2016年2月5日

上午9時42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、陳樂信大律師及羅頌明大律師，由律政司延聘，代表水務署署長

李柱銘資深大律師及譚俊傑大律師，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

何沛謙資深大律師及殷志明大律師，由羅夏信律師事務所延聘，代表香港房屋委員會

Mr Ian Pennicott 資深大律師及林定韻大律師，由孖士打律師行延聘，代表中國建築工程（香港）有限公司

黃佩琪大律師及杜慧燃大律師，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

孖士打律師行陳韻華律師，代表瑞安承建有限公司

水務署第二證人：陳健民（水務署（總水務化驗師））宣誓繼續作供
石先生繼續盤問

問：早晨，陳生。

答：早晨。

問：尋日我哋個 adjourn，即係休息之前，我就畀咗你睇一份第五次 task force 會議裏面 table 嘅一份文件，就係嗰個食水質量嗰個 Advisory Committee，嗰個委員會嘅一個 paper，裏面就有一啲嘅提議同埋推薦一啲 recommendation 嘅。咁你尋日就話你就冇即係咩嘢記憶，就當時曾經 table 過或者討論過呢份嘢。咁而家即係隔

咗一晚，你有冇諗過或者即係回憶番啲任何關於嗰份文件嘅嘢呢？

答：我返去再睇番我嗰陣時 take 啲紀錄，係冇討論過嘅，完全。

問：冇討論過？

答：佢淨係 table 咗，就冇討論過。

問：係。Table 咗，好多時候我哋知道，政府嗰啲 committee 嘅會議，大家 table 咗一份嘢，可能大家冇逐頁撥，或者辯論咁樣。但係咁點呀?即係就咁 table 咗，大家即係叫做 officially tabled for the record，咁就完嘞？

答：係呀，當時我哋主要嘅目的就係研究嗰個 task force 做嗰啲 testing 嗰啲 data,即係嗰啲 stagnation test 或者係 leaching test 嗰啲 data,就冇去討論呢一份 paper 裏面嗰啲內容或者建議。

問：好嘞，咁事實上就冇逐句、逐句咁樣去睇或者去嚟喇，咁就擺咗出嚟。咁但係我哋就有留意到，嗰個委員會，Advisory Committee on Water Resources and Quality of Water Supplies。你聽過呢個委員會㗎喇？

答：係。

問：其實亦都有好長嘅歷史㗎嘞，即係由千禧年左右已經成立，一路就經歷過改過名，咁又盛喇。水務署係有代表喺呢個委員會度嘅？

答：係

問：其實好高層嘅代表嚟嘅？

答：署長係副主席。

問：係呀，係。

答：咁就其他個委員會嘅成員主要係嚟自一啲學術界、環保組織、其他政府部門嘅官員。

問：水務署長就係副主席。

答：係。

問：咁我哋就冇即係相關嘅紀錄睇到話呢份 Advisory Committee 嗰個 proposed mitigation 嗰個 recommendation 係邊個草擬嘅，盛喇，咁但係就係由呢個 Advisory Committee 出嚟喇。我哋...（聽不清）見到呢度。

答：我就唔係好清楚呢一份嘢係咪--因為我哋嗰個 task group 個 member，其中有一位就係水諮會嘅主席嚟嘅，會唔會係佢自己本人寫咗份嘢，就 submit 畀水務署，而家我就唔係...

問：水諮會嘅主席就應該係陳漢輝先生。

答：陳漢輝博士。

問：陳漢輝博士。

答：嗄，嗄。

問：咁就所以--即係我正想講就話，因為我哋唔知道呢一份水諮會嗰個 paper，呢個 recommendation 嗰個 origin，喺水諮會裏面有冇傾過。咁但係只不過我好奇，就話水諮會嘅副主席就正正就係水務署長本人咁樣。咁即係份嘢就係用個委員會嘅名義出嚟。咁即係我又好有興趣知道即係--你哋係唔知道水務署長喺呢個 paper 裏面扮演個咩嘢角色嘅，係咪？即係佢不情願地被代表呢個，整咗呢份嘢出嚟，用委員會嘅名，定係點呢？

答：呢個我真係唔係好清楚。可能係陳博士佢自己 voluntary，自己見到一件鉛水事件發生咗之後，咁佢自己做咗啲 literature search 或者係研究，寫咗份 paper。咁因為佢以主席嗰個身份，即係喺嗰個 task group 裏面，佢自己 produce 咗份 paper 畀 task group，話考慮咁樣。

問：就用咗委員會個--用咗水諮會嘅名義？

答：呢個我係唔係好清楚呀，呢個。呢個我唔係好清楚。

問：校委會我就知啫，但係水諮會可以咁樣？

答：...（聽不清）

問：Okay。咁即係總之你係冇第一手嘅資料知道呢一份嘅文件嘅來龍去脈？

答：係。

問：你亦都冇一個 first-hand 嘅 recollection？

答：冇。

問：即係記得佢裏面係有仔細咁樣討論過嘅？

答：冇。我可以肯定冇討論過。

問：Okay，好。裏面嘅內容，我哋尋日都 go through 過，佢就係 recommend 就係水務署係應該去教育公眾，即係驗水嘅正確嘅步驟，咁樣，咁樣。但係佢就提議，佢 recommend，就係 pre-flush 同埋 post-flush sample 都要 take。如果我問你，你同唔同意，咁你就會點講呢？

答：如果你話--喺我嘅觀點嚟睇，我就係唔同意嘅。我就需要你淨係攞一個 flush sample 啫，你已經係代表你日常飲用嘅水嘅水質嚟㗎嘞。

問：我--得，我--繼續，繼續。

答：你 pre-flush 係冇乜特別義思嘅。

問：得，我明白，因為你講過。不過我為求公允，咁我就 put 番畀你，咁就即係你而家 for the record，你就唔同意佢裏面講嘅嘢？

答：係。

問：得，好。我哋就知道你尋晚返去就做咗少少嘅資料嘅搜集，就係因為我哋尋日就問開你關於英國，即係 United Kingdom 方面嘅 practice。你就畀咗一啲背景我哋。你就話其實你自己就額外喺你 DWI 嗰個電郵來往以外，其實你係做咗一啲嘅資料搜集嘅，就係關於即係英國嗰個 requirement 嘅背景，就係有關原來佢哋嗰個--有啲 measure 係 to reduce plumbosolvency，有個咁嘅背景嘅。麻煩你可唔可以講一講--我知道你有份文件提交咗。

答：係，呢一份 paper 就係 publish 喺 Journal of Water and Health 10.3，2012 年，係 IWA Publishing 2012 嘅。咁呢一篇 paper 係講 UK 嘅 experience in the monitoring and control of lead in drinking water。咁佢就 quote 到入面嗰啲嘢，就佢點樣用我哋叫做 RDT sampling 嘅方法，咁去攞水辦，and then 就作為一個我哋叫做 zonal monitoring，即係 monitor

嗰個 water supply zone 裏面嗰個含鉛嗰個情況係點嘅。咁 and then 佢亦都用呢個咁嘅 sample，呢啲 results 去 evaluate 佢哋嗰個 orthophosphate 嘅 dosing 究竟係咪 effective。

問：佢講就話--我 flip through 咗好快咁樣睇過喇。我唔知道有冇 bundle 嘅 reference，但係如果你睇番嗰個 journal 裏面嘅 page reference，裏面嘅第 338 頁。即係我喺有限嘅時間裏面好快咁樣就睇咗。338 頁，佢左手面個 column，佢就喺度講緊即係一啲英國嘅歷史背景，即係英國嗰方面食水含鉛嘅因由。咁譬如話"most commonly lead is absent from treated waters at sources"。即係喺佢哋濾水廠又好，或者個水源方面，就唔會有啲--即係好多嘅鉛份嘅。其實佢就基本上--即係長話短說，就係主要就係嗰啲 pipework systems，即係嗰啲喉管--喉管就唔係全程都係用鉛去製造嘅，因為佢嗰度後來有講到就係--有一樣可能係喇，即係應該係英國嗰啲...

答：Communication pipes。

問：即係總之--唔係所有由水源到到屋企個 tap 嘅喉管都係用鉛造嘅，不過當中可能有一個 segment 係用鉛造嘅，對嘛？

答：我相信佢係咁嘅意思。

問：係。跟住就講到--你睇下右手面，就上角，就係"Lead pipes are considered to be the major source of lead in drinking water in the UK..."。因為歷史嘅背景，係咪？

答：唔。

問：佢哋講到就係格拉斯哥，或者好多時候就直情係--即係好多地方都係直情係用鉛嘅水喉。香港唔同喇，香港一早就--三十年代就已經係唔畀用鉛造水喉，對嘛？

答：係。

問：佢繼續講，佢就話世衛有個 booklet。喺右手面，第一段嗰度，佢話世衛有一個 booklet，就係有關 Childhood Lead Poisoning 嘅。佢就話世衛有一個相反嘅意見，就話一般主要嘅鉛嘅來源就係 solder containing lead。即係世衛曾經提議過就話其實主要嘅鉛嘅來源就係含鉛嘅焊料，不過就有好多即係專家就眾說紛紜，「唔係其實啲鉛喺邊度嚟嘅呢？」我哋唔好即係糾纏喺呢度，因為即係個

個地方都唔同。

但係佢跟住有一度就話"While the removal of all lead pipes is the ultimate goal, the very high cost (... 10 billion pounds in the UK), problems with split ownership, likely long timescales and the scale of disruption involved prompted a national strategy for corrective action by water treatment measures as the logical first step to take. However, corrective water treatment is specific to individual water supply systems, as a function of water quality..."，諸如此類。

即係基本上就係話由於佢哋嘅歷史嘅問題，就你要全部管換晒就有好多嘅困難嘅，咁所以就不如喺啲 water treatment 嗰度落手嘞。咁呢個係佢嘅講法。咁所以就係引致到就係即係佢哋會用一啲嘅化學嘅物品就擺落啲水度就係去降低個 plumbosolvency。呢個係英國嘅做法。我相信都係美國嗰啲地方嘅做法，對嘛？

答：係。

問：即係美國個 Lead and Copper Rules 個背景都係咁樣，...

答：係。

問：...對嘛？嗄。

好嘞，我哋繼續睇落去，"Surveys based on random daytime sampling..."。咁呢度就係講到就係即係為求去 test 究竟嗰個 plumbosolvency 嗰個 reduce 嗰個 efficiency，英國一度就係曾經用過呢個 RDT 嘅方法，係咪？呢個就係嗰個 RDT 個 relevancy。

答：佢講番個背景，佢本來話 first draw 嘅，但係好似 DWI 講，佢 first draw 就好--即係唔係 widely practised，因為要嗰個 consumer 一早起身，咩嘢都唔好做，之前又唔可以用水。第一次就要用嗰啲頭啖水。咁而家佢 RDT 就係喺 office hour，working day 嘅時候，你走去嗰個客嗰個 property，個 consumer tap，without pre-flushing，就攞一個辦。嗰個就叫做 RDT 嘅 sampling。

問：但係呢個 RDT 嘅 sampling，喺英國去做，呢個都唔係一個 pre-flush sample 嚟個喎，因為純粹 random，話到明 random 吖嘛？

答：係。

問：你求其踩入去，佢真係可能真係 stagnate 咗好耐㗎嘛，你唔知㗎嘛，總之呢個就係 random？

答：係。

問：但係呢個同 DWI 畀你嗰個答覆，2015 年 7 月嗰個答覆，e-mail，佢話 must be first draw。咁嗰個係法例要求，定係點嘅呢，其實係？

答：法例，佢英國嗰個(Water Quality) Regulations 2000，as amended，咁佢係講係 first draw 嘅，但係 first draw 嘅 definition 就唔係 RDT 嚟嘅。

問：係囉。

答：嗄。

問：即係所以其實法例就係寫"must"，一定要 first draw 嘅，所以佢嗰個電郵覆你都係用到"must"呢個字，咁但係就即係佢哋就係權宜即係 first draw 可能有好多因素，令到佢哋都控制唔到 first draw 嘅質量，咁所以佢哋就即係法律以外嘅一啲方法，就不如用 RDT 喇，咁樣？

答：所以你見佢嘅電郵覆我呢，佢話好多水公司都係 prefer 用--即係去到先至攞嘅，其實就。

問：呢個 literature 其實基本上就係講到 first draw 嘅一啲 limitation，即係--呢個冇講嘅，呢個。呢個淨係講佢哋一般嘅做法，就用 RDT 咁樣。

答：嗄。

問：但係呢個其實係冇 support 到話係用 fully flushed 個喎，其實？呢個其實你只不過係解釋你嘅背景，即係去了解 DWI 畀你個電郵㗎咋喎，對嘛？

答：嗄。亦都我想解釋，佢做 RDT 嘅目的其實係想做一個 zonal monitoring，想知道嗰個供水區裏面嗰個 lead concentration，喺客嗰個 tap 嗰度係幾多。

問：但係呢個就 random，唔係一個 best-case scenario，亦都唔係一個 worst-case scenario，係一個 random 嘅 sample？

答：係 random sample。好似我琴日講，呢個係屬於 audio monitoring 嘅一部分嚟嘅。

主席：係喇，即係一樣喇。即係譬如如果我哋用喺啟晴邨嗰度，因為任何時間都有人起身飲水㗎嘛，咁即係「啊，我朝頭早一早起身嘅，就一開就攞水嘞。」咁跟住，啊，呢個人可能做看更嘅，夜晚，5 點鐘先至起身嘅，咁佢間屋嗰度嗰啲水就已經係由--即係總之呢啲我完全明白個喎，咁但係就同你尋日所講話一定要 flush，...

石先生：同係咪一定要 fully flushed 就冇關係，係。

主席：...係冇關係個喎，完全。

石先生：呢個係我嘅問題，就係。

主席：係囉。

石先生：即係可能解到第二啲嘢，但係就唔係 support 要 fully flushed，呢個係。

主席：係喇，完全冇關係個喎。

石先生：係我 put 畀個證人嘅，就係。

答：我琴日解釋咗，flushed 嘅 sample 個目的就唔係好似呢一個做 zonal monitoring。Flushed sample 係 for compliance monitoring。

主席：係呀，我明呀，明。

答：即即係個目的大家都唔同。而你亦都要了解，即係嗰個--你琴日都講過，嗰個水嘅含鉛量同個 stagnation time 係有好密切嘅關係。

主席：明白吖，係，明白。

石先生：係，明白。

答：即係如果你嗰個 RDT sample，你唔知道你攞個辦嗰個 tap 之前有冇用過水，好似主席講，有時嗰個看更幾日冇用水嘅，有啲就你啱啱...

問：5點鐘開都可能係 stagnation...（聽不清）

答：係嘞，咁變咗你嗰個 sample 嗰個 lead concentration 就好 variable 嘅。即係你睇唔到嗰個 zonal 嗰個 monitoring 嗰個 trend 或者乜嘢。但係如果你--即係佢點解要 advocate 呢一個 RT sampling 呢，就係有一個 basis 就係你嗰個 sufficient 嘅 RDT 嘅 sampling 係可以就係 eliminate 個 difference，即係嗰個 stagnation 嘅 difference。有啲人咁樣做，有啲人咁樣做，and then 攞到嗰個 overall 嘅 lead concentration，喺個 water supply zone。

主席：唔係，我哋明，我哋明呀，呢個係譬如，即係好簡單，我今日去啟晴邨，我想知道啟晴邨究竟啲水質而家 o 唔 okay 嘅，咁我咪行入去求其一個戶口嗰度咪開你嚟攞囉，住戶嗰度。

答：係。

問：係咪？唔 flush，咪就咁攞，因為幾時都有人開水喉㗎嘛。即係咁樣樣之嘛。咁呢個係一個 general assessment。你所講嘅 auditing，我冇問題。

繼續。

問：呢個即係你解釋咗即係其實基本上呢一份嘅文件就--其實你 rely on 呢份文件，就唔係真係直接係要嚟支持一個要 fully flushed 或者...

答：唔係。

問：...一個 flushed sample，你只不過係要嚟解釋英國嗰個--嗰個電郵嗰個 communication，佢嘅...

答：唔係...

問：...regulatory background。

答：其實我係補充我琴日講過佢英國嗰個 RDT sampling，佢嘅目的係想愛嚟 optimise 佢嗰個 corrosion control 嗰個...

主席：係吖，我明喇。

問：我明，係。

答：咁完全唔係攞嚟話 support 我自己個 sampling 或者係支持佢 RDT 嘅 sampling 嘅

問：得，明白。我最後一個問題，就係關於 Lead and Copper Rule，美國嘅。美國 Lead and Copper Rule 嘅文件就係話要 first draw 㗎。

答：係。

問：即係你嘅記憶都係。你畀睇一睇，提醒番你，就係你嘅證人供詞，一個副件，C19.6。C19.6 裏面嘅第 14587 頁，14587。睇番呢份文件嘅開頭，就係 14582 嘅。14582 就係呢份文件嘅開頭嗰個 cover，就係美國 Environmental Protection Agency 嘅 Lead and Cooper Rule，Monitoring and Reporting Guidance for Public Water Systems，你見到。

咁你睇番 14587，個 heading "G"，就係"How Do I Collect Lead and Copper Tap Water Samples?"

咁你見到第二個 bullet point，"Always collect a first-draw sample from a tap where the water has stood in the pipes for at least six hours (... no flushing, showing, etc)." 咁你見到喇。

呢個就係嗰個所謂美國 Lead and Copper Rule first-draw 嗰個來源，對嘛？

答：係。

問：後面就有個即係解釋，你睇番 14590。呢個就係你另外一份嘅諗辭附件。呢度就係講緊美國嗰個 action level 嗰個來源。

答：係。

問：因為任何一個地方抽水，咁都要有佢抽水嘅背景，都要知道究竟抽咗水要嚟做乜，咁呢個就係解釋美國 EPA 佢哋嗰個 regulatory 嘅背景，對嘛？

答：呢個唔係 regulatory，因為喺美國佢個 lead 係唔擺入去個 National Primary Water Quality Regulation 裏面嘅。

問：佢要 EPA 自己 set 一個 action level？

答：唔係，佢呢個 lead 呢，如果佢係 legally enforceable 嘅 water quality standard，佢會用一個叫做 maximum contaminant level，MCL 嘅--即係個 value，去 represent 呢個係 legally enforceable 嘅。咁佢 lead 佢就係一個佢叫做 TT，treatment technique，咁佢 set 嗰個 action level 就係 15 個 micrograms per liter。佢就唔係 legally 嘅。

問：得。你睇睇 14590。14590，呢個就係"Consumer Factsheet on Lead in Drinking Water"，係 EPA 出嘅。你睇番就第一個 heading，"What is Lead and how is it used?"

佢就話"Lead is a metal found in natural deposits as ores containing other elements. It is sometimes used ..." --呢個就即係天然即係環境裏面嘅一啲鉛。

第二句，"It is sometimes used in household plumbing materials or in water service lines used to bring water

from the main to the home."

呢個即係有啲用鉛做嘅水管，有時。

"Why is Lead being regulated?"

佢就話"In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, ..."

呢個就係即係唔係有法律嘅執行到嘅一個 level。

"... based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for lead has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below."

即係理想嘅情況就係應該有嘅。

答：係。

問：即係現實生活就冇理想嘅，咁話即係越低越好喇。

答：係。

問：就冇一個數值嘅。

答：係。

問：咁其實呢一個就係同所謂世衞嗰個冇 threshold 係差唔多嘅理念嘅，對嘛？

答：唔係好相似嘞，呢個。

問：唔係好相似？

答:因為佢 MCLG 係講佢嗰個最終目的,嗰個叫做 maximum contaminant level goal，即係話最好就零喇。但係如果唔係零嘅時候，我諗好

似你講嘞，就係咪...

問：越低越好？

答：...越低越好嘞。

問：咁其實世衞嗰個都差唔多，即係叫做 no threshold 喇，嗰個字眼亦都唔同喇。

答：係，啱。

問：No threshold，即係我哋計唔到，或者我哋用科學嘅方法計唔到。咁科學嘅方法計唔到，你有個 unknown，咁實際上係即係越低越好，因為你唔會搏㗎嘛，對嘛？

答：嗄。

問：即係用番常人嘅諗法嚟講，就話你計唔到一個最安全嘅辦法，咁你惟有就係咁咪越低越好，即係冇死喇。

答：嗄。

問：係咪咁講？可唔可以咁講呢，大致上？

答：大致上可以係，因為佢 goal 嚟㗎嘛，呢個係--即係未必 achievable，但係佢有一個 goal，佢係想零嘅。

問：係，係。咁世衞嗰個就叫做 no threshold，佢唔係叫做 goal，咁但係其實大家可能殊路同歸，都係。世衞計唔到一個數值出嚟叫做係 threshold 嘅，咁常人嚟講就話...

答：我諗...

問：...「你計唔到，咁我就」--即係為求保險，梗係越低越好喇，係咪？

答：個 concept 有少少唔同囉。呢個 goal 係即係話佢最終目標係咁，係要--想希望零嘅。咁而世衞嗰個 no threshold，即係話「喂，我搵唔到一個即係安全嘅值呀，above which 係 harmful，below which 就係 not harmful。」即係佢根本冇一個咁嘅數值去 demonstrate，「啊，我 below 呢個 threshold 呢就冇問題嘅。」

問：我哋繼續睇落去。佢話"Since lead contamination generally

occurs from corrosion of household lead pipes, it cannot be directly detected or removed by the water system. Instead, EPA is requiring water systems to control the corrosiveness of their water if the level of lead at home taps exceeds an Action Level."

咁其實嗰個講法就同英國差唔多，就係話「由於你啲食水裏面嘅鉛就係由啲喉裏面釋出嘅。」咁佢又即係冇英國講到咁白，就係話「哎吔，要換，又好啲錢喇。」基本上佢就話「你整唔走嘅。」即係佢假設你唔會換晒啲喉嘅。可唔可以咁講呀？

答：都...

問：「所以你唔會換晒啲喉，就惟有 treat 啲 water 喇。」

答：係。

問：其實結果都係同英國差唔多，就係話「我唔會同你換晒啲喉㗎嘞，你就扰啲化學物品落去，就 reduce 個 corrosiveness」，即係 reduce 個 plumbosolvency？

答：係。

問：係咪？

答：其實佢亦都唔知道個 scale of problem 有幾大，所以佢即係係用呢一個咁嘅方法去抽驗嗰啲唔同嘅 properties 嗰啲 lead 嘅 content。

問：係，好。跟住"The action level for lead has been set at 15 parts per ..." --呢個"(ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to control this contaminant should it occur in drinking water at their customers home taps."

咁呢一個其實即係講就話，嗱，ideally 我哋想將佢撳到零，但係即係呢個世界係冇咁理想嘅，我哋用一啲即係減少 plumbosolvency 嘅方法，但係以現今實際嗰個科技能夠做到呢，如果你一條用鉛嘅喉，你撳到盡呢，你 reasonably practicable

就係 15 個 parts per billion。即係其實 15 micrograms。

答：係，15 個 micrograms per litre，即係 ppb。

問：係。唔同嘅地方整出嚟嘅數值唔同。WHO 就叫你 10 喇。咁美國就係計就話「我哋就係計 15 喇。」總之有個數值喇。咁但係其實 WHO 嗰個 10，你睇番即係嗰個 derivation，佢後來 2011 年都係話基於嗰個實際上 achieve 到嗰個數值㗎嘛，係咪？

答：我琴日講咗佢本身嘅歷史嘅 of 嗰個 derivation...

問：佢開始就係講 health 喇。

答：係，係呀。

問：但係佢 2011 年由於冇咗個 threshold，佢就係用咗就話「我哋 keep 番 10，但係就唔係因為 health 嘞，因為 health 嗰個 withdraw 咗。」佢就係 base on 實際做唔做到吖嘛，...（聽不清）就係。

答：但係佢原本本身個數值都係由 health-based 嗰個 DWI，即係雖然 withdraw 咗，嗰度 derive 嚟㗎嘛，係咪？佢只不過而家因為--佢點解 designate 佢係一個 provisional 呢，就因為--好似呢度講嘞，given 嗰個 technology 同埋佢嗰個 analytical achievability，你最低能夠 achieve 都係 10。

問：咁所以其實--即係講番轉頭，世衞嗰個其實真係冇辦法中嘅辦法。之前講開 10，咁而家 10 嗰個已經唔再係因為健康理由，科技上--即係科學上用健康理由嘅 10，但係冇辦法中嘅辦法，「之前用開 10，我而家 keep 住 10 喇」，唔係因為--十分安全嘅，只不過係做到最盡就係 10。

答：我諗唔可以咁一概而論，因為你見下其他嘅國家，譬如你歐盟。澳洲最新嗰個 guidelines on drinking water quality，2015 年都仍然係用番 10。佢亦都係用番嗰個 same derivation basis 嘅去即係 establish 佢澳洲嗰個 lead in drinking water 嗰個 guideline values 嘅。除此之外，你譬如日本、中國、紐西蘭，佢仍然冚嘢唅都係用緊呢個 health-based 嘅 10 個 micrograms per litre 呢個數值。

主席：唔係，咁佢澳洲可能用 10，係因為佢跟世衛嘅。實際上佢可以話 1 或者 0.01 嘅，因為你都可以做到 0.01 喇。

答：唔係，我睇澳洲嗰個 derivation，佢有少少唔同世衛嘅，又佢。佢係 assume 一個細路仔--如果我冇記錯吓，就 13 公斤重，每日飲 1 公升，咁...

主席：不過我哋唔好講澳洲喇，因為香港跟世衛吖嘛。

答：嗄。

問：我其實同你講咁多呢，其實我想帶出一個點，我想 put 畀你，就係其實美國呢個 Lead and Copper Rule，佢嗰個來源，佢 ideally 就係 0，不過實際上佢即係叫做局住實際上佢要用 15，咁佢個 first draw 就係喺呢個背景嗰度出嚟嘅，其實同世衛嗰個差唔多㗎咋喎。

答：唔同喎。世衛嗰個係到而家為止我哋仍然認為佢係一個 health-based 嘅 target。咁你美國嗰個係 action level，係你如果 exceed --呢個話明 action level，就係即係話如果你 exceed 呢個 limit 呢，你要做一啲 corrective action，...

問：要做嘢嘞，係。

答：...就完全個 set-up 嘅 basis 唔同世衛嗰個 guideline value 嘅 set-up 嘅 basis 嘅。

問：但係即係以我哋外人嚟睇，大家都係你 test 啲水，過咗某個 level 就要做嘢嘞。做嘢其中一樣就係可能要啲喉管做啲嘢或者教育個公眾。咁大家都係 trigger 有啲嘢，即係覺得抽咗呢個水出嚟有問題，就要開始做啲嘢，咁都係靠 first draw sample 發現到嘅問題，trigger 咗要所謂做啲嘢啫。

答：我亦都要即係重申，美國嗰個 first-draw sample，佢係 assess 佢嗰個 effectiveness of 嗰個 corrosion control，assess 嗰個 effectiveness of corrosion control 同埋嗰個 treatment，就唔係好似我哋咁話抽咗個水辦，咁就話去驗血或者係去做其他嘅 public health 嘅 measures。佢唔係嘅。同埋你要睇睇佢成個成套 programme，就係攞啲辦，譬如你好似大--超過十萬人，就有個 standard monitoring，咁就一年又要攞一百個。咁

呢一百個當中有 50 個 per cent 以上一定係要嚟自一啲有鉛喉嘅 buildings。如果冇嘅話呢，唔夠嘅話呢，佢要再返去攞嘅。佢攞完晒之後，做晒嗰啲辦之後，佢就唔係話個個辦要合格，你先至叫做合格喎。佢係 10 per cent 嗰啲辦，個 tap sample exceed 佢嗰個 action level，佢先要 trigger 嗰個 corrective action，otherwise，係冇需要做嘢個喎。

問：我知道有啲地方係用 90，有啲地方用 95，咁但係即係個問題就話你--我可以即係比較直接咁講喇，就係即係 draw 咗一個我可以講好刁鑽嘅一個分別點，distinction，就係抽水出嚟作為 corrosive control 嘅目的吖，定係關於 health-based 嘅目的？但係 corrosive control 唔係為咗控制侵蝕而--唔係為控制而控制㗎嘛。你為咗控制個侵蝕，都係因為侵蝕咗，會有 health implication 嘅。你睇番 consumer factsheet on lead in drinking water，佢之所以要 control 個 corrosiveness，就係因為如果你嗰個 corrosiveness level 係控制唔好，會入咗去水度，最終都係因為 health 之嘛。咁所以即係呢個所謂，啊，呢個美國個 Lead and Copper Rule 係為咗控制 corrosiveness，就唔係好關 health 事，呢個係一個唔存在嘅 distinction 嚟嘅。你控制 corrosiveness，歸根究底都係因為你控制唔到，影響健康之嘛。

答：我或者講一講佢嘅背景喇。佢控制--即係如果佢 trigger 咗嗰個即係 action level，要做一啲 corrective action，佢第一樣嘢要做就係要睇下需唔需要再 optimise 佢嗰個 water treatment，即係 orthophosphate 係咪要再加，喺嗰個供水區...

