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Panel on Health Services

Background brief prepared by the Legislative Council Secretariat for the special meeting on 24 August 2015

Public health measures for the lead in drinking water incidents

Purpose

This paper summarizes the concerns of the members of the Panel on Health Services ("the Panel") on the public health measures for the lead in drinking water incidents ("the incidents").

Background

2. Between 9 to 11 July 2015, the Government announced that the lead content of seven water samples from Kai Ching Estate exceeded the provisional guideline value of not more than 10 micrograms per litre of water for lead ("the WHO value") as set out in the World Health Organization's Guidelines for Drinking-water Quality published in 2011¹, and that lead was found in two samples of solder used on water pipe joints. Water samples were taken from four other public rental housing ("PRH") estates² where the fresh water plumbing systems were installed by the same licensed plumber on 13 July 2015. The lead content of five water samples from Kwai Luen Estate and one sample from a vacated unit of Shui Chuen O Estate were found to be above the WHO value. To ease the concerns of residents of PRH estates, the Government subsequently announced that the scope of water sampling for lead testing would

¹ As defined under the Guidelines, a health-based guideline value represents the concentration of a constituent that does not exceed tolerable risk to the health of the consumer over a lifetime of consumption. For the contaminant of lead, the guideline value is designated as provisional because calculated guideline value is below the achievable quantification level as well as the level that can be achieved through practical treatment methods, source control, etc.

² The four PRH estates were Lung Yat Estate in Tuen Mun, Cheung Sha Wan Estate, Shui Chuen O Estate in Shatin, and Kwai Luen Estate in Kwai Shing Circuit.

be extended to all PRH estates completed since 2005 by phases³. According to the Government, thereafter, consideration would be given as to how sampling work would be conducted for those PRH estates completed before 2005.

3. The incidents have aroused wide public concerns over the health effects arising from long-term exposure to lead found in drinking water. According to the Centre for Health Protection ("CHP") under the Department of Health ("DH"), while exposure to lead which was a heavy metal commonly exists in the environment seems inevitable, significant exposure to lead may result in neurodevelopmental effects, anaemia, high blood pressure, gastrointestinal symptoms, impaired renal function, neurological impairment, impaired fertility and adverse pregnancy outcomes when it has accumulated in large amounts in the body. Due to the neurodevelopmental effects, infants, young children, pregnant women and lactating women are more likely to be affected. For those PRH estates the water samples of which are found to contain lead content exceeding the WHO value, residents who belonged to the above more easily affected groups may call a hotline set up by DH to make appointments for free blood lead testing⁴ at designated clinics under the Hospital Authority ("HA") from 11 July 2015 onwards. Test results are expected to be confirmed about four days after blood taking.

4. An inter-departmental meeting was convened by the Secretary for Food and Health ("SFH") with experts of DH and HA on 18 July 2015 to establish the reference value of lead in blood and care plan for residents of the affected PRH estates. For persons below 18 years of age, pregnant women and lactating mothers, a blood lead level below five micrograms per deciliter (" $\mu\text{g}/\text{dL}$ ") is considered normal with no significant health risk, and there is no need for further follow-up. A blood lead level in the range of five to 44 $\mu\text{g}/\text{dL}$ is borderline raised with potential health risks, and health evaluation and follow-up are required. A blood lead level of more than 44 $\mu\text{g}/\text{dL}$ is significantly raised with a risk of lead poisoning, and medical assessment and follow-up are required. As regards other adults aged 18 or above, a blood lead level below 10 $\mu\text{g}/\text{dL}$ is considered normal with no significant health risk, and there is no need for follow-up. A blood lead level in the range of 10 to 50 $\mu\text{g}/\text{dL}$ is borderline raised with potential health risks, and health evaluation and follow-up are required. A blood lead level of more than 50 $\mu\text{g}/\text{dL}$ is significantly raised with a risk of lead poisoning, and medical assessment and follow-up are

³ As of 13 August 2015, lead testing of water samples from all PRH developments completed since 2011 has been completed. The Housing Department is in the process of taking water samples from those PRH developments completed between 2005 and 2010 for lead testing. As advised by the Director of Housing at the press conference on 20 August 2015, it is expected that the above work would be completed in September 2015.

⁴ According to CHP, whole blood lead level is internationally recognized as the most accurate and reliable method for screening and diagnosis to assess the risk of lead on health. Hair and urine tests, which are not suitable for screening and diagnosis, are not advisable.

required. According to HA, lead in the body will be gradually reduced through excretion in urine and bile when the source of exposure is eliminated. For residents whose blood lead levels were found to slightly exceed the reference value, another testing would be performed three months later to assess whether the blood lead level has resumed normal.

