will not affect the quality of water

as supplied.

We have to go back to a previous point. You have to look at the purpose of doing the test. If the purpose is to know the general quality of water as supplied, you flush, by all means. But if the purpose is to investigate whether the internal distribution system is affected by lead, that's a separate question.

A. Yes.

CHAIRMAN: No further questions. Thank you, Dr Chan, for coming to the Commission to assist us. Thank you very much.

WITNESS: May I leave now?

CHAIRMAN: Yes. Thank you.

(The witness withdrew)

MR SHIEH: Chairman, it seems that we have called all the factual and expert witnesses for the Commission.

CHAIRMAN: All right. Let's set out the directions.

Housing Department, last time I asked you a question. The main contracts are all in English. There's no Chinese contract; right?

MR HO: Correct.

CHAIRMAN: Written submissions now. Apart from the written submissions from the Commission's counsel, for all other parties, please do it by 10 March 2016. It's 29 February today. Do it on or before 4 pm on 10 March,

for filing.

Commission counsel's final submission, by 4 pm on 14 March 2016, for filing.

MR SHIEH: Chairman --

CHAIRMAN: I will talk about the length. Commission's counsel submission, maximum 150 pages, A4 size, form 14, 1.5 spacing, margin minimum 1 inch.

And the same for all other submissions: I would say A4 size, form 14, 1.5 spacing, minimum margin 1 inch. It applies to all.

Housing Department and WSD, and Mr Lee, your coalition of the victims, 100 pages, maximum. I'm not asking you to give me 100 pages; I welcome more succinct submissions.

MR LEE: Yes, save paper.

CHAIRMAN: For other parties, 50 pages. Okay?

That would include everything, footnotes included, appendices and everything would be included, and footnotes. Please add footnotes only if they are absolutely necessary.

If you have legal authorities, please list your legal authorities at the beginning. Any case, who against who, citations, please use no more than five sentences to summarise the legal principle.

I don't think there are many legal principles.

I think it would be zero.

MR LEE: Five sentences can be very long.

CHAIRMAN: That's the maximum. If you can manage one sentence, fine.

Oral submissions: it will take place beginning on 15 March, for three days.

We begin with the WSD; you are going to have an hour and a half. Then Ho Biu Kee, 45 minutes. Then Golden Day, 45 minutes, and Paul Y, 45 minutes.

Day 2 -- the 16th, isn't it? -- Shui On, 45 minutes; China State, 45 minutes; Yau Lee, Ming Hop and Ng Hak Ming together, 45 minutes. The coalition of victims, I allow you one hour. That should be fine, shouldn't it? It's okay, isn't it?

MR LEE: (Nodded head).

CHAIRMAN: 17 March, Housing Department, an hour and a half; the Commission, three hours, because you have so much to say.

Prosperity? I don't think so. I don't think we need for any submission.

MR SHIEH: Lam Tak Sum, Mok Hoi Kwong and Siu Kin Wong?

CHAIRMAN: If that's the case, where do they fit in?

Day 1 -- we can shift Shui On over to Day 1. WSD, an hour and a half; and then Ho Biu Kee, 45 minutes; Golden Day 45 minutes; that's an hour and a half between

them; Paul Y and Shui On, I think they can come together.

MR SHIEH: All right, we shift Shui On to Day 1?

CHAIRMAN: Right, Shui On to Day 1. Then China State; Yau Lee, Ming Hop, Ng Hak Ming; Siu Kin Wong, Mok Hoi Kwong and Lam Tak Sum.

MR SHIEH: Lam Tak Sum?

CHAIRMAN: Yes, we can fit him in.

So, on Day 2, China State, Yau Lee, Siu Kin Wong, Mok Hoi Kwong, Lam Tak Sum, each 45 minutes, and the coalition, one hour.

I presume Mr Siu or Mr Mok may not need as long as 45 minutes, nor would Mr Lam, if they speak. They probably won't speak anyway.

So, on the 17th, Day 3, Housing Department and the Commission.

MR SHIEH: Day 3, that should be a buffer.

CHAIRMAN: Yes.

MR LEE: Chairman, the 17th and 18th, I have to attend Court of Appeal. Can I go first?

CHAIRMAN: You want to take the floor on the 16th? Yes, fine.

MR LEE: What about spilling over?

CHAIRMAN: Yes. You can go first.

MR LI: Chairman --

CHAIRMAN: Yes.

MR LI: -- Mr Lee said that he has a Court of Appeal case. In fact, we do have Court of Appeal cases. On the 17th, I am okay, but on the 16th we have a CFA case.

CHAIRMAN: No, I can't accommodate that. Well, you can swap with Paul Y, if you like.

MR LI: What about the afternoon of the 16th?

CHAIRMAN: Fine. That should be fine.

MR LI: The appeal case will be over in the morning.

CHAIRMAN: Yes. Yau Lee and Ming Hop for the afternoon on Day 2, that should be fine.

Let's do it like this. In the 16th, in the morning, the first one will be Mr Lee, and then Shui On -- I beg your pardon, Shui On has been shifted up -- China State. Then Siu Kin Wong, Mok Hoi Kwong and Lam Tak Sum, if they speak at all. Then, in the afternoon, we have Yau Lee, Ming Hop and Ng Hak Ming. Siu Kin Wong can overflow into the afternoon.

MR LEE: Will it be 10.00 to 4.30?

CHAIRMAN: You want to make it earlier?

MR LEE: No, I don't think so.

CHAIRMAN: I can make it earlier. Anyone wants to do it earlier?

MR LEE: It should be fine by me, but I don't see the need.

CHAIRMAN: All right. Let's stick with 10.00.

MR SHIEH: Cheung Tat Yam will go with Golden Day?

CHAIRMAN: Yes.

Anything else?

MR LI: For the avoidance of doubt, I represent three parties. So they will be regarded as one party or would there be any leeway?

CHAIRMAN: What difference does it make?

MR LI: Yau Lee and Ming Hop, there will be more to say. I am saying that I would foresee an overrun.

CHAIRMAN: 50 pages, would that be enough?

MR LI: We have the interim submission.

CHAIRMAN: (Chinese spoken).

MR SHIEH: (Chinese spoken) ... Yau Lee, as main contractor ... (Chinese spoken).

CHAIRMAN: For those you have already touched on, you don't have to touch on. We are talking about extra. For those that are already there, don't have to cover it.

MR LEE: Chairman, when filing this, will we copy this to other parties?

CHAIRMAN: You don't have to. You don't have to copy this to other parties. File this to me in the correct form, 4pm on 10 March. You file this to my secretary. We will collect everything and at the same time we will release them all together, so you can't copy from each other.

Any more questions? If not, or if you do have any questions, please write in with your questions to the secretary. If you have anything in particular for direction, please do so. Otherwise, we will meet again on 15 March.

Thank you very much.

(4.40 pm)

(The hearing adjourned until 10.00 am
on Tuesday, 15 March 2016)

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