主席：呢個係 means to an end 之嘛。

答：嗄。因為佢要...

主席：佢 end 就係 health 吖嘛。

答：...再加番啲 orthophosphate，跟住就要教育啲公-- initiate 嗰啲 public education programme，就教育嗰啲 consumer 就沖洗--即係沖完水你先至好用嚟飲。

主席：係呀。

答：跟住就要做 source water monitoring 嘞，就即係要睇下啲水，

即係係咪即係 corrosiveness 有降低到喇。跟住最後嗰招就係 service pipe replacement。

黎先生：係吖。

答：但係佢冇話即係你--跟住話你要即刻去即係 undertake 一啲--即係佢唔會 undertake 一啲 public health measures。

主席：唔係，你唔知啫，係嘥？

答：唔係，我見唔到佢有講話要...

主席：佢有寫啫，係喇。

答：嗄。

主席：咁呢啲--但係你頭先所講嗰啲全部都係個 means to an end 吖嘛，health basis 吖嘛。

問：即係你唔係為咗--你...

主席：Exactly。

問：...control corrosiveness，唔係因為佢話外觀唔靚，又話盛，你 control corrosiveness，因為入鉛，即係影響健康之嘛。如果冇咗健康呢樣嘢嘅話，佢裏面點樣 corrode，你都...

答：唔。

問：...唔會擔心。

主席：唔係，即係你會唔會太過 narrow-minded 呢，睇呢啲嘢嘅時候？

石先生：即係太過刁鑽呀，我頭先所講嘅。

答：唔係，我哋係...

主席：太狹窄咁去睇喇，唔好話刁鑽嘞。

石先生：狹窄，狹窄，係，狹窄。

主席：狹窄啲，係。

答：唔係，我哋睇佢嗰個 Lead and Copper Rule 就係喺呢個 prospective 去睇，即係佢喺咩嘢時候 take action。如果唔係，佢就唔會叫做 action level，就叫做即係 MCL health-based 嘅 level㗎嘞。

問：你睇番最底嗰度吖，諗，14590，"How will I know if Lead is in my drinking water?"

咁佢話"If the levels of lead exceed the action level, the system must notify the public via newspapers, radio, TV and other means. Customers will be informed of what they can do at home to lower their exposure to lead. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health."

咁所以即係歸根究底嗰個目的都係去即係防止對呢個公眾健康有影響。即係有啲地方緊張啲嘅，佢會強制大家驗血。有啲地方佢覺得「我淨係話畀你聽有 health risk，你自己走去--即係自求多福喇，你自己。政府唔幫你安排呀，你自己走去搵人驗喇。」咁但係即係其實呢個即係講嚟講去，即係我再最後問多一次，就係話即係 control corrosiveness 唔係為 control 而 control 嘅，始終

係有個 health base 喺度。咁即係如果你講話同 health 有關，咁美國呢個 Lead and Copper Rule 歸根究底都係同健康有關啫，咁所以佢用 first-draw sample，咁即係表示其實詼 first-draw --即係你唔可以話，啊，corrosive control 就用 first-draw，健康就唔關 first-draw 事，唔可以咁狹窄？

答：我始--即係我始終認為呢佢嗰個 action level 呢，佢因為係 for 一個 trigger for corrective action，而佢嘅目的就係 corrosive control。And then 可能 in the end 係 lead to the protection of public health，但係佢嗰個 action level，佢 so far 到而家都唔係 health-based，唔係 health-based 嘅 action level，as compared with 世衞，佢而家 so far 亦都冇話呢個唔係 health-based，只不過話冇 threshold，係咪先？佢嘅 derivation history 仍然係 health-based。

問：唔。得，我諗我哋都--用英文講，叫做好 exhaustively，即係我諗呢個已經係講咗好多次，呢個我都唔會再好譖贅地再重申咁樣 put 多一次。

主席：唔需要再問，係，係。

石先生：主席，我冇其他問題。

主席：唔該。有邊幾位想問問題嘅舉手先。三個，得。

MR PENNICOTT 盤問

問：Mr Chan, good morning. I represent China State. I'm afraid I have to ask my questions in English. If you wish to put the headphones, please do so, but please give your answers in Cantonese. I have a few factual questions I want to ask you about, then I've got a few questions about the sampling and testing, the testing that was done on the Kai Ching Estate, and then a few questions about the task force report.

主席：I think you have to speak up a little bit.

答：Yes, I can't hear.

問：I'm sorry. Mr Chan, I won't repeat what I said just a moment ago. I hope you heard me.

答：Yes.

問：First of all, can I ask you to be shown a document at A1, page 2. Mr Chan, this is a Legislative Council Panel on Housing document, and you will see a heading "Background" on A1, page 2, and it refers to:

"Annex 1 sets out the major events in chronological order since the end of June and early July [that's 2015] when fresh water samples from Kai Ching Estate were first suspected to contain excessive lead." Could I ask you then to turn please to annex 1, which starts at page 13.

答：Yes.

問：Mr Chan, could I ask you please to look at the entry on page 14, at 3 July 2015. Do you have that reference?

答：Yes.

問：It says:

"HA contacted WSD and two HOKLAS accredited laboratories to collect water samples from 11 locations in Kai Ching Estate to verify the findings and for cross-checking."

Mr Chan, so far as you are aware, was it 3 July upon which WSD was first contacted by the Housing Authority regarding this problem?

答：我冇印象佢直接搵過水質科學部。

問：Right. Do you have any recollection yourself of being contacted at the beginning of July by the Housing Authority?

答：I can't remember.

問：The reason I ask you that, Mr Chan, is this. We know that the very first tests that were done on Kai Ching were on 3 July. Those tests, we know, from the questions that Mr Shieh has been putting to you and your answers, were done on the basis of flushed tests. Do you understand?

答：Yes.

問：So whose decision was it, on 3 July or thereabouts, to use flushed testing?

答：For compliance testing with the WHO Guidelines for Drinking-water, it is the practice to take flushed samples for compliance checking. It is the standard practice given in our sampling manual. There's no need for any people to give, say, instruction to the water sampler.

問：Right. So whoever was contacted simply followed the manual; is that your position?

答：I can't quite catch your question.

問：Well, you have just told us that flushed sampling is what is referred to in the manual, and that's right, isn't it?

答：Yes, the sampling manual.

問：Which we are going to look at in a moment. So is it your position that, having been contacted by the Housing Authority about this lead problem, the samplers just followed the manual? No independent consideration, no thought was given to any other

methodology?

答：When we have to check the lead content in tap sample or in water samples, it's our practice to take flushed sample, and before that we have evaluated the different sampling protocol. But we think it is the general practice to take flushed sample for compliance checking with WHO Guidelines.

問：Could we just look very quickly at the sampling manual, which is referred to in your witness statement. You will find it at C2, page 1635. We can see from C2/1635, Mr Chan, that it's a document, the sampling manual, that is dated 2 January 2014, and it was issued under your authority; do you see that...

答：Yes.

問：...--as the chief waterworks chemist. Can you tell us which part of this manual applies to the testing of lead?

答：Would you please turn to page 1651, section 5.1.2, "Samples for physical and chemical analyses". Chemical analyses refers to all testing involving chemicals.

問：So it's the section starting at 5.1.2, is it?

答：Yes.

問：Then if you go over the page to 1652, and you look at the paragraph at the top, 5.1.2.2.1.1, we there see, in bold:

"Turn the tap on at maximum flow and let the water to flow for a minimum of 2 minutes in order to flush the interior of the nozzle and to free the service pipe of stagnant water. The period of flushing time required depends on the length of the service pipes ...", and so forth. So it's your understanding, is it, that

on 3 July, when the first batch of 11 tests were done on Kai Ching, it was this manual and this paragraph in the manual that was being followed?

答：I can say this is the generic procedures. It's because the sampling manuals will not specifically apply to Kai Ching Estate sampling. You know we have a lot of sampling from, say, treatment works, water distribution system, service reservoirs and consumer taps. For the service reservoirs, in fact, the sampling tap has a long connecting service pipe to the service reservoir. So we have to flush a minimum of two minutes, or longer.

問：Mr Chan, I'm only interested in what happened at Kai Ching and the decisions that were made leading up to the sampling and the testing that was done on Kai Ching. All right?

答：Yes.

問：I'm not worried about anything else at the moment.

答：For Kai Ching, starting from the sampling for the public housing estates, for example Kai Ching Estate, we have specifically tailored, or say we have specific sampling procedures for taking samples for the public housing estates, and the sampling procedures evolved as our experience gains.

問：But the position is this, isn't it, Mr Chan, as I think Mr Shieh has already explored with you to some extent: having started using the flushed sample technique, that is a technique that you stuck with throughout, and you never changed it?

答：Right, for this exercise.

問：All right. Could I then -- we've got some handouts about the Kai Ching blocks that I would like to look at with you, which I think will hopefully speed up the

few questions I have on this. Mr Chan, if you are looking at the first sheet that's just been handed to you, you will see a couple of tables at the top of the page, which seek to collate the numbers of tests -- sorry, samples -- that were taken at the Kai Ching Estate. If we just take block 5, Mun Ching House, we can see that a total of 18 samples were taken. Do you see that?

答：係，見到。

問：Before I plough on, can you ask you this: who was actually responsible for determining how many and where these samples would be taken?

答：或者我解釋一下我哋嗰個 systematic 嘅 water sampling programme。

主席：你想用中文定英文先？

答：中文用番。

主席：中文，得，唔。

答：嗄。解釋下我哋嗰個抽樣嗰個--即係嗰個 programme，我哋抽樣嗰個 system，係同房屋署嗰度一齊...

主席：唔係，你答咗佢個問題先。

答：係。

主席：邊個決定？

答：邊個決定抽辦嗰個？

主席：邊個決定點抽、同埋抽幾多、喺邊度抽，邊一個決定？

答：嗰個係應該我哋有一個即係 interdepartmental 嘅會，嗰個會就會即係睇番我哋抽嗰啲水辦嗰啲 results。

主席：邊個決定去邊一度抽，唔係睇水辦嘅 result，你答佢個問題喇，如果唔係你有排喺度畀人問。係。

答：我哋係--可以話房署同水務署決定嘅一齊。

主席：邊一個？

答：我諗如果話...

主席：唔係你諗，你唔知就話唔知。係咪你？因為你係 chief chemist。

答：唔係我決定。

主席：得。不過唔知邊一個？

答：我哋會根據房署畀我哋嘅供水圖去--根據嗰個抽樣嘅原則去搵出要搵樣嘅單位。

主席：邊一個？

答：我哋嗰陣時係我哋嘅客戶服務科嘅同事？

主席：邊一個？

答：當時應該係嗰個...

主席：唔好--唔好應該。

答：唔係，我要...

主席：可以--可以答唔知㗎，你唔好以為一定要知先得㗎。

答：Okay。

主席：可以話唔記得㗎嘛，陳先生，可以話唔知，唔係一定知，呢個世界冇嘢一...

答：係。不過我當時係知道係客戶服務科，但係唔知邊一個同事最後決定。

主席：得，唔該。即係問另外一個就知，係咪？

答：嗯。

主席：嗰個姓林嗰個，係咪呀？唔。

問：We can ask Mr Lam, but let me just ask you a couple of questions about --

主席：唔係，我想--對唔住，我想清楚知道呢一樣嘅答案，就係呢個5.1.2.2.1.1呢一個咁嘅generic method，...

答：嗯。

主席：...事前你係冇畀過一個決定出嚟話要跟呢一個method去做嘅？

答：事前係冇，但係後來房屋署要幫所有公共屋邨驗水，我哋係為房屋署嗰個驗水工作制定一個sampling個指引。

主席：到嗰陣時就係跟番呢一個嘅指引去做？

答：唔係，有modification。

主席：唔係，對唔住。應該咁講，唔係，呢個就係--你就話啟晴邨，跟住你話同其他屋邨嗰啲係--就採用呢個指引，就採用呢個方法，係幾時？

答：我要記番起佢--房署抽樣嗰個--有個sampling嘅protocol。我哋畀前線嘅同事就照跟，喺嗰啲公共屋邨嗰度去取樣。

主席：係吖。

答：嗯。

主席：咁嗰個--即係我哋其實講嚟講去，最重要就係究竟flush抑或唔唔flush啫，係咪？

答：係。

主席：好，呢度就係講唔flush，呢度就喺啟晴邨嗰度用，係咪？

答：呢個係 flush 嘅呢個係。

主席：呢個 flush 係喺啟晴邨度用，係咪？

答：嗄。

主席：好。跟住後來就要去擴展到其他所有嘅屋邨？

答：係，係。

主席：嗰陣時話我哋繼續採用呢一個咁樣樣 flushed 嘅 method，呢一個 decision 係幾時 made 呢？

答：我要睇番我嗰個--即係個 sampling protocol 嗰個 date。因為個 sampling protocol 就係話畀前線同事聽...

主席：得，得，得，唔使講畀我聽個 sampling protocol 住。

答：嗄。

主席：你要睇番個--你個 log，得，唔緊要。

答：嗄。

主席：好，你可以睇。好，跟住係邊一個決定係跟番呢一個 protocol 去用 flushed 嘅 water？

答：係我決定。

主席：係你決定，得，唔。

問：If you go back to the first sheet that we were looking at, Mr Chan -- again, if you don't know the answer, please say so -- we can see, if we just look along the "total" line in the top table, that 18 samples were taken at Mun Ching House, 14 at block 6, ten at block 4, six at block 3, 24 at block 2 and 18 at block 1. So the range of samples on the six blocks, Mr Chan, is from six to 24. Can you explain why four times as many samples were taken at Lok Ching House than were

taken at Yan Ching House? How does the protocol apply to those figures?

答：我哋嘅 sampling protocol 係由個水箱落嚟每一條下水喉，每一個下水喉嘅最--即係每一個下水喉嘅 water supply zone 最遠嗰個，距離嗰個 supply zone 最遠嗰個，嗰度就係--喺嗰度抽樣。至於你話點解有一啲地方得 6 個辦，有啲 24 個辦，呢個我相信我就解唔到。因為 6 個辦嗰座我要--要睇番個紀錄，究竟係咪我哋做呢 6 個辦。

問：They certainly were all taken by you, Mr Chan, because they are referred to in annex 1 of your witness statement, and all we have done is put onto this chart what's in annex 1 of your witness statement.

主席：唔係，佢嘅意思可能有啲水辦係房署嘅職員攞。

答：係。有 22 個水辦係房署自己搦去做。

問：Okay. Can we just pursue this a little bit further. Can you go to the next sheet. Let me try and explain it to you. Before I do, can I just ask you this, Mr Chan. We know that the water sampling, the 93 tests, initial tests, that were carried out at Kai Ching took place between 3 July, as we have already touched on, and 10 July, just a period of a week or so. Do you know whether or not WSD knew, when they did that sampling, that some of the units, the plumbing had been carried out in the volumetric precast units, on the mainland? Did you know that?

答：唔知，唔知道。我哋攞水辦唔會--唔會首先話佢呢一個係 precast unit，或者唔係 precast unit。我哋係 uniformly 咁樣去--去攞辦，唔會分佢係邊一種類。

問：Okay. Looking at the first sheet -- it's Mun Ching House, it's block 5 -- 18 water samples were taken.

On this block, the yellow indicates that those are the units where the plumbing was done on the mainland, in the VPBs. Do you see that?

答：唔。

問：We can see on this particular sheet, there is a generally sensible, it would appear, spread of samples, in the sense that you've got some on the upper floors, some on the lower floors, and you've got samples in each of the four wings. Do you see that?

答：Yes.

問：And you've also got a spread of samples both in toilets and kitchens; do you see that?

答：Yes.

問：If you go over to the next sheet, we are now at block 6, Yuet Ching House; do you see that, Mr Chan?

答：I am finding.

問：It's the next sheet, Yuet Ching House.

答：Yes.

問：This time, it is more complicated, because not only do we have plumbing in VPBs, we also have plumbing in VPKs, and that's indicated by the shaded area, both in blue and yellow. Now, 14 water samples here. Again, if you don't know, please say and we can ask somebody else. All of these samples were taken in kitchens, none in the bathrooms, none in the toilets. Do you know why that would be? Is there any reason for that?

答：我哋攞水樣一般會首先喺廚房，日常用嗰啲水喉，即係真係攞水去飲嘅地方攞水辦先。如果嗰啲同事去到嗰啲單位，佢嗰個水--即係嗰個住戶唔係好願意拆咗佢嗰啲即係裝喺水喉嗰度嗰啲裝置嘅時候，我哋

嗰啲同事就會退而求其次，就走去嗰個 toilet 嗰度攞水辦。

問：Just as a point of reference, on this sheet, Mr Chan, we see that unit 2002 was sampled; do you see that?

答：Yes.

問：There's "20" on the left-hand side, with "02". That is one of the supply chains that the task force selected to dismantle the components; do you recall?

答：Yes.

問：We will come to a few questions on that in a moment. Just to give you the reference. Could you go, please, to the next sheet. This is block 4, Sheung Ching House, where only ten water samples were taken. This time, insofar as we have been able to identify them, all in the toilets. A focus on wing B, one sample in wing A, no samples whatsoever in wing C or wing D. Are you able to offer an explanation for that?

答：我唔--我解釋唔到，我唔知道點解係咁。

問：Okay. Who might be able to help us? Is it Mr Lam?

答：我唔知佢會唔會知，但係我就唔知道點解會有一啲地方係冇攞水辦。

問：After the 93 samples that were taken between 3 and 10 July, the Government Laboratory tested another 234 samples at Kai Ching. Could I ask you, please, to be shown bundle A3, page 2432. If you have A3/2432, it stretches over a few pages, Mr Chan. You will eventually get to page 2435, and that identifies the 234 samples tested and carried out by the Government Laboratory, as we will see in one of the middle columns of the table. Do you see that?

答：Yes.

問：Was the WSD involved in any way with these samples;

do you know?

答：呢 234 個樣辦，據我所知係水務署即係幫佢哋--即係冇幫佢哋驗呢 234 個辦。因為當時房屋署係為住戶提供一啲臨時供水，喺嗰個 roof tank 就駁咗條喉出嚟；然後就喺嗰條喉--即係每一層樓就要攞一個樣辦，就去驗嗰啲--即係究竟係唔係--即係嗰 8 個參數再加嗰 4 個即係重金屬。驗完之後佢先至可以即係確認個水質冇問題，先可以畀住戶飲用。呢 234 個辦全部都係為咁嘅目的其實。

問：Yes, I see. We can see that from the table, so far as lead was concerned, there were none in excess of the WHO Guidelines and indeed most of them were less than 1?

答：Yes.

問：I suppose one can assume that they were done by the technique?

答：No. The sample is taken by...

主席：中文喇，中文喇，係。

答：中--係。咁就佢嗰個水辦應該係喺即係天棚落嚟嘅水係--都係 flush 咗之後先攞嘅。係。

問：All right. Okay.

Could I just ask you then a few more questions about the task force report. Could I ask you please to go to the task force report, which is in A1, and I just want to ask you a few questions about lead leaching tests, then the isotopic analysis and then the mathematical modelling, but there aren't many questions.

Could I ask you please to go to paragraph 2.4.2 in the report, on page 661. It's section 2.4 of the

report that the leaching tests are dealt with. Essentially, as I understand it, what happened is that you dismantled various pipes and fittings, filled them up with water, waited for 24 hours and then did some tests on the water?

答：Yes.

問：At 2.4.2, you say:

"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."

Where did the water come from, Mr Chan?

答：Sorry.

問：Where did the water come from?

答：佢啲水係嚟自番嗰個屋邨嗰個水箱嘅，即係嗰個天棚箱，或者係嗰個 sump tank。

問：The roof tank? Okay. If you go, please, to page 744 -- I'm only going to do this by reference to Hong Ching House at Kai Ching -- what you do there, as I understand it, Mr Chan, is to tabulate the leached amount by concentration and the leached amount by mass, from each of the copper pipes and sockets and elbows and copper alloy valves, and so forth, that were dismantled.

Sorry, could I have the other sheet that's been handed in? (Handed).

主席：或者我派呢啲嘅時候，想問一問你。我哋知道後來就加多四隻嘅 chemicals...

答：唔。

主席：...驗水喇，咁就係--係咪因為基於當時做呢啲 leaching tests 嘅時候都有驗到呢四隻嘅物料，咁就覺得有問題，所以先至將佢哋加入去後來嗰八個 parameters 之外再加多四隻呢？

答：嗰陣時係未嘅，即係呢一個 leaching tests 加--做嗰個 heavy metal 係後過嗰個即係我哋之前加嗰四隻嘅，嗰四隻加就係因為我哋覺得有個風險喺度，我哋先至加落去。

主席：嗰四隻加係幾時加㗎？

答：應該係由 7 月 15 號...

主席：七月十...

答：7 月 13 定唔知--7 月份開始喇，2015 年。

主席：嗄，咁或者我喺呢度 interrupt Mr Pennicott，我想問嘅問題就係，base on 乜嘢嘢你哋加嗰四隻落去嗰個 parameters 嗰度，即係嗰八隻嗰度。

答：咁就我哋睇過嗰個即係世衛嗰個介紹喇，就嗰個鉛呢可以嚟自 lead solder 或者乜嘢，大家都知道喇，咁仲有就嗰個 nickel 同 chromium 呢，主要係嚟自一啲水喉，佢有一啲 electroplating...

主席：唔。

答:...嗰啲嘢喺個水喉嗰度,咁呀 nickel 通常嚟講都係底層,chromium 就面層，佢一甩出嚟嗰陣時可能會有啲 particulate 會出咗嚟嘅。

主席：唔。

答：咁呢個係存在一定風險，至於 cadmium 呢，佢亦都有機會喺嗰啲 silver brazing，可能佢有啲含有 cadmium，我哋唔知有冇吖。

主席：唔。

答：通常應該就冇嘅，咁就係發生咗呢件事之後，我哋覺得風險大咗，不如即係驗埋，即係確保嗰啲水係冇 cadmium，咁仲有就係嗰個其他嗰啲 met--個 cadmium 亦都可以嚟自一啲 taps 呀，或者嗰啲 metal fitting 呀，或者 impurities of 嗰啲 metal 嘅。

主席：Okay，咁我--我明白喇，嗰啲金屬可能會存在喺呢啲 fittings 裏面。

答：係。

主席：咁實際上係基於乜嘢嘢，因為你而家將佢提升到好高嘅層次，突然之間又乜嘢都唔使驗嘅。

答：係。

主席：一下子去到最高嘅層次，咁呢啲問題，呢個風險，所謂嘅風險，頭先你所講嗰啲所謂風險，其實存在已經係一路都存在㗎喇。點解突然之間會有一個完全唔管嘅風險，突然之間提升到咁--即係你所講嗰啲，so far 你所講嘅理由呢，都未即係可以令到我哋--即係我了解到點解可以由--突然之間由 01 跳咗去 10。

答：風--即係嗰個我哋 risk assessment 呢通常有兩種方法嘅，一種就 qualitative，就即係你--即係 by 一啲 experience 或者 judgement，qualitative 嘅 risk assessment，有一種嘅 assessment 呢，risk assessment 呢就 quantitative 嘅，即係就好似呢樣嘢發生嘅機會有幾多，然後就計一個我哋叫可能 probabilistic 嘅 safety assessment 咁，即係計一輪數出嚟嘅，但係我哋喺今次呢，就以前驗八個呢，八個參數呢，我哋點解唔驗嗰四--多四隻 heavy metal 呢，就係因為我哋一路即係個 qualitative 嘅 risk assessment 呢都覺得佢係一個低風險嘅水平嚟嘅，因為即係我哋信任咗嗰個 regulatory mechanism 同埋其他嘅即係我哋嘅 monitoring data 呀，呢啲加埋晒，咁但係而家佢鉛水事件之後呢，畀我哋發覺呢，原來係個情況未必係咁嘅，咁我哋就將個風險水平呢，提高咗，嗄。

主席：如果係咁樣樣嘅話，咁我又問--問你，譬如點解又唔加 copper 落去呢？

答：Copper 呢，呢樣就即係我哋亦都曾經諗過，咁我哋--或者我向大家介紹一下喇，copper leach 出嚟水呢，通常嚟講係有三個 mechanism 嘅，就第一個就係叫做 general corrosion，第二個就 impingement attack，第三個呢就係 fitting corrosion，咁呢以 general corrosion 呢就係最 common 嘅，general corrosion 呢主要呢就係即係比如嗰啲水入面有一啲 carbonate，咁呢啲 carbonate 同嗰啲鉛喉嘅--銅喉嘅 copper react，就變咗一啲 basic 嘅 copper carbonate，呢個 basic 嘅 copper carbonate 呢，就嗰個 solubility 呀，係 depends on 嗰個 pH 同埋水入面嗰個我哋叫做 total inorganic carbon 嗰個 level，如果啲水嘅 pH 愈低嘅話呢...

主席：唔係，唔係，唔係，即係你唔使講咁多咁 technical 嘅嘢畀我聽

住。

答：唔，唔。

主席:即係你哋就認為 copper 就--唔係,首先你哋有 assess 過 copper 嘅，係咪呀？

答：我哋有諗過。

主席：你哋有諗過，你哋認為唔需要嘞，因為低風險，係咪咁呀？

答：係。

主席:咁 whereas 呢--唔好講 lead 喇,另外嗰三隻,你哋個 assessment 做咗嘞，就認為高風險，其實佢--你哋認為高風險就純粹因為呢啲咁嘅物質係會存在喺啲部件裏面，就係咁多㗎咋喎。

答：同埋呢啲物資呢，基本上對人體健康都有影響嘅。

主席：Copper 都有影響㗎。

答：Copper 呢就...

主席：不過要多啲咋嘛。

答：係。

主席：係囉。

答：Copper 呢，佢唔會 cause 一啲好 damaging 嘅 health effect，因為佢主要就係 cause 嗰個 gastric 嘅 irritation。

主席：係吖，我明。

答：嗄。

主席：Zinc 呢？

答：Zinc 佢亦都係即係世衞亦都冇一個 health-based 嘅 guideline 嚟嘅。

主席：Okay。

答：嗄。

主席：咁但係如果我就咁睇你哋--即係你哋--你嘅意思就即係完全唔係因為 qualitative 嘅原因係將佢呢--我講呢三隻喇，另外嗰三隻，我明白 lead 喇，lead 唔好講嘞，係完全唔係因為 base on 一啲咩嘢 scientific 嘅數據，純粹係因為佢哋喺部件裏面，就於是將佢提升嘞，係咪咁吖？

答：係。

主席：唔，得。繼續，Mr Pennicott。

MR PENNICOTT：Mr Chairman, so far as the date is concerned, it's 13 July 2015, when the WSD issued a circular on that date.

主席：Thank you.

MR PENNICOTT：The reference is D1/633.

問：Do you have the other sheet that we've just distributed, Mr Chan? What we've sought to do here, Mr Chan, is to collate on one piece of paper the readings that you record in the task force report. We looked at page 744, for Hong Ching House, and we know there are equivalent tables for Yuet Ching House and Luen Yat House and also for the control house at the bottom of the page that I have just given you. Do you see that?

答：唔。

問：What we have done is we have listed out each of the copper alloy components on the left-hand side, and then each of the pipe joints less than 76 millimetres; do you see that?

答：Yes.

問：Then we have put in the micrograms per litre readings that are in your tables in the task force report. Do

you follow?

答：唔。

問：If we look at these figures, Mr Chan, you can see that the sum of the copper alloy components was 779.9, and the average, 70.9, the median, 36. I am looking at Hong Ching House. Then you can see the equivalent figures for the pipe joints.