Deliberations of the Panel

5. The Panel has taken the opportunity of its meeting on 20 July 2015 to invite SFH to give a short briefing on the health effects arising from significant exposure to lead found in drinking water and the blood test arrangements for PRH estate residents affected by the incidents. The deliberations and concerns of members are summarized in the following paragraphs.

6. Members strongly urged the Administration to expand the scope of blood lead testing to ease the health concerns of the residents of those PRH estates affected by the incidents. On top of the existing three more easily affected groups which included children under six years of age, pregnant women and lactating women, consideration should be given to covering also children who were under six years old when moving into the concerned PRH estates and residents suffering from chronic diseases. Members also called on the Administration to allay public fear through stepping up public education on lead in drinking water and its health effects.

7. According to the Administration, HA's maximum throughput of blood lead testing for the affected residents was around 300 blood samples per week. Hence, priority for blood lead testing should be accorded to young children, pregnant women and lactating women who were more likely affected by exposure to lead in drinking water. The Food and Health Bureau would continue to closely monitor the results of the drinking water tests conducted by the Housing Department and the Water Supplies Department, and the blood test results of HA. Where necessary and practicable, it would consider increasing the number of blood taking session and hospitals providing blood taking service.

8. Some members considered that the Administration should co-ordinate with the private healthcare sector to enhance the overall blood lead testing capacity through public-private partnership, such as providing subsidy to the affected residents for taking the tests in the private sector. There was also a concern about the impact of the incidents on the clinical services of HA. The Administration advised that it was exploring the blood lead testing capacity of the private healthcare sector. At present, efforts had been made by HA to deploy its healthcare personnel to work overtime to perform blood taking and testing. The longer-term impact of the incidents on the clinical services of HA

would depend on the number of PRH estates affected by the incidents and the number of cases that required further assessment and follow-up.

9. Questions were raised about the medical treatment for residents whose blood lead levels exceeded the reference value. The Administration advised that a management protocol for persons whose blood lead levels had been found to have exceeded the reference value had been developed. Under the care plan, for cases whereby the blood lead level was at borderline and significantly raised levels, DH and HA would perform an overall exposure assessment and arrange health evaluation and follow-up respectively. Blood lead level of these cases would be monitored. According to local and international literature and research by experts, the half-life of lead in blood was approximately 30 days once the source of contamination had been eliminated.

10. There was a suggestion that HA should monitor the quality of the drinking water of the newly constructed public hospitals. HA advised that it would consider testing the lead content in drinking water during the final inspection of the Tin Shui Wai Hospital and the Hong Kong Children's Hospital which were under construction.

Recent developments

11. According to the Administration, as at 20 August 2015, water samples from 10 PRH estates were found to contain lead content that exceeded the WHO value. These PRH estates included the Kai Ching Estate, Kwai Luen Estate (Phase 2), Wing Cheong Estate, Lower Ngau Tau Kok Estate, Shek Kip Mei Estate (Phase 2), Hung Hom Estate (Phase 2), Tung Wui Estate, Yan On Estate, Choi Fook Estate and Un Chau Estate (Phases 2 and 4). The test results of water samples taken from the PRH developments released by the Housing Department on 20 August 2015 (Chinese version only) is in **Appendix I**.

12. In response to the test results of drinking water and public concerns, the scope of blood testing has once been expanded to cover children who were under six years old when moving into the affected PRH estates in late July 2015, and subsequently refined to children under eight years of age in early August 2015. To enhance the blood lead testing capacity, HA has sent certain blood samples to overseas laboratories for examination, and purchased portable blood testing devices for initial screening. According to HA, there will be two public hospitals (from the list of the Caritas Medical Centre, Kwong Wah Hospital, Pamela Youde Nethersole Eastern Hospital, Prince of Wales Hospital, Princess Margaret Hospital, Queen Elizabeth Hospital and United Christian Hospital) providing the blood taking service each week starting from 29 August 2015 with a view to maintaining the weekly number of blood samples to be taken at the

level of 720.

13. As of 20 August 2015, the blood lead levels of 126 residents from the affected PRH estates (including 95 young children, one youth aged 15 years old, 27 lactating mothers and three pregnant women) were found to exceed the reference value. Follow-up actions have been taken for these residents according to the care plan. To address the concerns of parents about the potential health risks and impact on development brought to children affected by the incidents, arrangements have been made for those children whose blood lead levels were found to exceed the reference value to receive development assessment at the Child Assessment Centres of DH.