Just focusing on the median figures -- that's 36 for the components and 51.2 for the pipe joints -- then if you travel down, obviously there's a huge difference on the median, 51.6 and 1,461 on Yuet Ching House -- but then if you look at Luen Yat House, that's the one in Kwai Luen -- that's a Shui On estate, it's not a China State estate -- you can see that actually the median figure for the copper alloy component is actually higher than the pipe joint median figure. Do you see that?

Are you with me, Mr Chan?

答：我搵唔到嗰啲--佢--你講嗰啲 data。

問：I am just looking on this sheet of paper. You will have to trust me that we have replicated it faithfully from your --

主席：喺個 medium 嗰度呀，medium 嗰度嚟，你係咪睇緊呢張呀？

答：而家啱喇。

主席：係喇，係喇，係喇，係呀。

問：Mr Chan, it's a simple point I want to ask you about, and it's this. Do you agree that the copper alloy components at least contribute to the overall

micrograms per litre, so far as lead is concerned?

答：Copper alloy 呢係即係一樣係會釋出一啲金屬出嚟嘅，呢個係視乎佢釋出幾多啫。

問：Yes. Have you done, at any of the work you have been involved in, a quantitative assessment of that contribution?

答：個 task force 有做過呢樣嘢嘅。

主席：Quantitative 喎。

答：佢有即係拆咗啲部件，即係新--全新嘅就冇。

主席：唔係呀，quantitative 呀，唔係 qualitative 呀。

答：嗄。

主席：Quantitative 有冇做過呀？Quantitative in the sense 係幾多係 leach 到出嚟喎。

答：佢做 leaching test 又係...

主席：我知呀，佢兩樣嘢咪 qualitative 同埋 quantitative㗎。

答：有，有 quantitative 嘅。

主席：有 quali--quantitative 呀。

答：嗄，quantitative，...

主席：有嘅？

答：...有，嗄。

問：Perhaps the answer might be found if we go to some figures on the mathematical modelling. Could we therefore go back to the body of the task force report,

at page 681.

What I want to look at very briefly with you, Mr Chan, is scenario 2 on page 681. Do you have that? I have skipped over all the mathematical modelling calculations and so forth that are on the preceding pages, largely because I don't understand them, but trying to bring it, as it were, together, if we look at the two tables on page 682, have I got this right, that so far as Hong Ching House is concerned -- tell me if I'm wrong about this, Mr Chan -- in terms of a quantitative contribution to the overall micrograms per litre, the copper alloy fittings are contributing 18 per cent before cleansing?

答：係。

問：And 14 per cent after cleansing?

答：Yes.

問：So in Luen Yat House, the Shui On estate, it's 26 per cent, so a quarter, just over, for the copper alloy fittings, and 74 per cent for the joints; yes?

答：係。

問：Mr Chan, do you think that the task force report plays down or seeks to play down the contribution that the various components make to the overall micrograms per litre of lead that's been found in the water?

答：我哋冇話專登即係話--即係令到話--即係 played down 嗰個 copper alloy 嗰個 contribution，我哋係研究究竟喺食水中含嘅鉛係嚟自邊一啲部件，我哋冇--我哋冚嘢唅全部公開透明咁樣寫晒出嚟嘅。

問：All right. Could I then lastly just ask you a couple of questions about the isotopic analysis, which you deal with in your 2nd witness statement, and is dealt with in the task force report at page 674.

Mr Chan, were you personally involved in the isotopic analysis?

答：我哋係委託咗理工大學幫我哋做呢個 isotopic analysis 嘅分析，呢啲數據係畀番我哋 task force 嘅。

問：Did you have any role to play in the material that was sent to PolyU or was that somebody else's responsibility?

答：我啲同事係負責攞啲樣辦畀 PolyU 嘅。

主席：Dr Greene 做㗎嘛？

答：唔係，係我哋水質科學部啲同事。

主席：唔係，係咪嗰個 Dr Greene 做㗎，你喺 Poly 做，唔係佢？

答：唔係㗎，係我哋 commission 咗 Poly 嗰個 research center。

主席：得。

問：We can see in paragraph 2.9.1 that what the task force report says is that lead has three major isotopes, namely Pb-206, 207 and 208.

My understanding, Mr Chan, is that it has four major stable isotopes, because it also has 204. Do you know why 204 was not included in the analysis?

答：係，佢係有四隻 stable 嘅 isotopes，係 Pb-204、206、207 同 208，點解我哋冇加落 Pb-204 呢，因為佢嗰個 abundance 嘅 variation 呢，基本上係 essentially constant，所以我哋係喺呢個 study 呢，係冇加入 Pb-204。而呢三隻 Pb-206、207、208 呢，佢係有一個 variation 嘅，嗰個 isotopic abundance，所以係 more meaningful 用呢三隻 rather than 用 204。

問：Can you just -- if you know the answer to this, was

204 excluded from the beginning, before any work was done, or was 204 used but then the results discarded? What was the position, if you know?

答：我哋決定嗰陣時已經係唔用 204。

問：Okay. Thank you very much.

主席：不如我哋 take 個 morning break，20 分鐘，唔該。

上午 11 時 09 分聆訊押後

上午 11 時 31 分恢復聆訊

出席人士如前。

石先生：主席，或者喺其他大律師繼續提問之前呢，就我想趁呢個機會向大家宣佈就係委員會所委任--委派嘅兩位專家證人，Professor Fawell 同埋 Professor Joseph Lee 佢哋嘅專家嘅報告，就將會喺午飯之後呢，係會 upload 上去委員會嘅網站嘅，咁就即係如果就到時大家想知道嘅，就可以喺委員會嘅網站上面可以搵到。

主席：咁你哋嗰個 expert report 幾時可以交到嚟呀？

王先生：下午。

主席：得，下午幾時呀？

王先生：我諗 4 點半、5 點嘍。

主席：4 點半到 5 點，得，好。

黃小姐盤問

問：陳生呀，昨日呢同今日呢都帶你睇咗好多嗰啲文件喇，咁就提及個鉛

喉或者含鉛嘅焊料都會係出現嘅，咁我就想問你本身你呢個職位呢，其實第一次知道呢樣嘢係幾時？

答：WHO 嗰啲 guideline 呢一路都有講即係 solder joint 可能會係即係有機會釋出鉛㗎嘞，已經--since 你如果一路有睇 WHO，你一路都知嘅。

問：即係講緊九幾年都已經知嘞？再早啲定係？

答：我諗 WHO 1984、1993、2004、2011...

主席：W...

答：WHO.

主席：WHO?

答：嗯。

主席：哦，okay。

答：佢一路都有提有啲 leachable 嘅 chemical 可能會嚟自嗰啲 pipe materials 呀，solder joints 呀嗰啲咁嘅嘢。

問：係，咁我就想問喇，頭先就喺你份第 4 份口供呢，其實提到好多國家㗎，紐西蘭、澳洲、日本、加拿大、美國、英國咁喇，咁都提到話呢啲 solder joint，或者係啲鉛喉喇，對食水會有影響嘅，咁其實你哋自己，就住你自己嘅部門喇，咁你對呢個問題有冇同其他你哋水務署內部嘅部門傾過呢？

答：冇呀。

問：即係有冇啲話大家部--內部會議不時有啲溝通咁樣？

答：你指內面--裏面嘅唔同嘅 division？

問：係。

主席：就住焊--含鉛焊料...

黃小姐：係，就住含鉛...

主席：...呢個議題有冇溝通過？

答：冇。

主席：冇，冇吖嘛，嗄。

問：咁所以其實你個部門就會知，但係 outside 你個部門就唔會知有呢個咁嘅問題個囉喎，係咪呀？

答：我諗嗰個 material user 知唔知，我就唔清楚喇真係。

問：係。

主席：你哋其他部門呀，佢嘅意思係，水務署嘅其他部門。

答：水務署我諗客戶服務科同事呢，佢知道有法例寫咗，即係嗰啲含鉛焊料係唔可以用吖嘛，佢哋應該知嘅，應該就。

問：好嘞，咁你頭先作供呢就提到話風險評估嗰度呢，就分 qualitative 同 quantitative 嘅 assessment 喇，咁你就講咗話有一個低風險嘅水平嘅，咁我就想問，你其實考慮咗啲乜嘢嘢覺得會係低風險嘅水平呢？

主席：關於邊一樣嘢呀？

黃小姐：唔好意思，主席，關於呢個焊料同埋鉛水喉。

答：鉛水喉呢，你都知喺香港 1938 年之後都禁用㗎嘞。

問：係。

答：咁鉛水喺呢就唔係我哋一個 issue 嘞，咁另外一方面呢，含鉛焊料係唔可以--喺 1987 年之後都唔可以用喇，據我所知呢，咁所以呢兩個因素加埋之下呢，我哋覺得係應--再加埋有一個 regulatory mechanism，即係我哋信 LP、AP，咁 and then 我哋覺得呢個風險 qualitatively 呢應該係低嘅。

問：咁既然你提到 LP、AP 嗰個問題呢，咁其實你哋水務署都要人哋入一啲 form 呢，就話就住一啲焊料呀--唔係，就住一啲水喉，pipe and fittings，咁呢就入一啲資料嘅，咁你自己有冇睇過個 list㗎其實，有冇畀你睇過？

答：冇，我唔係--我又唔係負責審批呢啲咁嘅物料嘅。

問:咁你哋部門之間亦都唔會話溝通呢,就話放乜嘢料喺呢個 list 度嘅？

答：我唔係負責呢方面嘅工作。

問：咁就變咗其實你唔會知道其實呢，你哋自己水務署個 list 入面呢，都冇包呢啲焊料話要審批呢個程序個喎？

答：呢個係我哋另外一個科嘅同事嘅工作嚟㗎，唔係我哋水質科學部嘅工作。

問：咁所以其實你個話 qualitative assessment 純粹係以為人哋會遵守啲嘢，同埋以為人哋對呢個焊物呀，或者係鉛呀係有認知呢樣嘢喎。

答：我哋個 qualitative assessment 呢係 base on 我哋嘅 professional experience 喇，judgement 喇，同埋嗰啲 past monitoring data，再加埋有一個 regulatory mechanism 喺度，我哋認為嗰個風險係低嘅。

問：咁你話 monitoring data，咁咩嘢叫--你--你頭先所講...

答：我哋一路都有喺嗰啲 consumer taps 嗰度有一--十--有十八個位置我哋都有抽驗一啲水辦，就做晒 WHO 九十二隻嘅 parameters 嘅。

問：幾時呀？

答：咁我哋一路睇有--我哋嗰個我哋叫 temporal 同埋 spatial 嘅

variation 呢，都冇嘅其實，所以我哋係 come to 個 conclusion 呢，就唔應該係一個 significant 嘅 issue。

問：係幾時做呀？

答：我哋一路都有 monitoring data，我哋年年都有睇嘅其實。

問：哦，即係九幾年開始都有㗎嘞？

答：我諗要 depends on，如果你 WHO 話 2011 年個版本喺 2011 年出，咁我哋 2012 年 8 月已經係完全跟晒 WHO 2011，咁我哋每一年都係 ongoing 有睇嗰啲 monitoring data㗎嘛。

問：咁但係就有睇 monitoring data，但係就其實呢我想問你一樣嘢㗎，就係 02 年呢，房署係由嗰個鍍鋅喉轉做銅喉呢，咁呢樣嘢你知唔知道？

答：唔知道。

問：咁呀其--水務署其他同事，或者所謂嘅 customer service division，有冇同你講過話，我哋要轉喇，咁有冇同你溝通過？

答：冇。

問：咁另外，咁你但係睇報紙都睇唔到呢樣嘢呀？嗰陣時都搞得幾大件事個喎，話啲鏽水嗰啲問題。

答：據我所知呢，我當年做 chemist 嗰陣時呢，我哋知道好多 customer complaint，就係關於啲水嘅 discoloration 嘅。

問：唔。

答：咁後來呢就即係我哋一路搵到個原因呢，就係因為嗰啲 GI pipes 呢，嗰個即係含--rusting 呀，令至到嗰啲鐵呢釋出嗰啲水入面，咁 and then 呢就由於嗰個 complaint 太多喇，同埋係即係政府應該市民已經唔再接受呢個 discolored water，所以決定就改例，禁用嗰個 GI pipe，我呢個知道呢個背景嘅我。

主席：我想請問你幾時開始擔任呢個總化驗師呢個職位呀？

答：我係 2008 年開始嘅。

主席：唔該。

問：咁就話你係知道嗰個問題喇，咁你知唔知道水務署其實 suggest 咗話--即係或者同其他部門溝通過，話想轉做銅喉，呢樣嘢你自己本身知唔知呢？

答：唔知道。

問：咁如果你知道嘅話，你會唔會話，話畀佢哋聽銅喉其實都有風險，因為有接駁呢個--即係接駁焊料個問題，呢樣嘢，...

答：咁...

問：...如果你知嘅話。

答：呢樣嘢我諗好難答你呢個問題，因為呢個問題就係我啲同事負責嗰個物料嗰啲同事呢，佢如果佢認為覺得可能有機會有呢個風險呢，佢會可能搵我哋協助，做一啲即係水質測試呀，或者乜嘢嘅。

問：係，咁我就想問嘞，即係你話有呢個--如果你個同事呢，睇到呢個風險先會做，咁我見你份第 4 份口供呢，其實喺其他國家嘅經驗呢，都係提及到教育呢樣嘢都幾緊要，因為其實講緊呢樣嘢未必話普通普羅大眾即係可能知道鉛係對人有害，但係對人有害嘅程度去到邊，佢哋未必會知，咁呢樣嘢你係咪同意其實教育都幾緊要呢？

答：係，我同意嘅呢個。

問：咁但係 so far 我哋見到呢，由九幾年開始呢，去到呢件事發生之前，都冇乜話教育公眾喇，或者係持份者喇，有關呢方面嘅知識，你同唔同意？

答：因為喺呢件事發--喺鉛水呢件事發生之前呢，我哋大家普遍認為呢香港喺呢方面嗰個風險唔高。因為香港第一冇用鉛喉，係咪？咁嗰啲出--即係有鉛嘅問題，我哋當時嘅估算呢就係大部分係發生喺啲國家，仍然係用緊啲鉛水喉嘅地方。

問：但係我哋睇啲文獻就唔止鉛喉喇，咁即係其實焊物都係有呢個問題，即係逢係你轉一隻料，咁你同唔同意其實轉一隻料之前，其實即係嗰

個風險評估都好緊要呢，部門之間？

答：喺發生鉛水事件之後呢，我哋就覺得呢個風險係大咗好多嘅。

問：但係之前就唔知？

答：之前，頭先我講，我哋冇鉛--用鉛水喉，我哋水質又唔係 corrosive，所以我哋覺得嗰個風險就唔係高嘅。

黃小姐：係。主席，冇問題嘞，唔該。

主席：唔該。

Mr Lee。

<u>李先生盤問</u>

問：陳生，其實你邊一日係正式退休嘅？

答：我 1 月 19 號。我而家係其實係退休前嘅放假嘅，而家係。

問：1 月 19 號？

答：嗄。

問：咁就喺政府嘅 WSD 裏面，我相信你係被認為係水質嘅專家，係咪？

答：我係負責水質科學部。係咪專家，我好難自己去評估。

問：不過就我相信你嘅意見係比政府各部門接受嘅程度係大過你哋部門任何其他一個人，因為你係 Chief Chemist，係咪？

答：我哋係盡力提供我哋嘅專業意見嘅。

問：你覺唔覺得你嘅意見係受政府接納嘅呢？

答：我諗政府接納公務員嘅意見，我諗佢亦都要考慮好多嘢，要整體考慮嘅，唔係話純粹淨係一個技術嘅或者係一個 technical 嘅 comments 或者 advice 佢哋就會 take into account。但係我相信政府好重視我哋嗰啲專業意見嘅。

問：係。你試譬如喺呢個鉛水問題呢度，你試過任何嘅意見係畀政府當局係唔接受嘅，試過未？

答：未。

問：咁而家我哋知道係下晝就兩個專家嘅意見會交上畀呢個委員會。咁嗰兩位專家，你知唔知係邊兩個？

答：我知，一個係科大嘅李行偉教授，另外一位就係英國嗰個toxicologist，毒物學家，係Professor Fawell。

問：咁你兩個都識嘅，係咪？

答：Fawell，我喺英國受訓嗰陣時係見過一面，但係我冇跟過佢去即係學嘢或者係。咁李教授，我係唔識嘅。

問：咁就至於而家水務署搵呢兩位專家，唔係你建議嘅，係咪？

答：唔係。

問：我知道就係政府就有--關於呢件事，鉛水呢件事，就有兩個叫做跨部門嘅會議嘅，係咪？一個就係跨部門嘅專家會議。

答：我哋主要就係同房署即係有一個--即係收咗啲數據之後，我哋有一個叫做interdepartmental meeting去討論啲數據嘅。

問：係咪包括水務署、政府化驗處同衞生署？

答：係，冇錯。

問：係。呢啲係專家嚟嘅？

答：係專業部門喇。

問：係嘞，係嘞，係。開過七、八次會，係咪？

答：實際數目，我唔記得嘞。呢個因為鉛水事件開始之後，我哋每有一次--即係每收到一啲即係測試數據，我就會開會討論呢啲數據嘅。

問：咁即係大概七、八次，啱唔啱呢？

答：起碼喇。

問：起碼，okay。係咪都係你自己親自己參與嘅？

答：如果我有第二啲會要開呢，我就會有我啲代表去參與。

問：如果唔係，你一定自己去嘅？

答：係。

問：即係你負責嘅，可以話？

答：水質科學部係我負責，所以嗰啲數據亦都係我要負責嘅。

問：咁就但係另外仲有一個係高層嘅跨部門會議，就係政務司司長主持嘅，你知道㗎？

答：係。

問：你去過嘅？

答：係。

問：係。即係包括三個局同埋三個署嘅，你知喇？

答：我就冇分即係邊個，係邊個局，因為我個 role 純粹係匯報一啲 data。

問：你就係水務署喇，但係就係屬於發展局嘅，係咪？

答：係。

問：咁就仲有衞生署，就係屬於食物同埋衞生局嘅？

答：係。

問：仲有就係房屋署，就屬於運輸同埋房屋局嘅？

答：係。

問：咁你去過呢個會議嘅時候，你都見到呢啲部門嘅人㗎？

答：我冇特別留意嘅。

問：Okay。咁係邊個帶你去㗎？

答：署長喇，當然。我唔...

問：咁你記唔記得開過大概幾多次會呀，呢一亭？

答：呢個我就即係冇紀錄嘞，呢個就。我冇印象開過幾多次。

問：幾多次嗖呢？

主席：唔係，佢去咗幾多次，係咪？

李先生：係。

問：你自己，你自己。

答：我唔記得去咗幾多次。

問：哦，你自己都唔記得去咗幾多次？

答：係呀，因為有需要，署長就話「你跟埋我去喇」，咁我就去㗎咋。

問：係呀，但係呢啲係重要嘅會議嚟㗎嘛，你知道，啲大粒人出晒㗎嘛。

答：我知，但係我嘅--我係一個 small potato㗎之嘛，我只係即係向嗰個會議匯報番嗰個即係我哋監測數據嘅情況嘅。

問：Okay，當然喇。就係因為 small potato，係去開嗰啲大人物嘅會議，就係更加有記性記得喎，應該，係咪？

答：冇喎，可以話...

問：返屋企都話聲畀太太聽嘅，係咪？

答：呢個我視為我嘅工作一部分嚟嘅，呢個只係。只係我工作嘅一部分。

問：Okay。

答：我唔話特別話，嘩，即係去呢啲咁嘅會呢，我覺得好 proud of 啲或者係咩嘢。即係我覺得...

問：Okay。咁你譬如三次，或者多過三次㗎嘛，可唔可以幫下我哋呢？

答：應該多過三次嘅。

問：五次，或者多過五次？

答：真係我唔...

問：咁上下？

答：我唔記得嘞，真係。

問：唔會多過十次，你自己去嘅？

答：我自己去呀？我真係冇紀錄我自己去過幾多次。總之署長話要上去report，咁我就跟住去 report。

問：攞衫尾咁上？

答：係。

問：Okay。記唔記得係傾咩嘢呢，你去嗰啲嘅會？

答：吓，我冇記，我總之我講咗我話即係測咗幾多個--即係監測咗幾多數據嘅，即係攞咗幾多個樣辦，啲數據嗰個情況係點，咁我就完㗎嘞。

問：咁你有冇關於譬如話驗水抽水辦係開咗水喉幾分鐘然後至抽水辦，呢啲問題有冇討論過呢？

答：冇。

問：完全冇？

答：呢個係我哋自己嘅，水務署，係我嘅決定嚟嘅，其實。

問：係你嘅決定嚟嘅？

答：嗄。

問：即係你係決定喺呢個鉛水問題發生之後，每次抽水辦都唔能夠驗隔夜水嘅？

答：我解釋咗就話點解我哋唔驗隔夜水。

問：唔係，我知道，我知道個理由，但係係咪你決定唔驗隔夜水嘅？

答：係。

問：咁即係你啲同事去嚟驗水呢，即係關於鉛水呢個問題，永遠唔會驗隔夜水嘅，啱唔啱？

答：我哋喺呢個，房署呢個即係 sampling exercise，我哋係唔驗嗰個我哋叫做 first draw 或者乜嘢嘅。

問：因為你認為唔啱，係咪？

答：唔係唔啱，而係冇代表性。

問：即係啲時，費事？

答：我哋嘅 resources 咁 limited，而要喺咁短時間要做咁多嘢，你唔會攞一個樣辦係有代表性嘅去嚟做測試嘅。

問：同埋冇用嘅，喺你個意見度？

答：喺我哋嘅睇法就係佢...

問：冇用嘅？

答：佢係唔代表即係嗰個住戶日常飲用嗰個水質嘅。

問：即係冇用喇？

答：你可以咁講。

問：即係話行多一步驗埋佢，都覺得冇呢個需要喇？

答：唔係話行唔行多一步，而係行多呢一步係有冇意義。

問：Okay，明白。咁就驗咗水嘞，有報告嘞，咁有冇匯報番呢個跨部門嘅會議呢？

答：有。我哋跨部門嘅會議，即係同房署、政府化驗所同埋衞生署，咁我哋將--當呢啲監測數據全部齊晒之後，我哋就會喺嗰個會議嗰度有--嗰個會議係分兩次嘅，第一次叫做 technical review meeting，第二次係叫做 conclusion meeting 嘅。Technical meeting 佢就會睇下即係嗰啲數據，究竟係唔係即係有代表性呀，同

埋係可以即係幫助呢個 interdepartmental meeting 可以 draw 到個 conclusion。

問：譬如呢？畀啲例子我哋。

答：你指係例如乜嘢？

問：譬如啲咩嘢例子？即係我冇開過會呀。

答：嗄，嗄。

主席：唔係，驗完水嗰啲 data 出嚟，跟住...

答：嗄。

問：咁但係你知道如果驗水超過世衞個標呢就會驗血嘅，係咪？

答：呢個係衞生署嗰個安排嚟嘅。

問：係，但係你哋一齊開會㗎嘛。

答：係呀。

問：所以你知嘅？

答：我知，我知。

問：咁即係話如果話驗到係水唔超標，咁就唔會驗血㗎喇，照你嘅理解？

答：係。即係如果佢嗰個屋邨唔係我哋定性為或者 conclude 係一個 affected estate 嘅，佢就冇一啲 follow-up action 嘅。

問：係。即係如果係受影響嘅，咁佢就會做？

答：係，受影響嘅。

問：唔受影響就唔做嘞？

答：係。

問：Okay。咁你有冇同呢兩類嘅跨部門會議，兩賴吓，有冇同你哋傾下即係驗水個目的係乜嘢呢？有冇傾過呢個問題？

答：冇。

問：房署都冇？

答：房署因為已經話佢係想即係 determine 個 lead content in 嗰個 consumer tap 嘅 water 係咪 exceed 世衞嘅標準或者世衞嗰個暫定指引值。呢一個已經係個 purpose 吖嘛。佢有呢個 purpose，我哋就 devise 我哋嘅 sampling protocol 去 meet 呢個 purpose。

問：除咗呢個 purpose，仲有冇第二個 purpose，房署？

答：冇。

問：係邊個同你講呢個係佢哋嘅 purpose？

答：呢個係我諗係我見嗰個 press statement 就係房委嘅主席嘅。

問：即係張炳良先生，係咪？

答：唔係張炳良先生。張炳良應該係局長嚟嘅。

問：局長，係。

答：HA 嘅主席，係第二位。

主席：都係佢。

問：都係佢。

答：係咪？

主席：係。

答：對唔住，呢個我唔係咁清楚。

主席：唔緊要，係，係。Small potato 通常唔知道啲--唔係，我講笑咋，千祈唔好介意。

答：係。

李先生：毛主席都講番佢自己話啫，呢個係。

主席：唔係，我都係 small potato 啫。

李先生：唔係啩。咁我哋係乜？

問：咁就所以你哋嘅立場，你個部門嘅立場，就係知道你哋個目的，驗水嘅目的，就係睇下喺公屋，呢啲有關樓宇裏面，直情去個租客嘅水喉，開水喉，食水，食水吓，驗下佢係咪合乎世衞嘅標準？

答：係。

問：呢個就係你哋嘅唯一嘅目標？

答：係。

問：好肯定㗎嘞？

答：係。

問：Okay。咁所以你就覺得如果係隔夜水就唔乎呢個要求，唔需要嘅？

主席：唔 representative 喇，係。

答：冇代表性吖嘛，因為。

主席：係喇，返番去。

問：係嘞，好嘞。咁就當你作出呢個決定之後，有冇任何人係向你提出「喂，唔係啩」，有冇呀？可能做埋隔夜水至好喎，有冇第二啲咁嘅意見你

聽過嘅呢？

答：我唔覺得有。

問：除咗喺呢度？

答：嗄，冇錯。

問：即係你自己部門裏面又冇？

答：冇。

問：個局裏面都冇？

答：冇。

問：跨部門都冇？

答：冇。

問：即係你呢個決定係政府係好似照你所睇就全部都接受嘅？

答：係。

問：認為正確嘅？

答：嗄。

問：Okay。好嘞，關於呢個沖水喉，即係沖水先，然後至驗呢，有時我就話--好似你話五分鐘，有時兩分鐘，其實有咩嘢分別嘅呢？

答：我諗過就係兩分鐘，通常嚟講係嗰個住戶係有人喺度住嘅。五分鐘，通常嚟講我哋係喺嗰啲叫做空置單位，冇人住嘅。因為冇人住嘅單位，我哋唔知嗰啲水究竟 stagnant 咗幾耐。

問：咁如果係講有人住嗰啲，兩分鐘嚟講喇，沖咗兩分鐘，咁你當假設係隔夜水嘅時候，積埋、積埋嘅時候，喺個水龍頭附近，係有鉛嘅，譬如話有 10 個 micrograms，用番嗰個標準先喇，係啱啱係超標，可以話，10 個 micrograms。如果你驗呢啲隔夜水就有呢個後果嘞。但係如果開足個水喉，沖咗兩分鐘之後，大概係幾多呢，剩番？

答：唔知道，因為我哋冇做任何實驗去即係將隔夜水同埋嗰個 flushed 嘅 sample，究竟有啲咩嘢 empirical 嘅 correlations，係我哋

係冇做過呢樣嘢。

問：同埋百分比都完全唔知嘅？

答：唔知。

問：有做過？

答：冇。

問：可唔可以話起碼 substantially 係好大部分地減少咗，可唔可以咁講呢？

答：我諗你睇番我哋嘅 task force 嘅 report，佢有做過 stagnation test㗎嘛。佢喺一個空置單位做過 stagnation test。嗰度你可以睇到即係嗰個 stagnation，as expected，佢個 lead 係會高啲嘅。因為你嘅 contact time 耐咗吖嘛，個 dissolution of water 就係高咗㗎嘛。

問：所以隔夜水同埋開足水喉兩分鐘之後，應該爭好遠個喎？

答：呢個就 depends 嗰個入面含鉛部件有幾多喇。

問：因為我自己都有啲數據嘅，就係一個未曾入去住嘅，一個仲係新嘅樓宇，咁我哋就有機會就去做，咁就係先就隔夜水。咁呢個即係新鮮，好新嘅，完全冇開過嘅水喉，咁就好高嘅。

答：係。

問：咁跟住就有...（聽不清）--或者我遲啲至畀呢個數據你，而家暫時未搵到，okay。

我哋香港我哋水務署嚟講，東江水又好，水塘啲水又好，經過處理之後，咁然後就供畀市民嚟用喇。

答：係。

問：咁啲水就經過啲大嘅水喉一路咁去喇？

答：係。

問：喺街喉喇，或者。咁去到某一個地盤嗰度嘞，咁然後就有個

connecting point 喇，去到嗰度啲水係非常好㗎嘛。

答：唔。

問：係咪？只有點零一，0.01 嘅鉛，係咪？

答：通常嚟講係低過 1 個 microgram per litre 嘅。

問：咁即係個水係...

答：即係你 10 億分之 1 喇。。

問：10 億分之 1，係。咁即係譬如話百分比，畀自己幾多分呀？即係畀幾多分？

答：你指點樣畀自己幾多？

問：即係你當考試咁喇。

答：我哋啲水質符合世衞標準，我哋已經係叫做即係達標個囉喎，其實已經。我哋...

問：梗係達標，唔只達標添。

答：我哋唔只--我哋唔會話即係幫自己嘅水畀幾多分。

問：即係低好好緊要嘅，係咪？

主席：唔係，咩嘢低得好緊要？

李先生：即係嗰個含鉛嘅。

主席：哦，係，係。

李先生：喺個水度係低得好緊要。

主席：個分數高得好緊要。

李先生：分數就高得好緊要。

主席：係。

李先生：係嘞。

問：係咪？

答：我諗我唔可以話畀分喇，即係我哋嗰個監測數據出嚟，即係喺供應畀市民嘅食水，佢嗰個含鉛量係低於每公升 1 微克。

問：Okay。如果係咁樣講呢，所以譬如喺一個普通一個用戶嘅水喉，一開出嚟，就算係開咗好耐嘅，或者喺下晝、夜晚至開嘅，咁如果你驗到係兩個微克，已經好犀利個囉喎。因為呢佢...

答：但係冇問題㗎。

問：唔係，因為你呢--唔係講問題先。即係啲鉛都緊要個喎，因為你好低--原本係你街喉嗰度冇㗎嘛，係咪？你喺街嗰度嗰陣時係冇㗎嘛，差唔多係冇㗎嘛，咁而家去到佢嗰度就有兩個微克嘞，咁即係水喉有問題喇。

答：我諗你唔可以用一個咁微量嘅數據，譬如 less than 1，and then 你去到 2 呢，你就覺得，嘩，增加咗成一倍，即係唔可以咁樣去比較嘅。

問：唔好講倍先喇。咁...

主席：唔係，assume 冇其他外來嘅因素，唔好有其他 environmental 嘅 interference。總之即係純粹從呢個內部供水系統去睇。

問：咁即係都有問題個囉喎。

答：冇，你符合世衞標準，個 10 嗰個微克嗰個吖嘛，係，咁...

問：係，因為你沖過喇，好耐喇嘛。

答：但係都唔表示兩個 microgram 係有問題㗎。

問：即係 significant，我只係可以話 significant。

答：In what way significant?

問：即係起碼你證明到呢座屋裏面嗰啲水喉係含鉛囉，唔係佢邊度搵到啲鉛水出嚟啫？

答：鉛可以嚟自好多 sources。

問：咁而家你哋當個水喉先喇。你當冇出面嘅影響先喇，而家，好似主席話。

答：頭先有位律師都問過，你 copper alloy，佢都會 leach 啲鉛出嚟個喎，唔一定係...

問：係喇，咁咪得囉。

答：嗄。

問：我唔理佢邊個方，即係求其水喉同水喉裏面有啲鉛入咗去喇嘛，若果唔係，點會多咗啫？

主席：內部供水系統，唔好理佢究竟係水喉抑或部件，總之有...

答：但係佢符合標準，我覺得冇問題。

主席：係。唔係，呢個另外一件事啫。

答：嗄。

主席：係，另外一件事先喇。

問：因為我聽到你講啲口供成日--我覺得你太過成日諗住我哋唔好超標，冇超標。你明唔明呀？你而家諗下離開呢個 box 好唔好呀？即係唔好成日喺個 box 度講番呢啲嘢，我哋聽過好多次㗎嘞。

你本來係差唔多零嘅，差唔多冇嘅，冇鉛嘅，去到街嗰度都冇嘅。一入咗嚟，喺開水喉，啡之後都有喎，咁即係啲水喉有啲問題喇，啲鉛就喺個水喉嗰度嚟㗎喇咁，好簡單之嘛。

主席：應該咁講，個內部供水系統裏面有鉛，咁係咪有問題就另外一件事。

答：嗄。

問：即係入咗水喇，入咗水喇，係咪呢？

答：咁我哋--喺我哋科學角度嚟睇，如果佢符合個標準，我哋唔覺得有問題個喎。

問：Okay。頭先今朝都有講過㗎，你話如果係驗鉛呢喺啲水度，係如果係超過呢，就--係，你話"beyond which is harmful"，即係講 WHO 嗰度，嗄，你話 beyond 即係有個標準喺度，"beyond which is harmful, below which, then there is no problem."大概係咁樣講，記唔記得？

答：係講緊 threshold 吖嘛，有啲 chemical 有冇 threshold 吖嘛？

問：係喇，係喇。

答：嗄。

問：咁即係話你揀住啲標準，10 微克呢個標準，咁若果喺水喉度驗咗水，係超過 10，咁就有問題，低過 10 就冇問題，咁啱唔啱呀？

答：係。

問：好嘞，我如果而家喺水--開水喉，有杯水，咁我就交畀你，當然我冇權交畀你喇，你嗰時喺政府做嘅時候，政府部門話陳生，唔該驗下呢杯水，睇下有冇危險性，係可能含鉛，咁我唔知佢含鉛嘅量幾多，咁你攞去驗。驗完係 11 嘅微克，咁你點辦呢？你個 conclusion，你個結論係咩嘢呢？

答：首先第一，根據我哋嗰個--我哋叫質量監控系統呢，你就咁攞個水辦畀我呢，我只能夠話呢個係 sample as received，然後驗出嚟嘅數據呢，我哋唔會 interpret 嘅。

問：咁個數據呢就係話 11 微克 1 公斤，係咁多㗎嘞。

答：冇錯。

問：咁你話唔 interpret，點解呢？有...

答：因為我唔知道你個 sampling procedure 係點，同埋你係咪用 proper 嘅 sampling bottle 呀，個 procedure 係咪跟足晒嗰個 sampling procedure 嚟做個喎。

問：如果我呢杯水原來係你個大徒弟攞去驗嘅，可靠喇啩？

答：對唔住喇都。

問：吓？咁...

主席：唔係，assume 所有嗰啲 sampling procedure 係...

李先生：做足。

主席：...係做足嘅，跟你嘅。

答：咁如果你話...

主席：驗咗出嚟 11 嘞，咁...

答：11 我哋咪話你 exceed WHO guideline。

主席：唔。

問：會唔會話？

答：會，如果你係 11，如果你 compare 佢個 standard 係 10 嘅，你咪話 exceed 囉。

問：係嘞。

答：嗄。

問：如果係咁樣嘅時候，咁你會唔會話如果飲落去，可能有問題喎。

答：唔會，我哋唔會講呢樣。

問：唔會，因為你唔知佢幾多杯，同埋飲幾耐？

答：因為我哋唔係 health 嘅 expert，或者係 authority，我哋唔會話飲呢樣嘢對身體會產生咩嘢 health effect 嘅。

問：但係畀過啲文獻你睇㗎喇，石大狀佢話嗰個係 1993 年 WHO 嗰個真版本嘅時候呢，佢話呢個叫做 cumulative poison 嚟㗎嘛，世衞講㗎，即係差唔多食煙咁喇，唔會一時--一食就死嘅，佢係 cumulative 嘅 poison，係咪呀？一路咁食咪一路咁，積埋積埋咁就唔好囉，咁你接受㗎嘛？

答：世衞不嬲咁講㗎喇。

問：係，咁你接受㗎嘛？

答：係，世衞係咁講，係 cumulative poison 嚟㗎嘛，lead 係。

問：係囉，咁所以呢，水如果係有超過嘅，譬如唔止 11，20，25，咁你冇理由叫人照飲可也個喎。

答：點解要咁嘅情況出現，好似公共屋邨咁，我哋要 provide alternative 嘅 source 畀佢囉。

問：即係唔好飲喇叫佢？

答：係喇，咪有個 bottled water 呀，temporary down pipe 呀嗰啲咁嘅嘢。

問：係呀，如果唔係你都唔使做咁多嘢喇。

答：嗄。

問：咁即係呢，你嘅立場呢就係，呢啲水唔適宜市民飲嘞。

答：如果你係...

問：超標。

答：...如果你係超標嘅話，我哋 for the sake of safety，都係要佢即係避開呢一個水源，用一個 alternative 嘅 water supply 嘅。

問：係嘞，係嘞。如果有呢啲咁嘅超標嘅鉛喺啲水度，就你煲熟咗佢，煲滾咗嚟飲都唔掂㗎，啱唔啱呀？

答：煲水係唔可以清除鉛個喎，...

問：係呀。

答：...只能 concentrate 嗰啲鉛㗎可能。

問：係喇，係喇，所以啲水如果以--出於無知，揀咗啲鉛水，即係超標嗰啲喇，煲咗佢以為殺菌，殺菌就殺到嘅，但係鉛係殺唔到㗎嘛，甚至可能仲多㗎，係咪，你嘅意思即係？

答：Concentration 吖嘛因為。

問：係喇，係喇，所以你--所以睇嗰啲文獻呢，都話叫你--如果你去攞水辦嘅時候呢，都要係--嗰啲係要凍嘅水，唔好用熱水嚟攞個水辦，啱唔啱呀？

答：對唔住，因為攞水辦要由 cold water tape 呢，目的呢就係如果你要用熱水嗰個 tape 呢，你分分鐘，因為你溫--水嘅溫度高呢，會增加嗰啲鉛嘅 solubility 嘅。

問：係嘞，就加咗多啲鉛素喺度，係咪？鉛嘅素，係咪？

答：咁咪即係冇代表性喇個辦。

問：係嘞，咁所以要用凍水㗎嘛。

答：係。

問：所以個水溫都重要㗎嘛？

答：係。

問：Okay。咁所以--如果咁樣講，講番去攞水辦嘅時候，如果係你--因為你哋個部門呢，已經知道香港啲公屋，起碼有啲公屋有鉛水超標嘅問題，你哋知道㗎喇，係咪？

答：發生咗呢件事之後咪知囉。

問：係喇，咁知道，所以你嘅風險都即刻同佢升級喇。

答：唔。

問：係咪呀？你哋冇啲咩顏色嗰啲升級呀，係咪呀？

答：冇。

問：冇嘅，咁你升級咗嘞，跟住屋署就請你哋幫手驗喇，啱唔啱呀？

答：係。

問：好嘞，咁你去驗嘅時候，你個決定就係唔要，你一早已經決定咗嘞，唔要隔夜水嘅，係咪？沖咗水喉至驗嘅，啱唔啱呀？

答：因為我哋要攞一個有代表性嘅樣辦，...

問：我知，我知。

答：...所以我就唔用嗰個...

問：係嘞。

答：...即係 first draw 嘅水。

問：係嘞，咁所以呢，如果有人住開嘅呢，就啡 2 分鐘，開大水喉 2 分鐘，然後至攞水。

答：唔。

問：同埋攞水嘅期間係咪要嗰個 flow 呀，個流伙要 constant㗎，係咪呀？

答：係，你開 maximum 已經係 constant 喇。

問：係嘞，咁就即係 maximum，constant，然後咁樣攞，okay。咁係咪你知道呢，因為你係開咗水喉 2 分鐘至驗嘅水，所以你攞咗啲咁嘅水辦返去驗呢，係驗到超標嘅機會係一定低過驗隔夜水嘅機會？

答：冇，我哋唔會 make 一個 presumption，即係邊一個水辦會超標，邊一類水辦唔會超標嘅，我哋係...

問：唔係喎。

答：...照樣攞個水辦，係大家係好 consistently 咁樣去好

objectively 咁做，咁當啲水係 flush 2 分鐘，經過內部供水系統，如果佢有一啲 contaminant released 呢，佢照樣 pick up，我哋照樣驗到出嚟嘅。

問：其實石大律師問咗你㗎喇。

答：嗄。

問：你話 common sense 係啱嘅咁，用 common sense 吖嘛，隔夜水，大家都知道，沖完之後，一定少過--可能一樣，可能佢根本冇事㗎，可能佢完全冇事㗎啲水，咁隔夜水都冇事囉，咁但係如果係你思疑佢有鉛嘅，所以就要驗嘅時候，咁你用隔夜水去驗呢，係驗到含鉛超標呢嘅機會一定大過驗嗰啲沖完 2 分鐘，然後攞嘅水㗎嘛，邏輯上啱唔啱呀？

答：未必一定。

問：有咩嘢可能唔係呢？

答：如果你個系統冇鉛嘅話，你就算你 first draw 都冇...

問：啱吖，啱吖，頭先我已經講咗，...

答：係喇。

問：...如果完全冇鉛冇問題㗎。

答：嗄。

問：咁如果有鉛嘅，咁你驗到有鉛超標嘅機會就一定大過沖咗 2 分鐘嗰啲㗎喇，邏輯上。

答：邏輯上係，不過你要考慮你嗰個 concentration 呀，個鉛個 concentration 呢，係一個 transient 嘅 concentration，一個即係 instantaneous 喇我叫，你一開水喉呢，已經完全唔同晒。

問：係嘞。

答：同埋你唔可以話畀我聽你全日飲嘅水都係呢一個水平。

問：啱，你話一開水喉就完全唔同晒，即係其實開 10 秒鐘，個分別都好大？

答：我諗你睇番我哋個 task group 嘅 report，亦都有 demonstrate 到呢一點，就係嗰個 effect of flushing 同...（聽不清）㗎嘞已經係。

問：即係你答我題目喇，即係 10--就算 10 秒鐘呀，個分別...

答：呢個我唔知呀，我哋見--我哋做就係 1 分鐘起。

問：唔係，但係你話吖嘛，一開水喉就已經跌吖嘛，跌得好緊要吖嘛，你講㗎。

主席：有分別喇，不過個 extent 係幾多...

答：係，...

主席：...就唔知喇，係咪？

答：...你等如你 10 秒鐘你可能係 clear 咗你個水喉頭，或者後面少少嘅水喇。

問：即係你自己講喇，就跌得好緊要喇，一開水喉就。

答：因為我睇番個 task group 嘅 report 吖嘛。

問：我跟番你啲口供問番你咋嘛。

答：嗄。

問：Okay。咁即係掉轉嚟講，如果係--唔需要喇，呢啲邏輯可以唔需要而家講。我哋睇到就--你就去英國係--有一個電郵就去英國，問人哋畀意見嘅，啱唔啱？

答：係。

問：我哋睇咗㗎嘞。咁就你攞到人哋--好快脆就--好似幾日就畀咗個答案你㗎嘞，係咪？

答：係。

問：唔好意思。

李先生：主席，唔好意思，因為我有嘅空間係好細，所以啲文件重疊得好緊要。

係C19.6，係14575同6同7。

我哋先睇你嗰個，係14576，喺底下，嗰頁，即係個頁嗰底下。

答：唔。

問：你睇到個日期就係7月21號，舊年，啱唔啱？

答：係。

問：咁你就send去畀嗰個DWI Enquiries，係咪？係咪呀，個電郵個上面嗰度？

答：係。

問：咁你就話"In Hong Kong, there has recently been the lead in water incident in the new public housing estates. The method of taking water sample from tap after 2-3 minutes flushing practised by my Department has been a matter of considerable debate by the community and subjected to challenge. Currently, we are following the provisional guideline value of lead 10 micrograms per litre for compliance checking of drinking water quality for lifetime consumption."

我就唔明點解for lifetime consumption呢？

答：世衞嗰個標準定出嚟係for lifetime consumption㗎嘛，唔係係一個instantaneous嘅consumption㗎嘛。

問：哦，即係一個長嘅時間？

答：嗄。

問：Okay。

答：終身飲用。

問：好難終身喎？佢搬屋，咪已經唔同咗囉。

答：咁你都要飲水㗎嘛。

問：Okay，okay，all right。好嘞，咁你跟住就話"At present, I am not aware that there is a harmonised approach in taking water sample for lead testing in EU. In this regard, I write to enquire about the sampling procedure for lead testing in drinking water at consumer taps in [the] UK for assessing the compliance with the parametric concentration of 10 micrograms per litre as specified in the Water Quality Regulation of UK and EC Directive for drinking water standard."

你好清楚就問人哋，就係話「喂，而家想 assess 個 compliance with 呢個 standard 喎」，係咪？

答：係。

問：咁就"If stagnation sample, say overnight or several hours is taken for lead testing, what is the standard/reference value for compliance assessment."

就係咁嘞。

答：唔。

問：咁佢嘅答覆就好清楚，其實已經讀咗㗎嘞，喺 14575。嗰個第三段，佢就話--第三段，"Samples for lead must be 'first draw' samples, that is, the sample comprises the first litre of water drawn from the tap before the tap is flushed in preparation for further samples to be taken。"

睇到喇嘛？

答：係。

問：咁跟住嗰段，就你讀過，所以我唔想讀晒嘞。你 mention 咗個 limit 喇，10 micrograms per litre。就佢答你嘅時候講到呢度喇。咁就去到尾嘞，屘屘嗰四行嘞，佢話"The company..."，即係個

water supplier 喇，"...must also give the consumer written advice on actions they can take to reduce the risk from lead in their water supply, which might include flushing the tap before using the water for drinking or cooking, and replacing any private lead pipework."

英國就係當佢驗過之後，再重複驗過之後，有事嘞，咁就要書面嘅忠告畀嗰啲用戶，係咪？即係教佢哋，「嗱，如果用嚟飲或者要攞嚟煮食嘅時候呢，一定要沖。」啱吖嘛，呢度？

答：啱。

問：你哋都有，係咪喺個本子度，呢個，呢一個本子嗰度，係咪？

答：據我所知喺，喺發生鉛水事件之後，衞生署已經上載咗嗰個--喺個政府新聞網嘅網頁就教導市民即係喺用水之前都 flush 下嗰個 tap 嘅用水嘅。

問：呢個本子吖嘛？

答：唔係，除咗呢個本子，衞生署...

問：上網都有？

答：...已經有，上網。

問：Okay。跟住嗰段都重要嘅，叫做"Over-night stagnation sampling is not carried out very widely, because it would normally be dependent upon the consumer to take the sample first thing in the morning, and companies prefer to take their own samples."

呢度即係話唔係嗰啲公司，即係供水啲公司，唔係佢哋唔想，不過唔容易，因為嗰啲用戶，你要佢合作，好慘嘅。譬如佢起身去廁所，去洗下手，咁已經又用咗嘞。

答：唔。

問：係咪？就係咁解之嘛。

答：或者半夜，我諗佢驚佢...

問：或者半夜，係嘞，係嘞。

答：嗄。

問：咁變咗你好難攞到真係 overnight㗎嘛，個意思就係咁之嘛。

答：係。

問：唔係唔女到，係咪？不過難，所以佢情願自己就第二啲時間去嘞，係咁解之嘛，呢度，係咪？

答：我諗佢想 safeguard 嗰個水辦嘅 integrity。

問：好。咁其實你即係問呢個，人哋嘅意見嘅時候，即係 7 月 21 嗰日，你哋已經做咗幾條邨驗水個囉喎，係咪？呢個...

答：係吖。

問：啟晴、葵聯、...

答：葵聯。

問：...永昌...

答：榮昌。

問：...--榮昌，呢三個邨已經做咗個囉喎，係咪？

答：嗄。

問：Okay。咁即係已經係唔用隔夜水㗎嘞，啱吖嘛？

答：係。

問：即係你哋沖幾多分鐘㗎？

答：我頭先講係兩至五分鐘。

問：即係五分鐘就係嗰啲未住嗰啲？

答：係。

問：有住嘅唔會超過兩分鐘嘅？

答：Normally 我哋嘅 instruction 係兩分鐘。

問：兩分鐘？

答：嗄。

問：所以唔應該超過兩分鐘？

答：嗄。

問：唔理佢邊層都好喇，係咪？

答：我諗--呢個係 standard protocol 嚟㗎嘛。

問：Okay。

答：二至五分鐘 or longer，if necessary。

問：好嘞，咁跟住你--你知道嘞，呢個委員會有兩個專家，就畀咗一個初步嘅意見書；我唔需要畀我睇，你知道㗎喇？

答：我見過。

問：咁其實就好清楚地話因為而家係驗鉛喺水嘅問題，一定要驗隔夜水嘅，好清楚咁講嘅，係咪？

答：你想 detect the presence of lead，你係可以驗隔夜水。

問：唔係可以，佢話一定要驗隔夜水。

答：我諗要...

問：我可以畀你睇㗎，需唔需要吖？

答：我知，我知。我諗我哋要大家要清楚大家抽樣嘅目的囉。

問：咁如果...

答：即係呢個同石大狀都即係...

問：當然，當然。

答：...交換過好多意見㗎嘞，呢樣。

問：係，係。但係而家未去到嗰度住，okay。

主席：未去到嗰度住。仲要去到嗰度呀？

問：咁你係咪--我個問題就咁呀，因為你--好緊要喎，而家唔係話淨係英國咩嘢囉喎，而家係國際嘅專家，兩個人寫一個共同嘅意見書喎，即係話你哋唔啱個囉喎。

答：我諗佢冇話我哋唔啱。我好尊重國際嘅專家，佢冇...

問：係。佢話一定要。佢冇話你唔啱，但係佢話一定要驗隔夜水吖嘛。

答：唔係佢--佢唔係話一定要驗隔夜水。

問：咁你咪睇下喇，睇下。

答：佢只係話英國、美國係驗隔夜水吖嘛，first draw 吖嘛。佢冇話我哋一定要驗隔夜水吖嘛。

問：係V，V1，然後tab 1，然後1至44。係嘞，okay。第二段，中間嗰段，第二段，呢個就係"... International Standards Organization Standard"即係"(ISO ..." --你好熟㗎，"5667-5) on sampling techniques of drinking water from treatment works and pipe distribution systems states that 'If the effects of materials on water quality are being investigated, then the initial draw off should be sampled. Samples may also be taken after a specified period of stagnation to provide information on the rate at which materials affect quality or the maximum likely effect.' For example ... " --咁就講UK 嘞，all right？

跟住就講USA 嘞。跟住講Japan 嘞。咁即係大家都係嘅，okay？

答：Japan 唔係。

問：Japan 唔係，okay。咁跟住就講嘞，"Fully flushed samples on their own may serve the purpose of assessing the

general quality of a drinking water as supplied, ..."

停一停先。佢話如果你係 fully flushed samples，係有咩嘢好呢，就係你睇下水，水嘅本質，即係你哋畀我供出嚟嘅水嘅本質係咪好嘞。

"... but will not give a representative assessment of the concentration of lead or other metals from the internal distribution system to which the consumer is exposed."

佢話如果你係想驗香港嘅水質好唔好，咪 flush 畀佢驗囉。但係如果你想驗嗰度有冇鉛，而係會唔會去到一個程度係會可能對建康有危險呢，就唔啱個囉喎。

答：但係嗰個 general quality 係包埋鉛個囉喎，所有嘅嘢個喎，唔係淨係咩嘢叫做 general quality 個喎。

問：唔係。我可以再去--我哋又要去番嗰個 ISO 5667㗎嘞，如果咁樣。

主席：我哋唔需要喎，其實，Mr Lee。其實我完全明白佢。

李先生：Okay。

主席：我哋尋日成日都係討論呢個問題之嘛。

李先生：好呀。好，得，可以。

問：因為點解呢？如果你係啱嘅呢，咁就永遠都唔使驗--因為佢有兩個層次嘅，嗰個 ISO 嗰度就。佢話如果你驗水嘅質素，普通嘅質素，就沖水嚟驗。如果你驗水裏面有冇含有一啲 metal，譬如鉛嗰啲，而睇下佢對人有冇影響，咁就一定要驗隔夜水。佢分開咁嘅層次講嘅。

答：所以而家你究竟係做 investigation sampling 吖，定係做 compliance sampling 喇。

問：好嘞，咁而家房署就請你哋驗啲水吖嘛，係咪合標吖嘛。

答：嗄。

問：點解呀？點解呀，你有冇諗過？

答：呢個咪係 compliance sampling --唔係，或者 compliance monitoring囉。

問：點解得㗎？最...

答：咁佢要決定嗰啲水係咪符合世衞標準㗎嘛。

問：如果唔係，點呢？

答：如果唔係，咪有跟進工作囉。

問：啱嘞。咁所以而家就係睇下啲鉛喺啲水裏面係去到咩嘢程度，會唔會超標，咁就好清楚就一定係唔係用即係普通嘅水質咁簡單吖嘛，一定係要隔夜水喇嘛。

答：但係普通嘅水質係包含所有 chemicals，或者如果你想驗 copper 都得㗎。其實唔...

問：唔係，你唔好講 copper，我而家講緊鉛。

答：鉛咪係包埋喺個 general quality 裏面㗎喇，已經。

問：點解？你點樣覺得佢有代表性呢？你點解要開完水喉至有代表性，唔開水喉冇代表性呢？代表乜嘢？

主席：我哋唔好再討論呢個問題喇。

李先生：唔係，主席，我有一個好重要嘅點畀佢。

主席：你有一個好咩嘢話？

李先生：好重要嘅睇法。

主席：講畀我聽喇。

李先生：係。

問：你話代表性，你成日講 average，啱唔啱？

答：係，average quality。

問：咩嘢叫做 average 呀？

答：Average overnight-time 嘅 quality。

問：唔好講先，普通--唔好講水先。如果有個高佬，一個矮嘅，咁我呢兩個人嘅 average，係你點樣計㗎？係咪加埋除二呀，係咪？

答：唔會喎。我諗高係高，矮係矮個喎。

問：咁係喇。咁我想要 average，咁點呢？譬如一班學生，四十個人，有啲高，有啲矮，咁我話 what is the average height？呢一班同學大家都十二歲，我想知道佢個平均高度，你係咪四十個人個高度加埋晒除四十喇，係咪？

答：我諗你用呢一個 example，我只能夠答番你，你唔係用 average，你係用嗰個 median，statistically。

主席：唔好爭拗呢啲喇。

李先生：好嘞。

主席：係。

問：咁我而家係你而家啲水...

主席：唔好爭拗呢啲。咪住先，Mr Lee，我想明白，即係你嘅意思就即係話--係咪想表達就係話「喂，其實有啲人可能係受影響㗎...」

李先生：唔係。

主席：唔係咁嘅意思，對唔住。咁就繼續喇。

問：我即係話你乜嘢叫做 representative，乜嘢有代表性？你就話要啡咗啲水，沖咗兩分鐘驗嗰啲就有代表性，係咪？

答：係。

問：係咪？代表咩嘢啫？

答:喺我哋嘅water science嘅角度嚟睇,代表性係即係話嗰個quality係represent嗰個水體嗰個--或者嗰個水個水質係有代表性嘅，就唔...

問：係喇，即係話啲水，開完水喉嗰啲水，啡完水喉兩分鐘之後嗰啲水，係有含鉛係去到咩嘢程度吖嘛，代表呢樣吖嘛。

答：但係你嗰個係standing water，唔係一個flowing water喎。

問：但係如果你想攞個平均，想攞個average，...

答：咪所以...

問：...你點可以將嗰個最嚴重嗰個撇咗去呢？咁點樣平均啫？最重要嗰個你唔要，咁個平均係咩嘢嚟㗎？我唔好理 median 好，average好，呢個數係呃人㗎。

答：我覺得呢個數唔可以話係呃人。呢個係代表...

問：呢個數係唔representative㗎。

主席：我哋唔好咁勞氣。

李先生：唔好。

主席：唔好咁勞氣，因為食飯時間到嘞。

問：你返去諗一諗，你而家諗一諗先，下晝我繼續問你。

主席：係呀，下晝繼續。我哋--唔係，我都唔係--我明你嘅意思，即係你係講緊個 representative 嗰個問題，就唔係講緊個 average 個問題喇。

李先生：佢成日用"average"個字㗎，佢講㗎。

主席：佢都唔係成日用嘅。

答：係呀。

李先生：係呀，佢...

主席：吓？

李先生：係 average 嘅。

主席：佢唔係成日用"average"呢個吖嘛，佢冇...

答：嗄。

主席：To be fair to 佢。

李先生：其實用邊個字都唔緊要。

主席：係。

李先生：用"representative"唔緊要㗎。

主席：係，representative。

李先生：你點 representative 都扰咗去嘞，仲 represent 乜嘢啫？

主席：唔係，其實呢個問題我哋尋日--不過晏晝繼續喇，不過呢個--不過我諗你繼續。我明你想表達嘅意思。我都係想我明白之嘛。係，我完全明白你想表達嘅意思，所以其實你係可以唔需要再追問落去。

李先生：Okay，我可以收工。

主席：不過我哋晏晝兩點半再繼續。

李先生：Okay。

下午 12 時 28 分聆訊押後

下午 2 時 31 分恢復聆訊

出席人士如前。

李先生：主席，我突然間覺得有啲星期五下晝同埋年廿七嘅 feel，所以就半個鐘頭就會停。

主席：非常好。

水務署第二證人：陳健民（水務署（總水務化驗師））宣誓繼續作供
李先生繼續盤問

問：證人，頭先我就想畀你睇一睇就有個單位，就未曾有人住嘅，跟住開水喉，而家我想 AC1 1-4 19 至 22 at page 21，你睇嗰度上面數落嚟第三行，「鉛」，你睇見去到中間個位，零分鐘就 272 嘅，睇唔睇到？

答：睇到。

問：隔籬嗰個就一分鐘-- sorry，兩分鐘，又係見到 2，272，跌咗落去 2 呢個 microgram，跟住五分鐘，都係 2 嘅啫，你睇到呢度喇嘛？

答：睇到。

問：如果係準確嘅話，即係話係跌得好緊要，係咪呀？

答：（沒有可聽到的回答）

問：同埋五分鐘都冇乜分別添，係咪呀？

答：即係證明...

問：一分鐘同兩分鐘冇乜分別，五分鐘--二同五係冇乜分別，係咪？

答：（沒有可聽到的回答）

問：即係證明係--呢個仲係未有人住過嘅屋嚟嘅，你明吖嘛？如果普通一個係有人住開好耐或者相當耐，啲水成日有人用嘅，如果係開大水喉「啡」兩分鐘應該就相當徹底㗎喇，係咪？

答：可以咁講。

問：頭先你就證供同埋尋日都有講到係教育啲市民，記唔記得？

答：係。

問：「教育」者即係等佢哋唔好會用嗰啲隔夜水嚟煲水飲或者係煮飯，係咪咁嘅意思？

答：我諗我係教育嘅意思即係話教育市民可以用水之前沖一沖個水喉，你先至攞水去用，你啲 result 如果係準確嘅話，亦都 demonstrate 到個 effectiveness of 嗰個 flushing。

問：但係你話教嗰啲市民可以唔好用嗰啲水，「啡」咗先用，其實你應該教佢「應該」呀，係咪？唔係「可以」，「應該」。

答：但係如果你對你自己嗰個供水系統，入面你唔知道有冇含鉛嘅，你為穩陣起見或者係 for prudence，你都應該係 flush 完之後先用，如果你好肯定你嗰個供水系統係冇 confirmed risk 嘅，你根本可以唔需要 flush，你都可以飲嘅，其實。

問：個問題就係如果啲市民都有呢個習慣，逢係未飲水之前都開大水喉「啡」兩分鐘，其實就就咁飲水喉水都應該安全，係咪？

答：係。

問：因為有一個英國喺香港嘅退休法官同我講，佢都有呢個問題，佢話「使乜緊要啫？我細路哥嗰時候已經阿媽教落，一早起身，如果想飲水，就『啡』咗個水喉兩分鐘，然後至飲㗎嘛。」即係如果你個個都知道呢樣嘢，就變咗一定安全，係咪？

答：我相信呢位法官應該係住喺英國好耐嘅，因為英國用鉛水喉，佢通常

嚟講，都係 flush 咗先至飲嘅，我嗰陣時喺英國受訓嗰陣時都係 flush 咗個水喉，我先至攞水飲。

問：但係而家問題就係香港水務署亦好多年都教香港市民慳水嘅，你知㗎喇？

答：係。

問：最近你哋個網站都仲係叫人哋慳水嘅，而家啲細路哥畫一滴大水咁樣慳水咁嘅，係咪？

答：係。

問：即係已經入咗市民個心裏面，大大細細都入咗去，我洗手，如果我擦番梘嘅時候，我熄咗佢添，直情一滴水都唔落嘅，因為慳到盡嘅，當而家叫市民「啡」水，同時又不停咁叫佢哋慳水以前，其實唔係咁容易教佢哋轉嘅，係咪？

答：其實「啡」咗個水你唔係一定嘥咗佢嘅，「啡」咗個水，你其實可以拎番嚟用其他非飲用用途㗎嘛，其他可以。

問：但係就好麻煩，...

答：我諗...

問：你要攞個盆嚟裝呀，係咪呀？好麻煩㗎喎。

答：我諗呢個係一個良好嘅習慣啫，你如果想唔嘥水嘅時候，你自然可以用一個 bucket 嚟裝咗啲水，然後攞去洗地又得，攞去淋花又得。

問：呢啲就真係一百分喇要畀，又慳水，又安全。所以英國都唔係咁做嘅，嗰個法官同我講都係，而家退休咗，佢都話會「啡」水，然後至飲。

答：係。

問：Okay，你覺唔覺得有需要，其實你哋有嘅，你頭先講咗，有 website 有，你呢本本子，我哋睇一睇呢本本子，好快脆，個秣巴就係 A1 tab 22 第 4 版，係喇，第 4 版，唔係，係喇，左手面呢個，你有本本子嘅，係咪呀？陳生。

答：係。

問：呢度上面有個圖嘅，中間嗰度就係「食水水質符合世界標準」，好大個字嘅，左、右邊都係 100 per cent 嘅，一百分嘅，百分之一百嘅，係咪？

答：（沒有可聽到的回答）

問：跟住落嚟，就話「食水水質符合世界標準」梗係講緊香港嘅食水，係咪？

答：係。

問：就話「水務署所供應的食水水質完全符合世衛水質標準，2007 年，水務署根據世衛訂定的水質準則推行水安全計劃，進一步保障供應給用戶的水質安全。」即係好正面嘅，係咪？市民睇落去就好安心，係咪？目的都係咁嘅。

答：（沒有可聽到的回答）

問：跟住又講，水質嘅監察制度咩嘢都係全面同埋嚴格，一路咁，整個食水供應同埋水務設施就各個環節就完善嘅水質監測，一路咁樣都係講好正面嘅嘢，啱唔啱？

答：（沒有可聽到的回答）

問：即係當呢個問題，其實你睇埋呢個 edition 出嘅，呢本係 2015 年 8 月出嘅，你睇下後面嗰度。

答：係。

問：即係呢個問題出現咗，呢個鉛水問題出現咗，係咪？

答：（沒有可聽到的回答）

問：你呢一方面即係話畀市長聽我哋啲食水係完全合乎世界標準嘅，即係唔使擔心，但係另外你又要叫市民開大個水喉，如果要安全嘅計，你就去睇第十版，第十版，「預防措施」，「2015 年 7 月初，有公共屋邨的食水樣本含鉛量，被驗出超出世衛標準和有水喉駁位被發現有使用含鉛的焊接物料。政府對事件高度重視，由政務司司長領導的跨部門會議於 7 月 11 日啟動，並作出重要後繼工作和相關措施的決定」。

跟住落嚟，跟住嗰段，「在受影響屋邨食水含鉛量超標問題獲得完全解決之前，居民可以採取下列預防措施」，呢度即係話其實係講

緊係受影響屋邨食水含鉛量超標嘅居民，係咪？就佢哋就「可以」咋喎，都係「可以採取下列預防措施」嘅啫，okay。

咁就「食水處理」，「如整晚沒有用水，翌日早上從各個水龍頭取水飲用或煮食前，應先行放水 1 至 2 分鐘。」跟住就「為節約用水，應利用容器將放出的水儲存作非飲用用途。」即係頭先你講嗰度。點解係 1 分鐘呢？我哋一路講開都 2 分鐘㗎喎？

答：我諗呢個係畀市民一個 general indication 嘅啫，如果你嗰個系統--即係譬如你--如果你由水喉到你屋企嘅水管可能個距離好短嘅，你可能一分鐘已經夠㗎喇其實，有啲可能係最遠嘅，離開嗰個--即係我哋話叫佢嗰個 stagnant water 嗰個 pipe 離開遠啲嘅，佢可以用兩分鐘。

問：其實即係我就覺得你應該安全啲，咪兩分鐘囉，點解又 1 至 2 呢？

答：呢個我諗係一個 general indication 啫。

問：Okay。

答：你 even though 好似紐西蘭，佢係叫你用 flush 500 mil.添，兩個 mug 嘅水就可以搞掂。

問：Okay，所以個問題就係咁，頭頭我畀你睇嗰啲就非常正面嘅，唔使擔心㗎喇，呢度就係「可以」啫，「你可以咁㗎，沖一沖喇。」即係我覺得個訊息係唔夠清晰，你同唔同意？

答：（沒有可聽到的回答）

問：同唔同意？係咪可以叫佢--即係等佢哋緊張啲，係咪可以呢？

答：我諗...

問：因為好容易，即係如果佢擺喺後面，分分鐘佢冇睇晒㗎嘛，喺網上睇下睇下，唔睇咁又點呢？我覺得係咪應該水務署應該積極啲，直情尤其是受影響嗰啲，直情叫佢哋一定--如果你所謂攞嚟飲或者食，一定要開大個水喉「啡」兩分鐘，然後至用，係咪咁應該安全啲？

答：係，我同意，呢啲係可以有改善嘅地方，呢啲用字嗰方面。

問：好，多謝你，我相信你係頭一次接受我嘅意見，可能你都睇住年廿七，okay。其實係咪政府--即係你哋係咪應該用啲 API 嚟，即係呢啲免

費嘅 announcement in public interest，可以即係叫人哋飲咗酒唔好駕駛汽車，唔好隨地吐痰，呢啲係咪好啲，廣泛啲傳？因為你除咗受影響嘅公屋，嗰啲就算你而家話唔係受影響嘅公屋其實都可能中招㗎嘛啲人，係咪呀？同埋私樓啲人都可能中招㗎嘛，唔知㗎嘛。

答：李大狀，我曾經接受一個千年禧年代嘅訪問嘅時候，我喺電台亦都同聽眾講「如果你唔肯定你屋企嘅供水系統有含鉛或者係乜嘢」嘅時候，我都係建議嗰啲市民就可以好似喺英國、美國咁，用水之前先 flush 嗰個水喉一、兩分鐘先至用水嘅，我喺電台有講過。

問：即係你未退休之前，有冇將呢個意見反映出嚟？

答：我喺電台講過，喺我未退休之前。

問：自己講？

答：係。

問：我嘅意思即係如果你叫政府當局就直情用呢啲免費電視台、電台嘅廣播咪更加深入民心？

答:我唔肯定衞生署係咪有製作一啲好似嗰啲 video 教啲市民點樣去處理食水含鉛嘅預防措施嘅。

問：即係可能有做？

答：因為我唔 certain，唔係我做，因為。

問：Okay，okay，okay，得。我跟住問你一樣嘢，就係你一開始畀口供之前，就你講過就有一個住戶調查，記唔記得？

答：係。

問：有一千戶嘅，係咪？你就話大概應該有百分之--雖然你未做完嘅，而家係未做完嘅。

答：係。

問：你嗰陣時係做咗三百四十八個啫，即係一半都未到，但係你就話係有大概係 95 個 per cent 啲人就話朝頭早就係洗面或者喺口先嘅，你記唔記得講過呢啲？

答：係，呢個我係由同事嗰度得到嘅初步資料嚟嘅。

問：即係如果 95 個 per cent 係洗面喺口，即係有 5 個 per cent 就攞嚟可能煲水或者煮食咁用，係咪呀？

答：我諗如果你--我唔知--即係 95 個 per cent 係 majority，5 個 per cent 係--我諗我--應該係有其他用途，或者係有直接飲用或者係點樣，即係開咗水之後點樣用，我哋唔係好清楚喇，我。

問：但係你話個問卷，你知唔知佢問咩嘢嘅呢？

答：唔知道，唔係我負責做呢樣嘢。

問：因為譬如你個問卷係爭好遠，啲問題，係咪？

答：（沒有可聽到的回答）

問：同埋你應該你仲要知道喎，譬如喺--公屋你知唔知有幾多個水龍頭？

答：我諗通常係有兩個，一個係廚房，一個係廁所，應該係。

問：仲有一個，仲有個 shower 嘅。

答：Shower 嗰個你唔會攞嚟飲吖嘛。

問：啱，咁就洗手、洗面嗰個都唔會攞嚟飲，好多時都，係咪呀？

答：係。

問：所以最重要就係廚房嗰個吖嘛？

答：係。

問：如果你一間屋裏面有三個水龍頭，你第一件事係唔係廚房嗰度，你哋變咗近廚房嗰個近水龍頭積住嗰啲就冇事嘅，仍然積喺度嘅，但係再入啲嗰啲可能已經流咗出嚟，啱唔啱？一間屋有三個水龍頭，係咪？廚房嗰個未郁住，佢可能洗面或者喺口，嗰個係沖涼房嗰個或者 shower，好喇，然後至開呢個廚房呢個，咪變咗廚房嗰個仍然近住嗰度仍然積住嘅，遠啲就可能流咗出嚟，係咪呀？

答：我唔係好清楚嗰啲 pumping 嘅 configuration，究竟嗰條水喉係入咗嚟之後去咗廚房先吖，定係去咗浴室先，呢個我唔係好清楚。

問：你唔知，okay，okay，冇問題。所以你唔知道問卷問咩嘢題目，所以你都同意個問卷問嘅題目重要吖嘛，逢係問卷個題目係最重要，你同意？

答：係。

問：你唔知吖嘛？

答：係。

問：Okay，最後我--你口供都講過嘅，叫做 dosing orthophosphate。

答：係。

問：你知道係咩嘢㗎？

答：知。

問：照我嘅理解，就其實個功能係幾好㗎喎，如果你擺咗呢一類嘢喺嗰啲水裏面，佢係會喺個水喉裏面就 form 一個好薄嘅一個膜，而且好堅固嘅，雖然好薄，好堅固嘅，變咗好似個水喉裏面有條內喉咁樣樣嘅作用，同唔同意？

答：係，佢係 form 咗個 lead phosphate，係一啲好 insoluble 嘅 lead compound。

問：同埋有啲 silicon 嗰啲就整到佢強，係咪？

答：係。

問：所以變咗就算嗰個銅喉出面裂咗都唔會漏水，因為佢裏面嗰條唔漏，你知唔知呢個 function？

答：我就未聽過銅喉落 orthophosphate 嘅其實，copper 同 phosphate 嘅 reaction 係咪 copper phosphate，呢個我就唔係好清楚，lead phosphate，我就肯定知道有。

問：其實一樣嘅啫，okay，唔緊要，即係你唔知？

答：我唔知係咪有 copper phosphate 可以有個 protection 嘅作用。

問：當你未退休之前，你有冇喺呢個問題上發表過意見，喺自己個部門裏

面？處理過呢啲問題？

主席：我諗佢唔係講緊 copper phosphate，佢嘅意思即係話就算你落咗焊料，你如果啲焊料有鉛嘅話，你嗰啲--你同 orthophosphate combine 咗，都係 lead phosphate 嘅。

答：係，但係你落嗰個 phosphate 係成條水喉咁行過㗎嘛，你可能係 preferentially 佢嗰個 orthophosphate 同嗰啲--好似主席講，嗰個 lead 一啲咁嘅 solder form 咗一啲 protective 嘅 film 喺度。

李先生：多謝主席。

問：你有冇喺呢一個問題上，即係政府一定要考慮呢一類嘅佢嘅好處喺邊度或者壞處喺邊度，你哋一定有考慮過，係咪？

答：係。

問：因為可以解決我哋個問題㗎喎，如果係好嘅話？

答：係。

問：你喺嗰度，你未退休之前，有冇喺呢個問題上發表過咩嘢意見或者作出咩嘢一個決定？

答：其實我哋係曾經諗過 orthophosphate 作為一個 corrosion inhibitor 究竟係咪適用喺香港嘅，即係我哋一路嘅評估就係 phosphate 係一個 nutrient 嚟嘅，而喺香港嘅 context，因為嗰個 tropical climate，嗰個水溫就比較高嘅，而你嗰啲 phosphate 入咗個喉管之後，如果你停留得耐，佢會為一啲微生物提供一啲養份，就令到啲喉管就生一啲我哋叫做生物膜 bioflim。

呢啲生物膜就可以 harbour 好多--即係未必一定係嗰啲我哋叫做 pathogenic 嘅 pathogens，即係嗰啲叫做致病性嘅病源體，例如係嗰啲細菌、病毒或者阿米巴原蟲嗰啲咁嘅嘢。

有啲咁嘅 pathogens 或者係嗰啲 opportunistic 嘅 pathogens 對一啲正常人係冇害嘅，但係對一啲譬如體質弱嗰啲，immunocompromise 嘅 patients 就可能就會構成健康風險嘅，例如好似 Legionnaires，你有機會可能會喺嗰啲咁嘅生物膜裏面，即係閪埋咗喺入面嘅，如果你嗰啲水唔係成日咁樣開住，有 stagnation 嘅時候，你帶嚟嗰個好處就未必一定--唔係，帶嚟嘅壞處未必一定多過好處嘅，其實就。

問：未必？

答：係。

問：未必，...

答：因為呢樣嘢我諗需要我哋衞生署嘅同事做一啲真係嗰啲 health risk 嘅評估嘅，如果你落呢一樣嘢落去。

問：即係衞生署嘅嘢嚟嘅，其實應該係？

答：係。

問：但係我聽你咁樣講，你相當負面㗎喇，係咪？你講到佢。

答：唔係，唔係，唔係，我係持開放態度嘅其實，因為呢啲 orthophosphate 其實係喺外國都好廣泛有人使用嘅，即係唔係一啲乜嘢 dangerous 或者係嗰啲 novel chemicals 嚟嘅。

問：你話香港嘅氣候唔同歐洲、德國嗰啲？

答：係。

問：人哋就實行好好㗎喎，美國都係，係咪？啲成功嘅例子多--即係冇話失敗嘅其實？你有冇聽過失敗？

答：李大狀，我亦都想補充少少。

問：好。

答：呢啲水入面如果個 phosphate 好高嘅時候，你係會導致一啲--即係如果你 discharge 咗出去之後，你會導致一啲水體發生一啲我哋叫 eutrophication 嘅變化嘅。

問：明白，當然，啲水任何過量都唔好㗎喇，做人都係，你食咩嘢，食得多都肥，都唔好喇，有啲就唔食得多都肥。但係如果佢唔過量，你唔可以講過量，佢控制得唔好咪過量，控制得好唔應該過量，係咪呀？

答：我而家唔係講過量，我哋講係 optimise 嘅 operation，一啲優化咗嘅 operation，任何如果呢啲水嘅水質佢入面嘅養份，例如係 phosphate 高咗嘅時候，呢一啲水出到去出面嘅水體，可能導致一啲水體發生一啲我哋叫 eutrophication 嘅現象，eutrophication 就會引致嗰啲水體，譬如水塘，佢嗰個 algal growth 就好緊要下嘅...

問：唔係，唔好講水塘，譬如佢係將呢啲咁嘅物體，係臨到入屋嘅時候至放，佢可以咁做㗎喎，即係入到譬如酒店咁樣，或者如果成座樓宇，係可以喺嗰個水喉嗰個位至擺入去，你知唔知？可以咁做㗎喎。

答：我冇經驗聽過或者聽過有一啲 building 佢會自己落一啲 orthophosphate，然後入去嗰個 consumer 嘅 tap。

問：我正正話畀你聽菲律賓就有啲酒店就係咁做，你未聽過？

答：未聽過。

問：Okay。

答：我所聽過嘅，所有 orthophosphate 落都係喺 treatment works 落嘅。

問：唔係嘅，可以兩樣都得嘅，不過呢樣你唔--但係你又好熟嘅，但係你都覺得呢個問題其實唔係水務署處理嘅，係咪呢？定係醫...

答：唔係，我哋...

問：衞生部點呢？

答：...同衞生署大家都會有合作嘅，但係喺水務署嘅評估，即係覺得有個 biofilm formation 嘅問題，再加埋嗰個 eutrophication 嘅問題，可能令到啲水會出現一啲我哋叫做藻類嘅毒素，即係如果個水塘嗰啲藍綠藻嗰個爆發嘅時候，啲水會多咗一啲我哋叫做 microcystin 嗰啲咁嘅毒素喺嗰啲水入面嘅，所以你要平衡嗰個 benefits 同埋個 risks。

李先生：可唔可以畀我一分鐘？未夠鐘，不過我冇問題，冇問題。

主席：好。你冇得問喎，你想問咩嘢呀？

許佐賓先生：呢個係澄清少少係陳先生嘅證供出嚟嘅一個字嘅啫。

主席：哦，講吖。

許佐賓先生盤問

問：大約今朝早 11 點 37 分嗰時，陳生，你講過話你知道 1987 年之後有鉛嘅焊料就 ban 咗嘅。

主席：係，佢今朝係咁講過。

答：係。

問：我想知道你個人個定義嗰個"ban"，個"ban"字係點解啫？你可唔可以幫幫我手，有一件文件已經打開咗，喺你後面，可唔可以麻煩你企一企起身，望一望嗰件文件，你要企起身先睇到，喺牆度嘅，有六樣嘢，嗰六樣嘢你算唔算係 ban 咗？

主席：呢個有咩嘢--唔係，唔係，你...

答：我唔明你嘅意思，我唔明你嘅問題。

主席：我唔係好明，有咩嘢--你想表--唔係，你請坐，陳生。

許佐賓先生：主席，因為嗰一份文件嗰六件嘢，照我個理解，就係 ban 咗，而如果例如我喺你面前，喺呢個聆訊會度揸住一支煙仔，點起咗佢，就唔只話 ban，你可能會趕我出場，又可能會有人可以罰我，有可能

罰款，如果我唔交嘅話，可能坐監。咁我想知道陳生嗰個"ban"字同我哋平時所理解嗰個 ban 同唔同咁解。

主席：唔准用囉。

答：係囉。

主席：唔准用囉。

問：呢個就係你嘅理解？

主席：864-2，1983 年通過，啱唔啱？

答：係。

許佐賓先生：係，咁...

主席：但係最初嗰陣時候，你睇番 5.1、5.2，講 solder materials，就未有講，依然係可以講 C and G grade 嘅 solder，去到 1987 年有一個 amendment 修改 864，於是就有咗 table 17 出現，table 17 就講 0.01 個 per cent。

許佐賓先生：所以主席，我個問題就係如果啲人繼續用，1987 年之後繼續用咁又點呢？

主席：咁唔合規格，如果你用超過 0.01 米。

許佐賓先生：但係就唔係 ban。

主席：到而家都冇 ban㗎。

石先生：我諗呢個問題就唔係一個證人佢點樣去理解呢個字。

主席：唔係，唔係--係。

石先生：如果許大律師想話有冇刑事責任定係淨係合約責任定係如何如何，呢個你同個證人糾纏係冇用。

主席：唔係，如果你想問呢個--我頭先講冇錯吖嘛，我講我記得嗰啲嘢，全部啱吖嘛？

許佐賓先生：我同意，主席，with respect to 你。

主席：係喇，係喇，ban 即係個意思即係如果你--因為之前 C and G grade 係可以用嘅，C and G grade，你睇番，係講緊 40 個 per cent 或者 50 個 per cent 嘅 lead/tin 嘅 percentage，嗰度唔准用囉。

許佐賓先生：係。

主席：跟住 87 年個 amendment 之後咪 0.01，Table 17，咪就係咁囉。

許佐賓先生：係。

主席：明白。

許佐賓先生：多謝。

主席："Ban" in the sense --呢一個 sense，即係唔畀你用。覆問，如果有嘅話。

王先生：有覆問。

主席：係，問喇。

<u>王先生補問</u>

問：陳先生，你記得琴日委員會嘅大律師，石大律師就同你探討咗一個問題，就係關於嗰個世衛嗰個 10 微克嘅標準是否係 health-based 嘅，你記得有呢個題目嘛？

答：係，記得。

問：佢亦都用咗一啲時間喺呢度嘅，佢就話因為世界糧農組織嗰度有一個參數撤換咗，所以就嗰個 reasoning，就係因為咁樣，所以就--即係佢嘅講法就唔係 health-based，你就唔同意呢個講法嘅。

答：係。

問：呢個第一，第二個題目佢同你探討嘅就係關於呢個 10 微克呢個，喺香港特定嘅環境，由於我哋 1938 年已經禁咗用鉛喉，同埋 1987 年禁咗用含鉛焊料，所以其實我哋就應該可以 achieve 一個更加好嘅標準就唔係 10，可能更低嘅標準，呢個佢都同你探討過嘅，係咪？

答：係。

問：好，我就想同你睇一睇一個 Prof Bellinger 嘅 report，睇下你同唔同意佢嘅觀點，Prof Bellinger 個 report 就係喺 V1 嘅 63 頁，V1 嘅 63 頁，V1 63，喺最下面嗰段，最下嗰段，Prof Bellinger 就係喺度解答緊個問題，就係嗰個 adequacy 同埋個 suitability of 個"acceptance criteria laid down by the Water Supplies Department for heavy metals and, if necessary, to make recommendations."嘅，你見到嘛？

答：見到。

問：我唔讀出嚟，麻煩你睇一睇佢呢一段，然後睇下你同唔同意 Prof Bellinger 嘅講法？

答：同意嘅，我係。

問：好。

王先生：主席，我冇其他覆問。

主席：唔該。

好，唔該晒陳先生，可以離開，唔該。

答：多謝。

石先生：主席先生，我哋原先就係諗住尋日同埋今日就係接受陳先生嘅證供，陳先生今日嘅證供就提早完成，我哋就冇 line up 到另外一位

嘅證人，其他水務署嘅事實證人，因為我哋就而家就準備就係農曆年假之後 15 號嗰個星期就係 book 咗就係成個星期都係專家證人嘅，所以我哋就冇諗住今日會加插一個水務署嘅證人問佢兩個鐘頭，跟住就--如果問唔晒就 break，咁就唔係好理想。

主席：係。

石先生：所以我就提議就係如果我哋而家冇第二個證人，我哋就 adjourn，就到到 15 號返嚟，就係我哋委員會嘅專家證人開始作供。

主席：好。

石先生：應該係李行偉教授開始先。

主席：乜嘢話？

石先生：李教授開始作供先。

主席：好。九點半？

石先生：係，九點半。

主席：係，九點半，唔該，好，休庭。

2016 年 2 月 5 日

下午 3 時正聆訊押後

Friday, 5 February 2016

(9.43 am)

(Transcript of simultaneous interpretation
except where otherwise specified)

MR CHAN KIN MAN (on former affirmation)

Cross-examination by MR SHIEH (continued)

MR SHIEH: Good morning, Mr Chan.

Yesterday, before the adjournment, I showed you a document tabled at the 5th meeting of the task force, which is the Advisory Committee on water quality, and the document includes some recommendations.

Yesterday, you said that you did not have much recollection on this document shown or tabled at the meeting.

Have you tried to recall overnight? Any recollection?

A. I went back and checked some records and there was no discussion on this paper. It was only tabled.

Q. So at the Advisory Committee, this document was tabled, and perhaps members did not flip through the paper, but the paper was officially tabled for the record and that was it?

A. Right. The objective at the time was to look at the data, the stagnation samples, et cetera, and there was no discussion on the content of the paper or

recommendations therein.

Q. So, in effect, the paper was only tabled, there was no detailed discussion on the content of the paper, but the Advisory Committee on Water Resources and Quality of Water Supplies -- you have heard of this committee? It was established in around the year 2000, and then the WSD also had representatives in this Advisory Committee. It's a high-level committee; right?

A. The director is the deputy chairman, and other members of the Advisory Committee are from academic, green groups and other departments.

Q. So the director is the deputy chairman, but we do not have the relevant records on the proposed mitigation recommendations, that is who drafted the document.

A. The paper is issued by the Advisory Committee. I'm not quite sure about it, because the task force also has a number of members, one who is chairman of the Advisory Committee.

Q. (Chinese spoken)?

A. That's Prof Chan Hon Fai.

Q. Exactly, because we do not know the origin of the recommendations in the paper issued by the Advisory Committee, but the deputy chairman of the Advisory Committee is in fact the director of Water Supplies, and the document is issued under the name of the Advisory

Committee, and you don't know the role played by the director? That is, he only reluctantly represented the WSD in coming up with this paper?

A. I don't know. Maybe he saw this lead in water incident and he did some research and he wrote a paper. In his capacity as chairman of the task force, he produced a paper to the task force.

Q. So he used the Advisory Committee's capacity to do this.

A. I don't know.

Q. I knew this happened with the HKU council, but even with this Advisory Committee.

So you do not have first-hand information about the source of this document? You do not have first-hand recollection either, whether there was detailed discussion?

A. I'm quite sure there was no detailed discussion.

Q. We went through the contents of that paper yesterday, and that is the WSD recommended to educate the public about the procedures to test lead in water and then they recommended that you should take pre-flush and post-flush samples. If I ask whether you agree, what would you say?

A. From my viewpoint, I do not agree. I just need one flushed sample and that will represent the quality of the water people use daily. Pre-flush has no particular

meaning.

Q. I understand. You said that already. But for the sake of fairness, I put it to you -- for the record, you do not agree to what is said in that paper?

A. That's correct.

Q. We know that last night you collected some information, because yesterday we were asking you about the UK practice. Now you have given us some background, saying that you had some email with DWI, and then apart from that you did some information-gathering about the background to the UK requirement; that actually there are some measures to reduce plumbosolvency. I know you have a paper. Can you talk about it?

A. Well, this paper was published in 2013, IWA Publishing, 2012. This paper is about the UK experience in the monitoring and control of lead in drinking water. It quoted how they used RDT sampling to take samples. Then they did zonal monitoring. That is to monitor the water supply zones and whether lead was found. Also, the sampling results were used to evaluate orthophosphate dosing and whether it was effective.

Q. I have flipped through this paper very quickly. I don't know whether you have a bundle reference, but if you look at the journal reference, I would like to refer to page 338. I have just limited time to flip through

this. On page 338, the left-hand column, it is talking about the historical background in the UK, and whether lead was found. It is said most commonly lead is absent from treated waters at source. That is, whether it is at the treatment plants or at source, lead is absent. To cut a long story short, it is usually the pipeworks system. But then it is not all made with lead. It goes on to say that part of the piping might be made with lead.

A. The communication pipes.

Q. So it is not that all the piping from the source to the domestic unit is made with lead but only part of it?

A. Well, this is what I think they mean.

Q. Then look at the right-hand column, please:

"(In English) Lead pipes are considered to be the major source of lead in drinking water in the UK ..."

This is because of the background, they also mention Glasgow and other places where pipes were made with lead. But in Hong Kong, in the 1930s, lead was no longer permitted to be used for piping.

Then it goes on to say that the WHO has a booklet -- this is the first paragraph in the right-hand column -- on Childhood Lead Poisoning.

And the WHO has a different view, that the principal source of lead in drinking water is solder containing

lead. But then the experts have very diverse views as to where the lead will come from. Let us not dwell on this point because it's different from place to place.

Then it goes on to say:

"(In English) Whilst the removal of all lead pipes is the ultimate goal, the very high cost (about 10 billion pounds in the UK), problems with split ownership, likely long timescales and the scale of disruption involved prompted a national strategy for corrective action by water treatment measures as the logical first step to take. However, corrective water treatment is specific to individual water supply systems, as a function of water quality ...", and so on and so forth.

Basically, because of the historical problems, it is very difficult to replace all the piping, so maybe they should do something with the water treatment process. This is what it says.

That is why they use chemicals to lower the plumbosolvency. This is what is done in the UK. I believe it is also done in the US. This is also the background to the US measures.

Let us continue:

"(In English) Surveys based on random daytime sampling ..."

This is about testing the efficiency of reducing plumbosolvency. The UK made use of this RDT sampling. This is how RDT is relevant.

A. Well, talking about the background, it first used first draw, but as DWI said, it is not widely practised. The consumer would have to wake up early and he cannot use the water beforehand and then he has to do the first draw to take a sample.

But RDT means that during office hours on a working day, you go to the consumer's flat to collect a pre-flush sample. That is the RDT sampling.

Q. But this is not a pre-flush sample, it is random; right? It's called random. So you just go in and there might have been a long period of stagnation, you don't know. So it's called random.

But in July 2015, DWI replied you in an email saying that it must be first draw. Is that a statutory requirement?

A. According to the UK (Water Quality) Regulations 2000 (Amendment), it talks about first draw, but the first draw definition is not RDT.

Q. That's right. That's why the law says it must be first draw. That is what is said in the DWI email. It uses the word "must". But they have exercised expediency and the first draw might be affected by many different

factors so the quality of the first draw cannot be ensured, therefore they use RDT as a method outside the law?

A. That is why you can see from the email that many companies would prefer just going in and taking a sample.

Q. Okay. This literature is basically about the limitations of first draw.

This is about their normal methodology, meaning RDT, but this document does not support the use of fully flushed samples. This only serves to be a background for us to understand the DWI email to you.

A. I would like to explain the objective of RDT and that is to do zonal monitoring. It is to find out lead concentration at the tap in a particular area.

Q. But this is random. It is not a best-case or worst-case scenario. It is a random sampling method.

A. Yes, it is random sampling. As I said yesterday, it is part of audit monitoring.

CHAIRMAN: So it's the same. For example, if we do it at Kai Ching Estate, because at any time people would get up and take water -- I wake up in the morning, I would turn on the tap and then I would take the water sample, and then another one who is a caretaker would wake up at 5 pm only and the water going into his tap will be

different. That I totally understand.

But you said yesterday that it must be flushed, but this has nothing to do with what you said yesterday.

MR SHIEH: Yes, this is exactly what I am trying to say. You may be explaining many other things but this does not support a fully flushed sample?

A. I explained yesterday that the objective of having a flushed sample is not for zonal monitoring. It is for comparison monitoring.

CHAIRMAN: Yes, I understand.

A. We have different objectives and you have to understand, as you said yesterday, that the lead content in water has a close relationship with the stagnation time.

MR SHIEH: Yes, we understand.

A. If the RDT sample is taken from a tap and you don't know whether the tap has been used before, like if a caretaker has not used the tap for many days, then the sample lead concentration would be subject to variation and you would not be able to know the trend for the sake of zonal monitoring.

Why they advocate RDT sampling, it is because the basis is that with sufficient RDT sampling, you can eliminate the difference in stagnation time, because people do it differently and then you will still be able to get an overall lead concentration.

CHAIRMAN: Yes, we understand that. Very simply, if I go to Kai Ching Estate today, I want to know whether the water quality in Kai Ching is okay today, I would just go in any unit and turn on the tap and get a sample; right? I don't flush the tap, I will just get a sample, because at any one time somebody may be turning on a tap; right?

A. (Nodded head).

CHAIRMAN: That's what it is. This is a general assessment and you were talking about auditing and I have no problem with that.

Please continue.

MR SHIEH: Okay. You have explained that basically this document is relied on by you not to directly support a fully flushed or flushed sample. It is just used to explain the email communication from DWI, meaning the regulatory background?

A. Actually, I was trying to supplement what I said yesterday, because yesterday I talked about RDT sampling in the UK, and that is to optimise the corrosion control.

Q. That we understand.

A. This is not to support my sampling method or to support RDT sampling.

Q. Yes, we understand.

My last question is the Lead and Copper Rule in the

US. It says that should be the first draw.

Let me show you the document. This is in one of the annexes in your witness statements. C19.6, page 14587.

Let us look at page 14582 first. That is the beginning of the paper, the cover. The United Nations Environmental Protection Agency, Lead and Copper Rule, monitoring and reporting guidance for public water systems.

Then we go to page 14587, "(In English) How do I collect lead and copper tap water samples?"

Bullet point 2:

"(In English) Always collect a first-draw sample from a tap where the water has stood in the pipes for at least six hours (eg, no flushing, showering, et cetera)."

This is the first-draw rule in the Lead and Copper Rule in the US. There is an explanation later. Please go to page 14590. This is an annex to your witness statement as well. This is about the action level of the US, because if samples are taken from any place, they have a background. They have to know what the sampling is for, and this explains the USEPA regulatory background.

A. No, this is not regulatory, because in the US, lead is not in the National Primary Water Quality Regulation.

Q. The EPA has to set its own?

A. No. If it is legally enforceable water quality standard, it uses an MCL, maximum contaminant level, value to represent that it is legally enforceable. So for lead, it's called TT, treatment technique, and the action level set is 15 micrograms per litre. It's not a legal standard.

Q. Please look at page 14590, which is a consumer factsheet on lead in drinking water. The first heading:

"(In English) What is lead and how is it used?

Lead is a metal found in natural deposits as ores containing other elements."

So it is naturally occurring lead.

"(In English) It is sometimes used in household plumbing materials or in water service lines used to bring water from the main to the home.

Why is lead being regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels ..."

So that means it is not legally enforceable level.

"(In English) ... based slightly on possible health risks and exposure, are called maximum contaminant level goals.

The MCLG for lead has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below."

That is the most desirable scenario, should be, that the level is zero. But in reality, we can only say that it should be kept as low as possible. So it's similar to the WHO's idea of a low threshold.

A. No, no, not at all, because for MCLG, it talks about the goal, that is the maximum contaminant level goal. It should be best kept at zero --

Q. Or at least as low as possible, as you put it. So the WHO's idea is that it should be kept below threshold, that's the wording used. That is, we don't have a scientific calculation of the level. So it should only be kept as low as possible. Applying common sense, if you cannot come up with a figure by calculation, it should be kept at the lowest level as possible?

A. Right, but there was a goal.

Q. This is a goal, but for WHO, it's a threshold. But ultimately, these two are the same, because you cannot come up with a figure by calculation, so it's a low threshold?

A. It's quite different because this is the ultimate goal here. For low threshold, it is because there is no safety reference value above which is harmful, below

which is safe. So we can't say that below a certain threshold there is no problem.

Q. Let's continue. It says:

"(In English) Since lead contamination generally occurs from corrosion of household lead pipes, it cannot be directly detected or removed by the water system. Instead, EPA is requiring water systems to control the corrosiveness of their water if the level of lead at home taps exceeds an action level."

So this is similar to the UK regulation. That is, lead in water comes from lead pipes. But it doesn't expressly provide as the UK regulation. It only assumes that you cannot replace all the pipes. So, instead, you can only treat the water.

Essentially, it's the same as the UK regulation, that is you can only reduce the corrosiveness or plumbosolvency by applying chemicals to the water?

A. Because the scale of the problem is unknown, this method is applied to check the content of different metals in water.

Q. "(In English) The action level for lead has been set at 15 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to control this contaminant should it occur in drinking

water at their customers home taps."

Ideally they would like to have a zero level, so we apply this method to reduce plumbosolvency, but for present-day technology, using lead pipes, at most, you can only suppress it to 15 parts per billion. That is 15 micrograms per litre.

A. Right, 15 micrograms per litre.

Q. Different countries have different standards. The WHO's guideline is 10 and the US is 15.

In 2011, the derivation was actually based on the actual data obtained.

A. Well, yesterday I talked about the history.

Q. In 2011, because the threshold was scrapped, the recommended level is kept at 10, based on whether this can actually be achieved or not.

A. But the origin is that it's health-based. Although it's derived from the DWI, it's a provisional value in 2014. Given the technology and analytical achievability, the lowest level that can be achieved is 10.

Q. So, in other words, for WHO's method, it's just the expedient solution. It's not really a health-based level to set it at 10. But then there is no other alternative but to set it at 10, which is the possible lowest level?

A. I don't think you can put it in such a general way,

because for European Union, the latest guideline on drinking water quality in 2015, the figure is kept at 10, using the same derivation basis, to establish Australia's guidelines on drinking water quality. In Japan, China, New Zealand, they are still adopting the health-based level of 10.

CHAIRMAN: Australia adopts this level because it follows the WHO. But it could be 1 or 10 because you may be able to achieve 0.01.

A. But for the Australian one, it's different from the WHO. If I remember correctly, the standard for Australia, for children weighing 13 kilograms, it's done per litre per day.

CHAIRMAN: Let's not talk about the Australian Standard.

MR SHIEH: I just want to bring up this point. For the Lead and Copper Rule for the United States, ideally the level should be zero, but in practice, it's kept at 15, and the background is actually similar to that of the WHO.

A. No. So far, we still think that for WHO standard it's a health-based target. For the US, it's an action level, which means that if you exceed this limit, some corrective action will have to be taken. The set-up basis is completely different than the basis set for the guideline values of WHO.

Q. So from a layman's point of view, we test the water and

if it exceeds a certain level, action will have to be taken, either to the pipes or to educate the public. That means something will be triggered, after the test result shows problems. That is, after conducting water tests, problems are identified and action is taken.

A. I want to reiterate that for the first-draw sample in the United States, it assesses the effectiveness of corrosion control, to assess the effectiveness of corrosion control and treatment, rather than taking water samples followed by blood tests and implementing other public health measures. It's different. You need to consider the whole programme. Say, for example, you take samples as a standard monitoring for 100,000 people, 50 per cent of them must come from -- I mean you take 100 samples and 50 per cent of them must come from buildings using lead pipes, and after taking samples, the threshold is 10 per cent of the tap samples exceeding an action level, before the action level is triggered. Otherwise, no action is required.

Q. Now, the question is this. To put it more directly, to draw a very fine distinction -- well, there may be a difference in effectiveness of corrosion control and health-based risk, but it's not control for the sake of control. It's because there has been corrosion, causing health risks.

If you look at the consumer factsheet on lead in drinking water, the purpose of controlling corrosiveness is if the corrosive level is not controlled, lead will seep into water and ultimately affect people's health. That is why, from the Lead and Copper Rule in the United States -- to say that Lead and Copper Rule is for controlling corrosion rather than public health, this is not an actual distinction.

A. The background is this. If corrective action is required to control corrosiveness, then the first step is to consider whether to increase the orthophosphate in the water supply system, to add orthophosphate, and then to initiate public education programmes to educate consumers that you should only take water for drinking after it has been flushed, and then you need to conduct zonal monitoring, to look at whether corrosiveness level has been reduced and also ultimately service pipe replacement.

But there is no requirement to undertake immediate public health measures.

CHAIRMAN: No, it's just that you don't know, because it is not so written here. But what you said just now, it's means to an end. It's health-based.

MR SHIEH: It's not really for the sake of controlling corrosiveness. It's not for maintaining appearance. If

you take away the public health element, then --

CHAIRMAN: Well, I think -- aren't you being a bit too narrow-minded.

MR SHIEH: Are you drawing too fine a distinction?

CHAIRMAN: Let's not put it this way. Let's say you frame this too narrowly.

A. We consider when action will be taken when we look at the Lead and Copper Rule. Otherwise, it will be called -- it won't be called an action level.

MR SHIEH: The bottom of the page, 14590:

"(In English) How will I know if lead is in my drinking water?

If the levels of lead exceed the action level, the system must notify the public via newspapers, radio, TV and other means. Customers will be informed of what they can do at home to lower their exposure to lead. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health."

So the ultimate objective is to prevent serious risks to public health. In some countries, there may be mandatory blood tests. In some other countries, the public may be notified of such health risks and the public is advised to take their own measures, and the government will not do anything.

So just to put it -- controlling the corrosiveness is not just for the sake of controlling corrosion, but it's a health-based risk. So ultimately, it has to do with health, and that is why first-draw samples are taken, and you cannot say that first-draw samples should be taken only for corrosiveness control but not for public health?

A. I still think that the action level is to trigger corrective action, and the objective is corrosive control. Then, in the end, it may lead to the protection of public health. But then the action level, up to now, is still not health-based. It is not an action level which is health-based as compared with the WHO -- well, so far, it doesn't say it is not health-based, just that there is no threshold. The derivation history is still health-based.

MR SHIEH: I think we have exhaustively discussed the matter, and I will not repeat my questions.

I have no other questions, Chairman.

CHAIRMAN: Would others like to pose questions? Please raise your hand. Three. Okay.

Cross-examination by MR PENNICOTT

(All questions from Mr Pennicott were in English)

MR PENNICOTT: Mr Chan, good morning. I represent China State. I'm afraid I have to ask my questions in

English. If you wish to put the headphones, please do so, but please give your answers in Cantonese.

I have a few factual questions I want to ask you about, then I've got a few questions about the sampling and testing, the testing that was done on the Kai Ching Estate, and then a few questions about the task force report.

CHAIRMAN: (In English) I think you have to speak up a little bit, because I can't hear.

MR PENNICOTT: I'm sorry.

Mr Chan, I won't repeat what I said just a moment ago. I hope you heard me.

A. (In English) Yes.

Q. First of all, can I ask you to be shown a document at A1, page 2.

Mr Chan, this is a Legislative Council Panel on Housing document, and you will see a heading "Background" on A1, page 2, and it refers to:

"Annex 1 sets out the major events in chronological order since the end of June and early July [that's 2015] when fresh water samples from Kai Ching Estate were first suspected to contain excessive lead."

Could I ask you then to turn please to annex 1, which starts at page 13.

A. (In English) Yes.

Q. Mr Chan, could I ask you please to look at the entry on page 14, at 3 July 2015.

Do you have that reference?

A. (In English) Yes.

Q. It says:

"HA contacted WSD and two HOKLAS accredited laboratories to collect water samples from 11 locations in Kai Ching Estate to verify the findings and for cross-checking."

Mr Chan, so far as you are aware, was it 3 July upon which WSD was first contacted by the Housing Authority regarding this problem?

A. I have no recollection that they contacted directly the Water Science Division.

Q. Right. Do you have any recollection yourself of being contacted at the beginning of July by the Housing Authority?

A. (In English) I can't remember.

Q. The reason I ask you that, Mr Chan, is this. We know that the very first tests that were done on Kai Ching were on 3 July. Those tests, we know, from the questions that Mr Shieh has been putting to you and your answers, were done on the basis of flushed tests. Do you understand?

A. (In English) Yes.

Q. So whose decision was it, on 3 July or thereabouts, to use flushed testing?

A. (In English) For compliance testing with the WHO Guidelines for Drinking-water, it is the practice to take flushed samples for compliance checking. It is the standard practice given in our sampling manual. There's no need for any people to give, say, instruction to the water sampler.

Q. Right. So whoever was contacted simply followed the manual; is that your position?

A. (In English) I can't quite catch your question.

Q. Well, you have just told us that flushed sampling is what is referred to in the manual, and that's right, isn't it?

A. (In English) Yes, the sampling manual.

Q. Which we are going to look at in a moment. So is it your position that, having been contacted by the Housing Authority about this lead problem, the samplers just followed the manual? No independent consideration, no thought was given to any other methodology?

A. (In English) When we have to check the lead content in tap sample or in water samples, it's our practice to take flushed sample, and before that we have evaluated the different sampling protocol. But we think it is the general practice to take flushed sample for compliance

checking with WHO Guidelines.

Q. Could we just look very quickly at the sampling manual, which is referred to in your witness statement. You will find it at C2, page 1635.

We can see from C2/1635, Mr Chan, that it's a document, the sampling manual, that is dated 2 January 2014, and it was issued under your authority; do you see that --

A. (In English) Yes.

Q. -- as the chief waterworks chemist.

Can you tell us which part of this manual applies to the testing of lead?

A. (In English) Would you please turn to page 1651, section 5.1.2, "Samples for physical and chemical analyses". Chemical analyses" refers to all testing involving chemicals.

Q. So it's the section starting at 5.1.2, is it?

A. (In English) Yes.

Q. Then if you go over the page to 1652, and you look at the paragraph at the top, 5.1.2.2.1.1, we there see, in bold:

"Turn the tap on at maximum flow and let the water to flow for a minimum of 2 minutes in order to flush the interior of the nozzle and to free the service pipe of stagnant water. The period of flushing time required

depends on the length of the service pipes ...", and so forth.

So it's your understanding, is it, that on 3 July, when the first batch of 11 tests were done on Kai Ching, it was this manual and this paragraph in the manual that was being followed?

A. (In English) I can say this is the generic procedures. It's because the sampling manuals will not specifically apply to Kai Ching Estate sampling. You know we have a lot of sampling from, say, treatment works, water distribution system, service reservoirs and consumer taps. For the service reservoirs, in fact, the sampling tap has a long connecting service pipe to the service reservoir. So we have to flush a minimum of two minutes, or longer.

Q. Mr Chan, I'm only interested in what happened at Kai Ching and the decisions that were made leading up to the sampling and the testing that was done on Kai Ching. All right?

A. (In English) Yes.

Q. I'm not worried about anything else at the moment.

A. (In English) For Kai Ching, starting from the sampling for the public housing estates, for example Kai Ching Estate, we have specifically tailored, or say we have specific sampling procedures for taking samples for the

public housing estates, and the sampling procedures evolved as our experience gains.

Q. But the position is this, isn't it, Mr Chan, as I think Mr Shieh has already explored with you to some extent: having started using the flushed sample technique, that is a technique that you stuck with throughout, and you never changed it?

A. (In English) Right, for this exercise.

Q. All right.

Could I then -- we've got some handouts about the Kai Ching blocks that I would like to look at with you, which I think will hopefully speed up the few questions I have on this. (Handed).

Mr Chan, if you are looking at the first sheet that's just been handed to you, you will see a couple of tables at the top of the page, which seek to collate the numbers of tests -- sorry, samples -- that were taken at the Kai Ching Estate.

If we just take block 5, Mun Ching House, we can see that a total of 18 samples were taken. Do you see that?

A. Yes, I do.

Q. Before I plough on, can you ask you this: who was actually responsible for determining how many and where these samples would be taken?

A. Let me explain. The systematic water sampling

programme --

CHAIRMAN: Do you want to use Chinese or English?

A. Chinese.

Let me explain the sampling programme. The sampling system --

CHAIRMAN: Please answer the question. Who made the determination?

A. Who determined --

CHAIRMAN: Who determined how the samples would be taken and where? Who made the decision?

A. It should be an interdepartmental meeting. At that meeting, we would look at the results of water sampling.

CHAIRMAN: Who determined where samples were taken? Please answer his question or you will stay here for questions for a long time.

A. The Housing Department and the WSD jointly made this determination.

CHAIRMAN: Who?

A. I think --

CHAIRMAN: Don't say you "think". If you don't know, say you don't know. Is it you, because you are the chief chemist?

A. No, not me.

CHAIRMAN: Right, so you don't know who.

A. Well, we would, based on the water distribution network

provided by the Housing Department and based on the sampling protocol, take samples at the locations concerned.

CHAIRMAN: Who?

A. It should be the colleagues at the Customer Services Division.

CHAIRMAN: Who?

A. At that time, I suppose --

CHAIRMAN: Don't say you suppose. You can answer you don't know. Please.

Mr Chan, you can say you don't remember, you don't know.

A. At that time -- well, I know it's the Customer Services Division but I don't know which colleague made the final decision.

CHAIRMAN: So if we ask someone else, Mr Lam, say, he would know?

A. (Nodded head).

MR PENNICOTT: We can ask Mr Lam, but let me just ask you a couple of questions about --

CHAIRMAN: Sorry, I just want to know for sure the answer to this question. That is, 5.1.2.2.1.1, the generic method -- before the incident, you did not make any determination that the sampler should follow this method?

A. No, not before the incident, but subsequently, when the Housing Department was required to conduct water tests for all housing estates, without assistance, we then devised a sampling protocol.

CHAIRMAN: Based on this one?

A. No, with modification.

CHAIRMAN: Let me put it this way. You said that this is for Kai Ching, and then for other estates you adopted this method, this protocol. When was it?

A. Let me try to remember. For the HD's sampling, there was a sampling programme, and we instructed frontline colleagues to follow the sampling programme, to take samples at housing estates.

CHAIRMAN: So we are talking about, most importantly, whether samples taken should be flushed or unflushed. This one says unflushed. This is for Kai Ching. This one is flushed.

A. Right, flushed.

CHAIRMAN: Applied in Kai Ching. And then later, sampling was extended to all other estates.

A. Yes.

CHAIRMAN: At that time, to suggest that we continue to use this method of flushed samples, when was this decision made?

A. I have to refer to the sampling protocol's basis,

because the sampling protocol instructs colleagues --

CHAIRMAN: No, no, don't tell me the sampling protocol, not just yet. You need to check your log.

A. Right.

CHAIRMAN: You can. Next, who made the decision that samplers should follow this sampling protocol to use flushed samples?

A. I made the decision.

CHAIRMAN: All right.

MR PENNICOTT: If you go back to the first sheet that we were looking at, Mr Chan -- again, if you don't know the answer, please say so -- we can see, if we just look along the "total" line in the top table, that 18 samples were taken at Mun Ching House, 14 at block 6, ten at block 4, six at block 3, 24 at block 2 and 18 at block 1.

So the range of samples on the six blocks, Mr Chan, is from six to 24. Can you explain why four times as many samples were taken at Lok Ching House than were taken at Yan Ching House? How does the protocol apply to those figures?

A. Our sampling protocol is that from the water tank, for every down pipe, in each water supply zone, at the point farthest away from the water supply zone, samples would be taken.

As to why in one block six samples and in another block 24 samples were taken, I don't know. I need to check the records, whether the six samples were taken by us.

Q. They certainly were all taken by you, Mr Chan, because they are referred to in annex 1 of your witness statement, and all we have done is put onto this chart what's in annex 1 of your witness statement.

CHAIRMAN: No, I think some samples might have been taken by HD staff.

A. 22 samples were taken by the Housing Department.

MR PENNICOTT: Okay. Can we just pursue this a little bit further. Can you go to the next sheet. Let me try and explain it to you.

Before I do, can I just ask you this, Mr Chan. We know that the water sampling, the 93 tests, initial tests, that were carried out at Kai Ching took place between 3 July, as we have already touched on, and 10 July, just a period of a week or so.

Do you know whether or not WSD knew, when they did that sampling, that some of the units, the plumbing had been carried out in the volumetric precast units, on the mainland? Did you know that?

A. No, no idea. When we took samples, we would not first check whether this was a precast unit or not. We did it

uniformly, when taking samples. We would not distinguish the type.

Q. Okay. Looking at the first sheet -- it's Mun Ching House, it's block 5 -- 18 water samples were taken. On this block, the yellow indicates that those are the units where the plumbing was done on the mainland, in the VPBs. Do you see that?

A. Yes.

Q. We can see on this particular sheet, there is a generally sensible, it would appear, spread of samples, in the sense that you've got some on the upper floors, some on the lower floors, and you've got samples in each of the four wings. Do you see that?

A. (In English) Yes.

Q. And you've also got a spread of samples both in toilets and kitchens; do you see that?

A. (In English) Yes.

Q. If you go over to the next sheet, we are now at block 6, Yuet Ching House; do you see that, Mr Chan?

A. (In English) I am finding.

Q. It's the next sheet, Yuet Ching House.

A. (In English) Yes.

Q. This time, it is more complicated, because not only do we have plumbing in VPBs, we also have plumbing in VPKs, and that's indicated by the shaded area, both in blue

and yellow.

Now, 14 water samples here. Again, if you don't know, please say and we can ask somebody else. All of these samples were taken in kitchens, none in the bathrooms, none in the toilets. Do you know why that would be? Is there any reason for that?

A. When we took samples, usually we would start with taps in the kitchen, where the drinking water would usually be taken. But when colleagues arrived at the units, and if the tenants were reluctant in dismantling the fittings in the kitchen, then our colleagues would then proceed to take samples in toilets.

Q. Just as a point of reference, on this sheet, Mr Chan, we see that unit 2002 was sampled; do you see that?

A. (In English) Yes.

Q. There's "20" on the left-hand side, with "02". That is one of the supply chains that the task force selected to dismantle the components; do you recall?

A. (In English) Yes.

Q. We will come to a few questions on that in a moment. Just to give you the reference.

Could you go, please, to the next sheet. This is block 4, Sheung Ching House, where only ten water samples were taken. This time, insofar as we have been able to identify them, all in the toilets.

A focus on wing B, one sample in wing A, no samples whatsoever in wing C or wing D. Are you able to offer an explanation for that?

A. I can't. I can't explain it. I don't know why it was the case.

Q. Okay. Who might be able to help us? Is it Mr Lam?

A. I don't know whether he would know, but I don't know why some samples were not taken in certain units.

Q. After the 93 samples that were taken between 3 and 10 July, the Government Laboratory tested another 234 samples at Kai Ching.

Could I ask you, please, to be shown bundle A3, page 2432. If you have A3/2432, it stretches over a few pages, Mr Chan. You will eventually get to page 2435, and that identifies the 234 samples tested and carried out by the Government Laboratory, as we will see in one of the middle columns of the table. Do you see that?

A. (In English) Yes.

Q. Was the WSD involved in any way with these samples; do you know?

A. For these 234 samples, as far as I know, the WSD did not take part in these water samples, because the HD was providing temporary water supply by connecting to the roof tank for tenants, and on each floor water samples were taken to test the eight parameters and four heavy

metals, to confirm the safety of drinking water before supplying to the tenants, and this was the purpose of the 234 samples.

Q. Yes, I see. We can see that from the table, so far as lead was concerned, there were none in excess of the WHO Guidelines and indeed most of them were less than 1?

A. (In English) Yes.

Q. I suppose one can assume that they were done by the flushing technique?

A. (In English) No. The sample is taken by --

CHAIRMAN: Please use Chinese.

A. The samples should have been taken from pipes connecting to the rooftop and they must have been flushed.

MR PENNICOTT: All right. Okay.

Could I just ask you then a few more questions about the task force report. Could I ask you please to go to the task force report, which is in A1, and I just want to ask you a few questions about lead leaching tests, then the isotopic analysis and then the mathematical modelling, but there aren't many questions.

Could I ask you please to go to paragraph 2.4.2 in the report, on page 661. It's section 2.4 of the report that the leaching tests are dealt with. Essentially, as I understand it, what happened is that you dismantled various pipes and fittings, filled them up with water,

waited for 24 hours and then did some tests on the water?

A. Yes.

Q. At 2.4.2, you say:

"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."

Where did the water come from, Mr Chan?

A. The water came from the water tank at the rooftop or the sump tank.

Q. The roof tank?

A. (In English) Yes.

Q. Okay. If you go, please, to page 744 -- I'm only going to do this by reference to Hong Ching House at Kai Ching -- what you do there, as I understand it, Mr Chan, is to tabulate the leached amount by concentration and the leached amount by mass, from each of the copper pipes and sockets and elbows and copper alloy valves, and so forth, that were dismantled.

Sorry, could I have the other sheet that's been handed in? (Handed).

CHAIRMAN: Perhaps while this is distributed I would like to ask you something. We know that afterwards, four more chemicals were added for testing. Is it because, at that time, when leaching tests were done, those four

materials were also tested, and it was found that there was a problem, that is why they were added into the eight parameters? In other words, they were added in addition to the eight parameters?

A. Well, no, not at that time. The heavy metals were tested later. The other four were added because we thought there was a risk, so we added them.

CHAIRMAN: When was that? When were the four added?

A. It was 13 or 15 July, but July anyway, July 2015.

CHAIRMAN: I would like to interrupt Mr Pennicott here. I would like to ask a question. What was the basis for you to add those four to the parameters, to the eight parameters, that is?

A. We looked at the WHO Guidelines. Lead can come from lead solder. We all know that. And nickel and chromium usually come from pipes and its electroplating, and usually nickel is the base level and chromium is on the surface, and they can leach into the water. There is a certain risk, therefore.

As for cadmium, they could be present in silver brazing, but usually it shouldn't.

So, after the incident happened, we thought that the risk was greater, therefore we also tested them to make sure that there would be no chromium in the water. And cadmium can come from taps or metal fittings and

impurities of metals.

CHAIRMAN: Okay. I understand. The metals can exist in the fittings.

Actually, what is the basis? Now you have enhanced this to a very high level, at a point nothing had to be tested and now you enhanced it to the highest level. The so-called risk you mentioned, so-called risks, they should have existed all along. Why suddenly you changed from no regulation at all to such a high level of regulation? So far, the reasons you have cited cannot help me to understand why you jumped from zero to ten suddenly.

A. For risk assessment, there are two ways to do it. One qualitative. By experience or judgment, you do qualitative assessment. But then there is another kind, which is quantitative. You look at the chance of this happening, and then you go for probabilistic safety assessment and then you do many calculations.

But this time around, you used to test eight parameters but not the four heavy metals. This is because the qualitative risk assessment has told us that they were at a very low risk level. We trusted the regulatory mechanism and our monitoring data.

But then there was this incident and we discovered that the situation might not be what we thought, so we

enhanced the risk level.

CHAIRMAN: If that's the case, then I will ask you: why did you not include copper, for example?

A. We thought about that.

Let me explain this to you. For copper to leach into water, there are three mechanisms: one, general corrosion; two, impingement attack; three, fitting corrosion. And for general corrosion, that is the most common way. Usually, there is carbonate in the water, and it reacts with the copper and it becomes basic copper carbonate. The basic copper carbonate depends on the pH and the total inorganic carbon level --

CHAIRMAN: Sorry, wait. You don't have to go into the very technical things.

So you are of the view -- no, first of all, you have assessed copper; right?

A. We thought about it.

CHAIRMAN: But you thought it was not necessary because there is a low risk; is that right?

A. Yes.

CHAIRMAN: Whereas -- let me not talk about lead -- for the other three metals, you did the assessment and you thought there was a high risk. You thought it was of high risk because these materials could exist in the fittings; is that all?

A. The materials basically have a health impact on humans.

CHAIRMAN: So does copper. You just need more of it.

A. But copper does not cause very damaging health effects. It only causes gastric irritation.

CHAIRMAN: That I understand. What about zinc?

A. The WHO does not have any health-based guideline for that.

CHAIRMAN: Okay. What you mean is, it is not because of qualitative considerations that the other three -- because I understand lead, I don't want to talk about lead -- so the other three were not based on scientific data. It is just because they existed in the fittings, that is why you raised the risk level; is that right?

A. Yes.

CHAIRMAN: Okay.

Please continue, Mr Pennicott.

MR PENNICOTT: Mr Chairman, so far as the date is concerned, it's 13 July 2015, when the WSD issued a circular on that date.

CHAIRMAN: (In English) Thank you.

MR PENNICOTT: The reference is D1/633.

Do you have the other sheet that we've just distributed, Mr Chan? What we've sought to do here, Mr Chan, is to collate on one piece of paper the readings that you record in the task force report. We

looked at page 744, for Hong Ching House, and we know there are equivalent tables for Yuet Ching House and Luen Yat House and also for the control house at the bottom of the page that I have just given you. Do you see that?

A. Mmm.

Q. What we have done is we have listed out each of the copper alloy components on the left-hand side, and then each of the pipe joints less than 76 millimetres; do you see that?

A. (In English) Yes.

Q. Then we have put in the micrograms per litre readings that are in your tables in the task force report. Do you follow?

A. (In English) Yes.

Q. If we look at these figures, Mr Chan, you can see that the sum of the copper alloy components was 779.9, and the average, 70.9, the median, 36. I am looking at Hong Ching House. Then you can see the equivalent figures for the pipe joints.

Just focusing on the median figures -- that's 36 for the components and 51.2 for the pipe joints -- then if you travel down, obviously there's a huge difference on the median, 51.6 and 1,461 on Yuet Ching House -- but then if you look at Luen Yat House, that's the one in

Kwai Luen -- that's a Shui On estate, it's not a China State estate -- you can see that actually the median figure for the copper alloy component is actually higher than the pipe joint median figure. Do you see that?

Are you with me, Mr Chan?

A. I can't find the data you are referring to.

Q. I am just looking on this sheet of paper. You will have to trust me that we have replicated it faithfully from your --

CHAIRMAN: The median. You are reading this sheet?

A. Yes, I'm just looking at it.

MR PENNICOTT: Mr Chan, it's a simple point I want to ask you about, and it's this. Do you agree that the copper or alloy components at least contribute to the overall micrograms per litre, so far as lead is concerned?

A. Copper alloy would also cause leaching of metals. It's just a matter of quantity.

Q. Yes. Have you done, at any of the work you have been involved in, a quantitative assessment of that contribution?

A. The task force did that.

CHAIRMAN: Quantitative, not qualitative. Any quantitative analysis in the sense that how much would be leached.

A. Yes, in the leaching test.

CHAIRMAN: I know, but these are two different matters, quantitative and qualitative. You have quantitative.

A. Yes.

MR PENNICOTT: Perhaps the answer might be found if we go to some figures on the mathematical modelling. Could we therefore go back to the body of the task force report, at page 681.

What I want to look at very briefly with you, Mr Chan, is scenario 2 on page 681. Do you have that? I have skipped over all the mathematical modelling calculations and so forth that are on the preceding pages, largely because I don't understand them, but trying to bring it, as it were, together, if we look at the two tables on page 682, have I got this right, that so far as Hong Ching House is concerned -- tell me if I'm wrong about this, Mr Chan -- in terms of a quantitative contribution to the overall micrograms per litre, the copper alloy fittings are contributing 18 per cent before cleansing?

A. Yes.

Q. And 14 per cent after cleansing?

A. (In English) Yes.

Q. So in Luen Yat House, the Shui On estate, it's 26 per cent, so a quarter, just over, for the copper alloy fittings, and 74 per cent for the joints; yes?

A. Yes.

Q. Mr Chan, do you think that the task force report plays down or seeks to play down the contribution that the various components make to the overall micrograms per litre of lead that's been found in the water?

A. We have not deliberately played down the copper alloy contribution. What we look at is the source of lead in water, which components it comes from. We have not set out all of them.

Q. All right. Could I then lastly just ask you a couple of questions about the isotopic analysis, which you deal with in your 2nd witness statement, and is dealt with in the task force report at page 674.

Mr Chan, were you personally involved in the isotopic analysis?

A. We commissioned the Polytechnic University to conduct the isotopic analysis for us. The data was returned to the task force.

Q. Did you have any role to play in the material that was sent to PolyU or was that somebody else's responsibility?

A. My colleagues were responsible for submitting samples to PolyU.

CHAIRMAN: Dr Greene?

A. No, colleagues from the Water Science Division.

CHAIRMAN: Was it conducted by Dr Greene?

A. No. We commissioned the research centre of the Polytechnic University.

MR PENNICOTT: We can see in paragraph 2.9.1 that what the task force report says is that lead has three major isotopes, namely Pb-206, 207 and 208.

My understanding, Mr Chan, is that it has four major stable isotopes, because it also has 204. Do you know why 204 was not included in the analysis?

A. Yes. There are four stable isotopes, Pb-204, 206, 207 and 208. Why haven't we included Pb-204? Because the abundance variation is essentially constant. So, in this study, we have not included Pb-204.

As for these three isotopes, Pb-206, 207 and 208, the isotopic abundance has certain variations, so it's more meaningful to use these three than 204.

Q. Can you just -- if you know the answer to this, was 204 excluded from the beginning, before any work was done, or was 204 used but then the results discarded? What was the position, if you know?

A. We decided at the outset not to use 204.

MR PENNICOTT: Okay. Thank you very much.

CHAIRMAN: Why don't we take a morning break now, for 20 minutes. Thank you.

(11.09 am)

(A short adjournment)

(11.32 am)

MR SHIEH: Chairman, before other counsel ask questions, I would like to tell the Commission that the two expert witnesses, Prof Fawell and Prof Joseph Lee's report will be updated to the Commission's website after lunch. So if you would like to know about the report, you can access the website.

CHAIRMAN: When will your expert report be ready? What time in the afternoon?

DR WONG: 4.30 or 5.00.

Cross-examination by MS WONG

MS WONG: Mr Chan, (Chinese spoken).

INTERPRETER: Sorry, the speaker is not coming through.

MS WONG: When was the first time you knew about it?

A. The WHO Guidelines, all along, had said that solder joints may release lead. If you have been following the WHO, you would know about it.

Q. That means you knew about it even in the 1990s or earlier?

A. I think the WHO 1984, 1993, 2004, 2011, WHO.

CHAIRMAN: The WHO? All right.

A. All along, it talks about leachable materials which might come from solder joints and the pipes.

MS WONG: So, in your 4th witness statement, you mention

many countries -- New Zealand, Australia, Japan, Canada, the US and the UK -- and you mention that the solder joints might affect the water quality.

So, as far as your department is concerned, did you talk to the internal divisions in the Water Supplies Department?

A. No.

Q. Any discussion in the internal meetings?

A. You mean different divisions in the department?

CHAIRMAN: On the topic of leaded solder, any discussion?

A. No.

MS WONG: So your department would know about it, but outside your department this problem would be unknown?

A. I think the material -- I think I don't know whether the material users would know.

CHAIRMAN: When you say the department, do you mean other divisions in the WSD?

A. I think the Customer Services Division colleagues know that it is the law that leaded solder should not be used.

MS WONG: You talk about risk assessment in your testimony and that there is a distinction between qualitative and quantitative assessment, and that there is a low risk level. What is your consideration?

CHAIRMAN: About what?

MS WONG: About soldering materials and lead pipes?

A. You know that after 1938, lead pipes could no longer be used in Hong Kong, so lead pipes is not an issue.

As for soldering materials containing lead, as far as I know, after 1987 it was also banned. So these reasons, coupled with the regulatory mechanism, as we believe -- we trust the LP and AP, we believe the risk should be low.

MS WONG: Since we are on the topic of LP and AP, the WSD requires submission of forms for approval on pipes and fittings and soldering materials. Submission of information, that is.

Have you looked at the list?

A. No, I'm not in charge of approving these materials.

Q. Was there any communication in your department on the content of the list?

A. No, I'm not in charge of this area.

Q. Do you know that even for the WSD's checklist, the soldering materials are not on the list?

A. It's not the scope of work of the Water Science Division.

Q. So, for qualitative analysis, you just base your assumption on the fact that people would comply with the regulation and they would have knowledge?

A. Our qualitative assessment is based on our judgment, our

experience, past monitoring data, and the regulatory mechanism, and our conclusion is that the risk is low.

Q. Monitoring data, as you put it, what is it?

A. We have been taking samples from consumer taps at 18 locations, to conduct tests on the 92 parameters suggested by the WHO. We looked at the temporal and spatial variation, and the result is nil, none. So the conclusion that we have is that it's not a significant risk.

Q. When was it done?

A. We have monitoring data and we do it annually.

Q. Starting from the 1990s?

A. Well, it depends. For the 2001 WHO edition, after it was issued in 2011, then by August 2012 we would have followed the 2011 edition, and on an annual basis we check the monitoring data.

Q. I have a question. In 2002, the Housing Department changed from using GI pipes to copper pipes. Do you know about that?

A. No.

Q. For the Customer Services Division or other colleagues in the department, did any colleague tell you about the change?

A. No.

Q. Neither did you read that in the newspaper, because

there was a major incident?

A. As far as I know, when I was chemist, we learned about a lot of customer complaints about discoloration of water, and we traced the source of the problem and found it to be the rusting of GI pipes, causing the discoloration of water. Because of too many complaints and the view of the government that the public no longer accept tainted water, that was why GI pipes were no longer used.

CHAIRMAN: When did you assume the post of chief chemist?

A. In 2008.

CHAIRMAN: Thank you.

MS WONG: So you knew about the problem. Did you know that the WSD had suggested to other departments to use copper pipes? Did you know about it?

A. No.

Q. Had you personally known about it, would you have told others that using copper pipes might entail a risk, that is involving soldering of pipes?

A. It's hard for me to answer you this question, because it's colleagues in charge of materials who would approach us for assistance to conduct tests on water quality, if they believe there is such a risk.

Q. This would only be done if colleagues considered that there was a risk, but in your 4th witness statement, you

talked about education, which is quite important, when you talk about other countries' practices.

The public may know that it's harmful to health, but they may not know the extent. Do you agree that public education is important?

A. Yes.

Q. But so far, starting from the 1990s, to right before the incident happened, there hadn't been much public education initiative, or education for stakeholders?

A. Before the lead in water incident happened, there is a general knowledge that there is not a high risk of lead in water, because we don't use lead pipes in Hong Kong.

As for countries with problems of lead in water, our observation is that they used lead pipes.

Q. Then do you agree that risk assessment is important among government departments for assessing the problems of soldering joints?

A. After the incident happened, we agree, but before that, since the pipes were not corrosive, we did not think that the risk was high.

MS WONG: I have no further questions.

CHAIRMAN: Mr Lee.

Cross-examination by MR LEE

MR LEE: Mr Chan, what is the exact date of your retirement?

A. 19 January. I'm on pre-retirement leave.

Q. For the WSD, I think you can be called the expert on water quality?

A. I'm in charge of the Water Science Division. It's not for me to say whether I'm the expert.

Q. But I take it that your comment on water quality, as the chief waterworks chemist, would carry more weight than anyone else in the department?

A. We provide professional or expert advice in this regard.

Q. Do you think that your comments would be accepted by the government?

A. I think, for the government to take comments from civil servants, there is a lot to consider, not just technical comments or advice. They won't just take technical advice or comments outright. But I believe the government attaches importance to our professional comments.

Q. On this matter, the lead in drinking water incident, has there been any instance when your comment was not accepted by the government?

A. No.

Q. We understand that in the afternoon the two experts will submit their joint report to the Commission. Do you know which two?

A. Yes. One is Prof Joseph Lee from UST, and another, a UK

toxicologist, Prof Fawell.

Q. Do you know the two experts?

A. When I was undergoing training in the UK, I met Prof Fawell on one occasion, but I did not learn from him, and I do not know Prof Lee.

Q. As for the two experts engaged by the WSD, it's not based on your recommendation?

A. No.

Q. I understand that in relation to this lead in water incident, the government has set up two interdepartmental groups. One is an expert meeting, an interdepartmental expert meeting.

A. We collected data from the Housing Department and we held an interdepartmental expert meeting to discuss the data.

Q. Including experts from the WSD, Government Laboratory and the Housing Department?

A. Yes.

Q. All experts?

A. Yes.

Q. Seven to eight meetings?

A. I don't recall the exact number, because after the incident happened, when we received test data, we would hold meetings to discuss the data.

Q. So roughly seven to eight meetings?

A. At least, yes.

Q. Did you take part in the meetings personally?

A. If I was engaged in other meetings, my representatives would attend the meeting.

Q. Otherwise, you would attend the meeting personally, because you were in charge?

A. I am in charge of the Water Science Division, so I am also responsible for the data.

Q. And there is also a high-level interdepartmental meeting chaired by the Chief Secretary for Administration; you know about that, right?

A. Yes.

Q. And you also attended the meeting?

A. Yes.

Q. Including three bureaus and three departments?

A. I am not sure which bureaus, but my responsibility is to report data.

Q. So you represent the WSD under the Development Bureau?

A. Yes.

Q. And also the Department of Health under the Food and Health Bureau?

A. Yes.

Q. And the Transport Department under the Transport and Housing Bureau?

A. Correct.

Q. You have been to these meetings, and you met the people from these departments?

A. I didn't pay particular attention.

Q. Who took you there?

A. The director, of course.

Q. Do you remember how many meetings were held?

A. I do not have any record. I have no impression how many meetings were held.

CHAIRMAN: You mean how many did he go to?

A. I don't remember how many I went to.

MR LEE: You don't remember?

A. Because if there is a need, the director would say, "Come with me", and then I would go.

Q. But these are very important meetings. All the big shots are there.

A. I know, but I'm a small potato. I would be there to report the test data and monitoring data only.

Q. Yes, exactly, because you are a small potato and you go to a meeting with big shots, then you should remember even more, right, and you would go home and tell your wife; right?

A. I just view this as part of my work. It's just part of my work. I won't particularly say I go to these meetings and I feel proud of it.

Q. Three times or more than three times?

A. It should be more than three times.

Q. Five times or more than five times?

A. More or less. I don't remember.

Q. Not more than ten meetings that you personally went to?

A. I personally went to so many meetings. I don't have a record. As long as the director would say, "Come with me and do the reporting".

Q. So you would just go along with him?

A. Yes.

Q. What was discussed, do you remember, in the meetings that you went to?

A. I would just go and report the monitoring data, how many samples were taken and what the data was like, and that's it.

Q. What about the water testing or taking water samples? Say you turn on the tap for a few minutes and then you take the samples, were those discussed?

A. No.

Q. Absolutely not?

A. Well, that was my decision within the WSD.

Q. It was your decision? So you decided that after the incident, every time a sample was taken we should not take water that has been stagnated for the night?

A. I have explained.

Q. I know the reason. So you decided not to take a water

sample right in the morning?

A. Yes.

Q. So whenever your colleagues went to take sample on this incident, they would never take a sample first thing in the morning; is that right?

A. In the sampling exercise of the WSD, we don't test first draws.

Q. Because you think it is not right?

A. No, it's not that it's not right but it's not representative.

Q. So it's a waste of time?

A. Our resources are very limited, and within a short while we have to do so much. You won't go and take a sample which is not representative for testing.

Q. And is useless, in your view?

A. Well, in our view, it does not represent the water quality that the customers use or consumers use.

Q. So it's useless?

A. You can put it that way.

Q. You mean you won't take even more step and test it?

A. It's not one more step or not. It's whether the step is meaningful.

Q. Okay. I understand.

Water is tested. There is a report. Did you report to this interdepartmental meeting?

A. Yes. Together with the HD and the Government Laboratory and the Department of Health, we have this interdepartmental meeting. When all the monitoring data were complete, there were two meetings, one technical review and another one, conclusion meeting. In the technical meeting, the data was reviewed as to whether it was representative and whether it could help the interdepartmental meeting to draw a conclusion.

Q. For example? Can you give us examples?

A. What do you mean by examples?

Q. Since I was not at the meeting, give us some examples.

CHAIRMAN: After testing, the data was available.

MR LEE: You know that if it exceeds the WHO Guidelines, blood will be tested; is that right?

A. This is the Department of Health's arrangement.

Q. But you knew it; you were at the meeting?

A. I knew about it.

Q. So if water is tested not to exceed the level, then there would be no blood testing; that is your understanding?

A. Correct. If we do not draw the conclusion that a certain estate is an affected estate, there will be no follow-up action.

Q. But if it's affected, then there will be; if it is not affected, you will do nothing?

A. That's correct.

Q. Did you discuss with people in these two types of interdepartmental meetings the objective of water testing? Did you talk to anyone about it?

A. No.

Q. Not even with the HD?

A. Because the HD said it would like to determine lead content in the consumer tap, to see whether it exceeds the PGV of the WHO. That is the premise and purpose. So we decided our testing protocol to meet the purpose.

Q. Apart from that purpose, was there another purpose?

A. No.

Q. Who said this was their purpose?

A. I think I read it from a press statement and it was said by the chairman of the HA.

Q. You mean Mr Anthony Cheung?

A. No, not Mr Anthony Cheung. He is the Bureau director. The HA chairman is another one.

CHAIRMAN: No, it is the same person.

A. Sorry, I'm not sure about that.

CHAIRMAN: Small potatoes usually don't know about these things!

I'm just joking. Please do not take offence.

MR LEE: Chairman, you were just quoting from him.

CHAIRMAN: I'm also a small potato.

MR LEE: No way. If you are, what are we?

So your position, your department's position, is that you know the purpose of water testing is to find out the lead content in water at the tap of public housing units? You want to test it, to see whether it complies with WHO standards?

A. Yes.

Q. That is your only objective?

A. Yes.

Q. So you think that if it is the first draw, then it will not comply with that requirement, so it is not useful?

A. It is not representative.

Q. Okay. When you made the decision and after that, did anyone say to you, "Well, it should not be like that; you should also take a first draw"? Did you hear about those opinions?

A. I don't think so.

Q. Apart from here?

A. That's correct.

Q. Within your department, no one said so?

A. No.

Q. Not even from the Bureau?

A. No.

Q. Not even at the interdepartmental level?

A. No.

Q. So the government followed and accepted your opinion, thinking that it is correct?

A. Yes.

Q. Okay. About flushing the tap. Sometimes it's for two minutes, sometimes for five minutes. What's the difference?

A. I said, if it is for two minutes, then usually the unit should be occupied, and if it's five minutes, usually we do so at vacant units, because we don't know for how long the water has been stagnant in a vacant unit.

Q. Okay. Talking about occupied units, you flush for two minutes. Supposing if it's a first draw, there would be accumulation of lead near the tap, say, 10 micrograms, for example -- let us use that standard -- and it touches the standard. And if you take the first draw, that will be the finding. But if you flush the tap for two minutes, how much would be left?

A. I don't know, because we have not done any experiments to compare the empirical correlation between a first draw and after flushing the tap for two minutes.

Q. Not even a percentage?

A. No.

Q. Can we say at least substantially it will be reduced? Can I say that?

A. Well, please look at the task force report. It has done

a stagnation test in a vacant unit, and you can see there, as expected, after stagnation, the lead found is higher, because the dissolution of water will be longer because the contact time is longer.

Q. So there should be a big difference between first draw and after two minutes?

A. Well, it depends how much lead is in the components.

Q. We have our own data. A unit that is new, we had the opportunity to do the test there, and then we took the first draw. That is a tap that has never been used, it's a new unit, and it was very high. Then -- maybe later I can give you the data -- now I don't have it here.

In Hong Kong, whether it is reservoir water or Dongjiang water, after treatment the water is supplied to the public and it will go through large pipes, and then at a certain site there will be the connecting point. The water should be of very good quality up to this point. It has only 0.01 lead content; is that right?

A. Usually, it is lower than 1 microgram per litre.

Q. Meaning?

A. Meaning 1 in 100 billion, or 1 in 1 billion.

Q. So what is the score that you give to yourself?

A. What do you mean by giving a score to myself?

Q. It's just like in an examination, how much will you score?

A. Our water quality meets the WHO standard and we have met the standard.

Q. It's not just meeting the standard.

A. We won't give ourselves any scores or marks.

Q. The level is so low.

CHAIRMAN: What do you mean, the level is so low?

MR LEE: The lead content is so low and then the score will be very high; is that right?

A. I can't say I want to give a mark to myself, but the monitoring data shows us that the water supplied to the public has a lead content of lower than 1 microgram per litre.

Q. Okay. If that's the case, then when a tap is turned on in a unit, even if there is flushing for a long time, and if you should find 2 micrograms, then it is a big number already?

A. That would be no problem.

Q. I'm saying there is a problem. There would be a lot of lead, because lead is not found in the public pipes, it's almost non-existent, but then coming to the tap of a unit, there are 2 micrograms. In other words, the piping is problematic.

A. I don't think you can use that kind of microdata, like

it's less than 1, and even if it goes to 2, you would say it's 100 per cent increase. I don't think you should compare like that.

Q. I'm not talking about 100 per cent increase.

CHAIRMAN: Assuming there are no outside factors affecting it, let us say there is no environmental interference, as long as the inside service system is concerned.

MR LEE: Then there is a problem.

A. No, you are still within the WHO standard. But then I say there has been flushing for a long time. Still it doesn't mean that 2 micrograms should represent a problem.

Q. I would only say it is significant.

A. In what way significant?

Q. At least you can prove that in the building, the pipes have a lead content, or else where can the lead come from?

A. It can come from many sources.

Q. Look. Let us say there is no environmental influence and you flush the tap for some time.

A. Just now, another lawyer asked about copper alloy and it can leach lead into the water.

Q. Yes. I don't mind about the source. I am talking about the pipes. As long as there is lead in the pipe, then there will be a higher content in the water.

CHAIRMAN: Yes. Let us talk about the inside service. Never mind it's the pipes or the components.

A. As long as it complies with the standard.

MR LEE: I have heard your statement. I think you are too bent on not exceeding the WHO standard. Think out of that box. Don't repeat the same version in the box. We have heard that many times. Originally, it's close to zero, almost a total absence of lead, but after coming out from the tap, there is presence of lead. That means lead must come from the pipes.

CHAIRMAN: It should be said that lead is present in the inside service system. It's not a matter whether there is a problem with the system.?

A. From our scientific point of view, if it complies with the standard, then we don't find this problematic.

MR LEE: All right.

This morning, you said that for testing the presence of lead in water, if it goes above -- beyond which is harmful, that is beyond the WHO's standard, it is harmful; below which, there is no problem. You said that, roughly.

A. We were talking about the threshold for chemicals.

Q. That means, adopting the standard of 10 micrograms, if you find from the tests that it's above 10, that there is a problem; below 10, there is no problem?

A. Yes.

Q. So let's say if I turn on the tap, pour a cup of water, pass it to you -- well, because you work in a government department and I pass it to you, "Mr Chan, please test this cup of water to see if there is any risk of lead being present in water, I don't know how much, but please take it for a test", and then the test shows 11 micrograms, so what should be done? What's your conclusion?

A. First of all, according to our qualitative monitoring system, if you give me one sample, I can only say that it's a sample as received and we will not interpret the data.

Q. The data shows 11 micrograms per litre, that's it.

A. All right.

Q. Why won't you interpret?

A. Because I don't know about your sampling procedure. I don't know whether you are using a proper sampling bottle, whether you follow strictly the sampling procedure.

Q. So, if it's your practice, who took the sample?

CHAIRMAN: Assuming that all the sampling procedures are in order.

A. If the test result is 11, then we would say it exceeds the WHO Guidelines.

MR LEE: Would you do that?

A. Yes. If it goes above 10, we would say it exceeds the WHO level.

Q. Would you say there's a problem if you drink it?

A. No, we won't say it.

Q. Because you don't know how many cups one would drink or for how long?

A. Because we are not the health expert or authority, we won't talk about the health effects of drinking this cup of water.

Q. Mr Shieh already showed you some literature. The 1993 WHO version, it says that it is "(In English) Cumulative poison", according to the WHO. Just like smoking, it's a cumulative poison. You won't die if you smoke one cigarette but it has a cumulative effect and you accept it?

A. That's the WHO's version.

Q. You accept it?

A. Cumulative poison, that is lead.

Q. So if it contains more than 11, say 25 micrograms in water, it would be unreasonable for you to ask people to continue to drink water?

A. That is why, for these housing estates, we need to provide alternative water sources. We need to have temporary down pipe, bottled water.

Q. Right. So your position should be that the water is no longer suitable for consumption.

A. If it's in exceedance, for the sake of safety, the public should avoid this source of water and use alternative water supply.

Q. So, if there is excess lead in drinking water, it will still be problematic, even if you boil the water?

A. You can't really eliminate lead by boiling. It would only concentrate lead.

Q. Some may think that you can boil water to kill microorganisms but not to eliminate lead; it would only concentrate lead?

A. Right.

Q. That is why, according to literature, when taking samples, you should take samples from cold water, not from boiled water.

A. The purpose of taking samples from cold water tap is that if you take a water sample from hot water, because high-temperature water would increase solubility.

Q. So that means more lead in water?

A. That means the sample would not be representative.

Q. Yes. That is why we use cold water.

A. Yes.

Q. In other words -- let's talk about water sampling. Your department knows that at least in some public housing

estates, excess lead was found in drinking water?

A. Yes, we knew after the incident happened.

Q. And you immediately stepped up the risk level? Any colouring code?

A. No.

Q. Then the Housing Department asked you to assist in testing the water. Then you, at the early beginning, decided not to take first-draw samples but flushed samples.

A. Because we needed to take representative samples therefore we decided not to use first-draw samples.

Q. So you took samples after flushing for two minutes, and there should be constant flow during flushing?

A. Yes, once you turn on the tap, it would be constant.

Q. So constant flow. So you knew that samples should be taken after flushing for two minutes, and therefore you knew the chances of finding excess lead in drinking water using flushed samples would be lower than unflushed samples?

A. No, we would not consider that. We would just take samples very consistently, very objectively. After flushing for two minutes, for the inside service system, it would pick up contaminant released and it would so be found in the test results.

Q. Just to apply common sense, for first draw, we know that

after flushing -- well, perhaps the water would be entirely all right, so the test result for first-draw samples would be all right. But if lead is present, then if you take first-draw samples, then definitely there would be a higher chance of finding excess lead in drinking water than using a two-minute flushed sample?

A. Not necessarily.

Q. Why not?

A. Because if there is no lead in the system, even first draw would be all right.

Q. Right. That's what I said. It would be all right. But if lead is present in the system, then there would be a higher chance of finding excess lead than using two-minute flushed samples?

A. Logically speaking, right. Logically speaking, that is the case. But we need to consider the lead concentration, whether it's a transient or instantaneous concentration, and things would be different once the tap is turned on. And you cannot say that you consume the same kind of water throughout the day.

Q. Right. Things would be different once the tap is turned on. So even if the tap is turned on for 10 seconds --

A. I think we need to refer to the task force report, that demonstrates the difference.

Q. So even if it's turned on for just 10 seconds?

A. Well, our threshold is one minute.

Q. But as soon as the tap is turned on --

CHAIRMAN: So there is a difference, we just don't know the extent of the difference?

A. So for 10 seconds, we are talking about water coming from tap after ten seconds.

MR LEE: (Chinese spoken).

A. (Chinese spoken).

Q. So, in other words -- well, we see that there is this email sent to the UK authority for opinion, as we can see.

A. Yes.

Q. Just a few days later, you obtained a reply from them.

A. Yes.

Q. Chairman, sorry, I have limited space here.

C19.6, page 14575, 6 and 7.

Let's look at your email, page 14576, at the bottom, dated 21 July last year; right?

A. Yes.

Q. Sent to DWI Enquiries; right?

A. Yes.

Q. Then:

"(In English) In Hong Kong, there has recently been the lead in water incident in the public housing estates. The method of taking water sample from tap

after 2-3 minutes flushing practised by my department has been a matter of considerable debate by the community and subjected to challenge. Currently, we are following the provisional guideline value of lead 10 micrograms per litre for compliance checking of drinking water quality for lifetime consumption."

I don't understand why it's for lifetime consumption.

A. Because the WHO's standard is that it is for lifetime consumption, not for instantaneous consumption.

Q. So for a prolonged period of time?

A. Yes, lifetime consumption.

Q. Why lifetime? If I move, then things would be different.

A. But you still need to drink water; right?

Q. Then:

"(In English) At present, I am not aware that there is a harmonised approach in taking water sample for lead testing in EU. In this regard, I write to enquire about the sampling procedure for lead testing in drinking water at consumer taps in UK for assessing the compliance with the parametric concentration of 10 micrograms per litre as specified in the Water Quality Regulation of UK and EC Directive for drinking water standard."

So very clearly you ask about assessing the compliance with that standard; right?

A. Yes.

Q. "(In English) If stagnation sample, say overnight or several hours is taken for lead testing, what is the standard/reference value for compliance assessment."

That's it.

Then the reply, very clearly, on page 14575, paragraph 3, line 3:

"(In English) Samples for lead must be 'first draw' samples, that is, the sample comprises the first litre of water drawn from the tap before the tap is flushed in preparation for further samples to be taken."

Do you see that?

A. Yes.

Q. Then the next paragraph -- I'm not going to read out the whole paragraph. He mentioned the limit, 10 micrograms per litre. That is what he answered you. Then near the end, the fourth line from the bottom:

"(In English) The company [that is the water supplier] must also give the consumer written advice on actions they can take to reduce the risk from lead in their water supply, which might include flushing the tap before using the water for drinking or cooking, and replacing any private lead pipework."

So the UK would do repeated testing and if there is a problem they should write to give advice to the users, to teach them that if you use it for drinking or cooking, you must flush the tap first. Is that correct?

A. Yes.

Q. You also do that, is that right, in your booklet?

A. From what I know, after the incident took place, the Department of Health uploaded to the government information website, to educate the public that they should flush the tap before using water.

Q. Are you talking about this booklet? (Indicating).

A. Apart from this one, the Department of Health also has information on its website.

Q. Then the next paragraph is important:

"(In English) Overnight stagnation sampling is not carried out very widely, because it would normally be dependent upon the consumer to take the sample first thing in the morning, and companies prefer to take their own samples."

It means that it is not that the companies do not want to, it's just that it is not easy, because you need the co-operation of the clients. They may go to the toilet and wash their hands, and they would have already used the water. That may happen in the middle of the night as well, so it is very difficult to really get

a first draw overnight. It's not that they don't want to, it's just that they can't, so they prefer to do it at other times?

A. I think they want to safeguard the integrity of the water sample.

Q. Okay.

You asked for other people's opinion on 21 July, and at that time you had already tested the water for a few estates; is that right?

A. Yes.

Q. Kai Ching?

A. Kwai Luen and Wing Cheong.

Q. You had already taken samples from the three estates.

A. Yes.

Q. In other words, you did not use the first draw?

A. Correct.

Q. How many minutes did you flush the taps for?

A. I said two to five minutes.

Q. Five minutes for vacant units, but for those occupied units, you won't flush it for more than two minutes?

A. Normally, the instruction is for two minutes.

Q. So it should not exceed two minutes?

A. Correct.

Q. Regardless of the floor?

A. That's the standard protocol, two to five minutes, or

longer if necessary.

Q. Okay. This committee has two experts who have given initial opinion papers.

A. I have seen them.

Q. It's very easily seen from their reports that to test lead in water, you must use the first draw. That is what they say very clearly.

A. If you want to detect the presence of lead, you can use the first draw.

Q. No, not you can, but you must. I can show it to you.

A. I know. I think we have to get clear about the objective of sampling, as Mr Shieh has had an exchange with me already.

Q. No, we are not there yet.

CHAIRMAN: You still want to get there; right?

MR LEE: My question is -- this is very important -- it is not just the UK, but international experts, two of them, have written this joint opinion paper, saying that you are wrong.

A. I don't think they said we are wrong. I respect the international experts.

Q. They didn't say you are wrong but they said you must use the first draw.

A. They didn't say you must use the first draw. They only say the UK and the US use the first draw. They didn't

say we must use the first draw.

Q. V1, tab 1, pages 1 to 44.

The second paragraph:

"(In English) The International Standards Organisation Standard (ISO ... "

You know this very well.

"(In English) ... 5667-5) on sampling techniques of drinking water from treatment works and pipe distribution systems states that 'If the effects of materials on water quality are being investigated, then the initial draw off should be sampled. Samples may also be taken after a specified period of stagnation to provide information on the rate at which materials affect quality or the maximum likely effect.' For example ..."

It talks about the UK from there, then the US, then Japan.

So everybody does that.

A. Not Japan.

Q. Not Japan? Okay.

"(In English) Fully flushed samples on their own may serve the purpose of assessing the general quality of a drinking water as supplied ..."

Pause there. If it is fully flushed, what is the advantage? You can assess the general quality of

drinking water as supplied.

"(In English) ... but will not give a representative assessment of the concentration of lead or other metals from the internal distribution system to which the consumer is exposed."

If you want to test the quality of water in Hong Kong, then you can flush the tap, but if you want to test whether there is lead and whether it will pose a health risk, then this is not right.

A. But the general quality would include lead and everything else. How else would it be called "general quality"?

Q. No. Let us go back to ISO 5667, if that's the case.

CHAIRMAN: I don't think that is necessary, Mr Lee. I can fully understand what was said yesterday. We spent the whole day yesterday on this.

MR LEE: If you are right, then you don't have to do the two levels of testing. Under ISO, there are two levels. If you want to test the general quality of water, then you can flush the tap. But if you want to test whether metals are present, including lead in water, and whether there is a health impact, then you must use the first draw. The ISO separates the two.

A. So do you want to do investigative sampling or comparative sampling?

Q. The HD would like you to test the water. Why? Have you thought about why?

A. That's compliance monitoring.

Q. But why?

A. To determine whether the water is in compliance with the WHO standard.

Q. If not, what happens?

A. If not, then we will do follow-up work.

Q. Right. So we want to see how much lead is present in water, whether there is exceedance. It's very clear that we are not looking for general quality. You must use the first draw.

A. Well, the general quality would include all chemicals, and even copper.

Q. Don't talk about copper. We are talking about lead.

A. Lead is included in general quality.

Q. Why? Why do you think that is representative? Why do you think that sample is representative after the tap is flushed?

CHAIRMAN: Let us not talk about this again.

MR LEE: I have an important point to make. I have an important view.

CHAIRMAN: Just state it.

MR LEE: To be representative, you always talk about average; right?

A. Yes, average quality.

Q. What do you mean by average?

A. Average overnight-time quality.

Q. Okay. Let us not talk about water. If there is a tall man and a short man, what is the average of these two persons? Do you just add the two and divide it by two?

A. No. One is tall and one is short.

Q. So what do you mean by average? Like you have a class of 40 students, some are tall, some are short; what is the average height of this class of students? They are all aged 12. I want to know their average height. You would add the height of the 40 students and divide it by 40; right?

A. If you use this example, I can only tell you that you are not using the average but the median, statistically.

CHAIRMAN: Let us not argue about this. Don't argue about this.

Mr Lee, I want to understand from you this. Are you trying to say that some people may be affected --

MR LEE: No.

CHAIRMAN: I'm sorry. Please continue.

MR LEE: I am only asking what is representative.

You say you flush the tap for two minutes, then you get a representative sample. But what does it represent?

A. From the angle of water science, representativeness means that the quality would represent the water quality of that water body.

Q. Okay. After the tap is flushed for two minutes, if there is a lead content found -- well, that is what you want to represent; is that right?

A. No. You are talking about standing water, not flowing water.

Q. But if you go for an average, how can you exclude the worst-case scenario? Then what meaning is that, the average -- whether you call it average or median, I don't care -- but that figure is misleading?

A. No, I can't say it is misleading.

Q. No, that figure is not representative.

CHAIRMAN: Let's cool down. It's lunchtime.

MR LEE: You go back and think about it. I will continue the questioning in the afternoon.

CHAIRMAN: I understand what you mean. You are talking about representativeness, not the average.

MR LEE: Well, he uses the word "average".

CHAIRMAN: No, not all the time.

MR LEE: Yes, he did.

CHAIRMAN: He doesn't always use the word "average", to be fair to him.

MR LEE: Never mind what word he uses, but how

representative is it? You have already discarded the first draw.

CHAIRMAN: We can continue in the afternoon, but I know what you are trying to say. You want me to understand. Now I already understand what you are trying to say, so in fact you don't have to continue with your questioning.

We can continue in the afternoon at 2.30.

(12.29 pm)

(The luncheon adjournment)

(2.31 pm)

MR LEE: Chairman, it's Friday and it's the 27th day of the last month of the Lunar New Year, and that's why I'm going to stop after half an hour.

CHAIRMAN: Very good.

MR LEE: Earlier, you were shown a unit which is a vacant unit. I'm going to show you AC1/1 to 4, pages 19 to 22.

Page 21. Line 3, "Copper". You can see, in the middle, 272; do you see that?

A. Yes.

Q. Then next to it, one minute -- sorry, two minutes, and then 2 -- 272, 2 micrograms. And then five minutes, again 2. Do you see that?

A. Yes.

Q. If this is accurate, that means it has dropped very substantially and there isn't much difference between

two and five minutes. Not much difference between two minutes and five minutes. That was a vacant unit, a brand-new one, whereas for a unit where it was inhabited and the pipes frequently used, then after flushing for two minutes, then the flushing would have been very comprehensive.

A. You can put it this way.

Q. You mentioned yesterday, in your testimony, about educating the public. That is, for them not to use water that had been stagnant overnight for drinking or for cooking.

A. That is to educate the public that water should only be taken after flushing the tap. If the results are accurate, it demonstrates the effectiveness of flushing.

Q. But you said that the public would be educated that they could flush the tap first. But in fact it's not could, it's that they should.

A. But if you don't know whether lead is present in the water supply system, then for prudence, you should use it after flushing.

If you are sure that there is no confirmed risk in your supply system, then you can consume water without flushing.

Q. But what if members of the public had this habit to flush the tap for two minutes before drinking, then it

would be safe to consume from the tap? Because I was told by a judge in the UK that it was no surprise, because even when he was a child, his mother had taught him that he should take water from the tap for drinking after flushing for two minutes. So that means as long as the public is aware of that, it would be safe?

A. I believe the judge should have resided in the UK for a long time, because it was normal for the tap to be flushed before water was taken for consumption. That was also my practice when I resided in the UK for training.

Q. However, for many years, the WSD has been educating the public to save water and that's also the reason contained in the WSD's website. It's already ingrained in the minds of the public, young and old. Even when I apply soap to my hands as I wash my hands, I would turn off the tap to save water. If you tell the public to flush the tap and to save water at the same time, it's not easy to change habits?

A. In fact water would not be wasted during flushing. The water can be conserved for other uses.

Q. But it would be very troublesome to use a basin to contain it.

A. I believe this is just a matter of good habit. If you don't want to waste water, you can save water in

a bucket and use it later for irrigating plants or for washing the floor.

Q. In that case, you would score 100 marks. It's safe and also you can save water.

Do you think that it is necessary -- you have that on the website and also in the booklet. It's A1, tab 22, page 4. Do you have the booklet, Mr Chan?

A. Yes.

Q. On the left-hand side, there is a picture on top, and then in the middle, "Water quality conforms to international standards", and then on both the left and right-hand sides you see "100 per cent". Then:

"The quality of water supplied by the WSD fully conforms to the WHO Guidelines."

That's under the heading, "Water quality conforms to international standards".

"A Water Safety Plan in accordance with the WHO Guidelines has been in place since 2007 to further ensure a safe water supply to customers."

So it's very positive in the minds of the public. They will feel reassured, that's your objective.

Then it follows:

"... water quality monitoring programme is comprehensive and stringent. Water quality throughout the supply system is systematically and regularly

monitored", and so on and so forth.

Very positive; do you agree?

The booklet was issued in August 2015. So that's after the incident happened, after the lead in drinking water incident happened.

So on the one hand you are telling the public that the drinking water conforms fully to international standards and the public should be reassured, but on the other hand, you are telling the public to turn on the tap fully, for safety's sake.

Then please turn to page 10, "Precautionary measures":

"In early July 2015, the lead content of some water samples from PRH estates were found to exceed the guideline value set by the WHO. Subsequently, lead was found in the solder used on the water pipe joints of these estates. The government has attached great importance to this matter. An interdepartmental meeting chaired by the Chief Secretary for Administration was held on July 11 during which decisions were made on crucial follow-up work and measures."

Then the next paragraph:

"Before the excess lead content issue can be fully resolved, residents of affected estates can take the following precautionary measures".

That's in relation to residents of affected estates, where it says lead content is found in drinking water, they "can take the following precautionary measures", with the emphasis on "can".

Then:

"Use of drinking water.

1. If water has not been run overnight, run water taps for one to two minutes each morning before taking any water for drinking or cooking. To avoid wastage, you may use a container to collect the water for non-drinking purposes."

That's what you mentioned just now. Why is it one to two minutes? We were talking about two minutes all along.

A. I think this is just a general indication for members of the public. Say from the down pipe to your inside service pipe, the distance may be very short, and then flushing for one minute will suffice. But in some other cases, maybe your distance from the stagnant water pipe is very far away, then you can flush for two minutes.

Q. So for safety's sake, I believe it should be two minutes instead of one?

A. I think it's just a general indication. In New Zealand, it suggests that 500 millilitres of water should be flushed, two glasses.

Q. So in the first paragraph things are very positive, then in latter paragraphs you can flush it. So do you agree that the message is not very clear? Do you agree? Do you agree that you could have -- it was strongly reminded to the public? Because perhaps one may not finish reading the whole booklet if one is reading online, especially the latter part.

So for those affected, if they want to use or take water for drinking or cooking, they should run taps for two minutes, for better hygiene?

A. I agree that the wording can be improved.

Q. Thank you. I believe it's the first time you agree with my suggestion.

Do you agree that the government should make use of APIs, in the interests of the public, such as reminding the public not to commit drink-driving or to spit? Because for other public housing estates, residents may still be affected and it's unknown that private housing estates can be affected?

A. On a radio programme, I once told the listeners that if you are not sure whether lead is present in the water supply system of your building, then I suggest that the UK or the US practices should be followed, that is the tap should run for one to two minutes before you take water for use. I did say that on the radio.

Q. Did you say that?

A. I said that on a radio programme.

Q. Did you tell the government to make use of the free TV stations and radio programmes to publicise this message?

A. I'm not sure whether APIs have been produced to remind members of the public of the measures to guard against lead in water. I'm not sure.

Q. In the beginning of your testimony, you talked about a survey, a household survey, 1,000 households involved. That means -- it is not yet completed. At the time, you only completed 348 households. That is less than half, and about 95 per cent of them said they would freshen up in the morning.

A. That's the information I got from my colleagues.

Q. So 95 per cent of them would freshen up with water from the tap. That means 5 per cent would use them for drinking or cooking?

A. Well, 95 per cent is the majority. As for the 5 per cent, I suppose water is used for other purposes, either drinking directly or for other uses. I'm not sure.

Q. But do you know about the content of the questionnaire?

A. No, I wasn't involved.

Q. Because the questions in the questionnaire matter, and do you know how many taps there are in a PRH unit?

A. Usually two, one in the kitchen, the other in the toilet. There's also the one in the shower.

Q. But usually you won't drink from the shower tap. So the most important one will be the kitchen; altogether three taps. So, if water runs from the kitchen tap -- I mean, there are three taps, and if the first tap to be turned on is in the toilet or the shower, for freshening up, and then the next tap to be turned on is the one in the kitchen, then the water will remain stagnant at the kitchen tap?

A. I'm not sure about the configuration of plumbing. I don't know whether water would first flow to the tap in the kitchen or the toilet.

Q. So you are not sure about the questions in the questionnaire survey, but you agree that the questions in the questionnaire survey are very important; do you agree to that?

A. Yes.

Q. You don't know about the questions?

A. Right.

Q. In your witness statement, you talked about dosing orthophosphate. To my understanding, it performs a good function. If you put this material into the water, then it will form a very thin film in the water, which is quite strong, though it's thin. That means that it acts

like a kind of lining within the water pipe?

A. Well, yes. It forms a phosphate compound and then silicon will strengthen it.

Q. So even if the copper pipe breaks, then inside, the lining will strengthen the pipe?

A. I have never heard about orthophosphate in copper pipes. I'm not sure of that. But I know that there is lead phosphate.

Q. I think it works the same; right? That's all right. You don't know about it.

A. I don't know whether copper phosphate has a protection function.

Q. Before you retired, have you given your views in your department on this issue? Have you dealt with this issue?

CHAIRMAN: I don't think he is talking about copper phosphate. He said that even if there is soldering, and this is leaded soldering, and it combines with orthophosphate, then it would become lead phosphate.

A. Well, you would put in the phosphate throughout the entire pipe, but then the orthophosphate may, together with the solder, form a protective film or membrane.

MR LEE: Thank you, Chairman.

On this particular issue, I'm sure that the government has considered the pros and cons of such

an approach; is that right?

A. Yes.

Q. Well, if it performs a function, it can resolve our problem.

A. Yes.

Q. Before you retired, have you given your views on this issue or made certain decision in relation to this?

A. We have considered orthophosphate has a corrosion inhibitor, whether it can be used in Hong Kong. Our assessment so far is that phosphate is a nutrient, and in the Hong Kong context, because of our tropical climate and the water temperature is rather high, the phosphate, when it goes into the pipe and it stays there for a long time, then it will provide nutrients to the microorganisms. There will be biofilm in the pipes, and such biofilms will harbour pathogens; for example, bacteria, amoeba and so on. If there are such opportunistic pathogens, they may not be harmful to a normal adult, but for those who are particularly weak, who are immunocompromised patients, then there may be health hazards; for example, Legionnaires' disease germs can actually inhabit within the microorganisms.

Now, if the water is just stagnated, then it brings maybe more harm than good. So I think we need the Department of Health's colleagues to do health

assessment.

Q. Do you think it is within the ambit of the Department of Health; right?

A. Yes.

Q. Well, from what you said, you seem to be having a negative attitude towards that.

A. No, I'm open-minded. Orthophosphate is widely used overseas. It's not a kind of dangerous substance or dangerous chemical.

Q. You said that Hong Kong's climate is different from that in, say, Europe and Germany. But then they are making good use of this substance. The US is also the same; there are successful examples of using that. There have not been any cases which have failed; right?

A. Let me supplement. If there is a high level of phosphate in water, it will lead to eutrophication of water bodies.

Q. Any excessive substance in a certain water body is not good. It's just like a human being. If you eat too much, then that's not good for your health as well. But if it is not at an excessive level, then it would be good; right?

A. We should have optimised operation. I'm not talking about excessive level. For any water body, if the nutrients, say for example phosphate, are higher than

normal, then there will be eutrophication in the water body. For example, in a reservoir, algae growth will be much faster.

Q. Let's not talk about reservoirs. If this material is just put inside the household's water pipes, say for example in the water pipe of the hotel or the building, it can be put in the inside service of the building; is that right?

A. I have never heard that building managers will put in orthophosphate.

Q. I am telling you that some hotels in the Philippines are doing that. You have not heard of it?

A. No, I have never heard of it. From what I have heard, the orthophosphate is added only at water treatment works.

Q. No, no, no. That should not be the case. They can do it at both venues. You think this is not an issue which is under the ambit of the WSD?

A. I think we work together with the Department of Health, but for the WSD's assessment, there might be a problem with biofilm formation, and then there is also the problem of eutrophication, which means there may be algae, toxic substances. Just like in a water reservoir, there might be microsystems, toxic systems in the water. So you have to balance the benefits against

the risk.

MR LEE: Can I be given one minute?

I don't have any further questions.

CHAIRMAN: What do you want to ask?

MR D HUI: I would like to ask one word from the witness statement.

Cross-examination by MR D HUI

Q. Mr Chan, you said, after 1987, do you know that the leaded soldering materials were banned?

CHAIRMAN: That's what he said this morning.

MR D HUI: What do you mean by banned? Let me refer you to a document. It's just right behind you, the document. Please stand up. It's pasted on the wall. There are six scenarios here. Do you think they are banned?

A. I don't get the question.

CHAIRMAN: Mr Chan, please take your seat.

MR D HUI: The six substances or materials in the document, to my understanding, they are banned. Now, if in the public hearing I light a cigarette and I puff it, I will be banned from doing so. You would drive me out of this room and I would be asked to pay a fine, and so on.

So I would like to ask Mr Chan what do you mean by banning? Does it tally with our common understanding?

CHAIRMAN: Not allowed. 864-2 was passed in 1983.

Let's look at 5.1 and 5.2 on solder materials. We

can still talk about C and G grade solder, but in 1987 there was an amendment to 864, and we have table 17. Then table 17 said 0.01 per cent.

MR D HUI: So, Chairman, my question is if people after 1987 continue to use it, what will happen?

CHAIRMAN: Then they will not be complying.

MR D HUI: Does it mean it's banned?

CHAIRMAN: Up to now, it's not banned yet.

MR SHIEH: I don't think we should be asking the witness how he understands it. If Mr Hui asks about whether it attracts civil or criminal liability or contractual liability, that's altogether a different matter.

CHAIRMAN: Have I been accurate in my recollection of what happened?

MR D HUI: You are totally correct.

CHAIRMAN: C and G grade could be used in the past, but we are talking about 40 to 50 per cent lead percentage, then that's not allowed. After the amendment, 1987, 0.01 per cent, table 17. So that's it. Understand?

MR D HUI: Yes.

CHAIRMAN: Banned, in that sense, you are not allowed to use it.

Yes, cross-examination, if there is any?

Please go ahead.

Re-examination by DR WONG

DR WONG: Mr Chan, yesterday Mr Paul Shieh explored with you one issue. It was relating to the WHO standard and it being health-based. You don't agree that it is not health-based?

The second issue that he talked to you about is about 10 micrograms.

After 1938 and 1987, leaded pipes were banned, so we can achieve an even higher standard and even lower standard than 10 micrograms.

Can I refer you to Prof Bellinger's report and see whether you agree to his view. It's V1, page 63. Towards the very bottom, the paragraph right down there on the page, Prof Bellinger was answering this question:

"(In English) The adequacy and suitability of the acceptance criteria laid down by the Water Supplies Department for heavy metals and, if necessary, to make recommendations."

Do you see that?

A. Yes.

Q. I'm not going to read it through. Please read through the paragraph and see if you agree to what he said.

A. Yes, I agree.

DR WONG: I don't have any other question.

CHAIRMAN: Thank you, Mr Chan. You may now leave.

(The witness withdrew)

MR SHIEH: Mr Chairman, earlier on we thought that yesterday and today Mr Chan would give testimony, and we haven't lined up another witness from the WSD. After the Lunar New Year, on 15 February, we will have expert witnesses, so we didn't intend to have another witness from the WSD filling up the two remaining hours.

If you agree that we don't have any witness today, then we will adjourn to 15 February and then we will have the expert witnesses. We will have Prof Lee first.

CHAIRMAN: 9.30. Thank you.

(3.01 pm)

(The hearing adjourned until 9.30 am
on Monday, 15 February 2016)

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