14. Apart from the Review Committee formed by the Hong Kong Housing Authority⁵ and the Task Force established by the Development Bureau⁶ to investigate the incidents, a Commission of Inquiry into Excess Lead found in Drinking Water⁷ has been set up by the Chief Executive in Council under the Commissions of Inquiry Ordinance (Cap. 86) on 13 August 2015. The Commission will report to the Chief Executive within nine months from the date of appointment or such time as the Chief Executive in Council may allow.

Relevant papers

15. A list of the relevant papers is set out in **Appendix II**.

Council Business Division 2
Legislative Council Secretariat
21 August 2015

⁵ The Hong Kong Housing Authority has formed a Review Committee to review the quality assurance issues relating to fresh water supply of PRH estates.

⁶ The Development Bureau has established a Task Force to ascertain the causes of the recent incidents leading to presence of lead in water drawn by households and to recommend measures to prevent recurrence of similar incidents in future; and follow up on a recent case of Legionnaires' disease in Kai Ching Estate.

⁷ According to its Terms of Reference, the Commission will (a) ascertain the causes of excess lead found in drinking water in public rental housing developments; (b) review and evaluate the adequacy of the present regulatory and monitoring system in respect of drinking water supply in Hong Kong; and (c) make recommendations with regard to the safety of drinking water in Hong Kong.

公屋屋邨抽驗食水樣本結果

房屋署正在公屋屋邨從有關總承建商鋪設的供水系統中有系統地抽驗食水樣本，以確定水中含鉛量有否超過世界衛生組織（世衛）每公升水含鉛不多於10微克的標準。房屋署正大致按公屋項目落成年份進行分批抽驗工作，由新近落成的追溯至較舊的項目。有些屋邨涉及多過一個項目，不同項目的抽驗工作可能在不同時間完成，每批水樣本抽驗完成後，房屋署會即時公布結果。

（截止2015年8月20日前公布的結果涉及32個公屋屋邨的48個項目）

食水樣本含鉛量超過世衛標準

	屋邨項目名稱	落成年份	住宅單位總數	總承建商	抽取樣本數目	超過世衛標準的樣本數目
1	葵聯邨第二期 (聯逸樓, 聯悅樓)	2014	1,507	瑞安承建有限公司	44	5
2	啟晴邨	2013	5,204	中國建築工程(香港)有限公司	115	7
3	葵昌邨	2013	1,488	保華建築營造有限公司	46	1
4	牛頭角下邨第一期 (貴亮樓, 貴月樓, 貴顯樓, 貴新樓, 貴輝樓)	2012	4,238	有利建築有限公司	130	6
5	石硤尾邨第二期(美善樓, 美亮樓)	2012	1,558	有利建築有限公司	59	5
6	東匯邨(匯心樓, 匯仁樓)	2012	1,333	保華建築營造有限公司	52	4
7	紅磡邨第二期(紅日樓, 紅昕樓, 紅曜樓)	2011	1,938	中國建築工程(香港)有限公司	74	16
8	欣安邨(欣喜樓, 欣悅樓, 欣頌樓)	2011	2,587	有利建築有限公司	69	5
9	彩福邨(彩樂樓, 彩善樓, 彩喜樓)	2010	2,524	有利建築有限公司	90	13
10	元洲邨第二, 四期 (元樂樓, 元雅樓, 元智樓, 元禧樓, 元健樓)	2008	3,533	有利建築有限公司	135	19

食水樣本含鉛量符合世衛標準

	屋邨項目名稱	落成年份	住宅單位總數	總承建商	抽取樣本數目	超過世衛標準的樣本數目
1	祥龍圍邨	2015	1,358	有利建築有限公司	42	0
2	洪福邨第一, 二期 (洪歡樓, 洪欣樓, 洪喜樓, 洪樂樓, 洪福商場及設施大樓)	2015	2,097	新昌營造廠有限公司	150	0
3	洪福邨第三期 (洪豐樓, 洪溢樓, 洪悅樓, 洪昌樓, 洪盛樓)	2015	2,808	有利建築有限公司		
4	水泉澳邨第一期 (清泉樓, 朗泉樓, 欣泉樓, 喜泉樓)	2015	3,039	中國建築工程(香港)有限公司	53	0 (註)
5	美東邨(美德樓)	2014	990	安保工程有限公司	24	0
6	怡明邨	2014	2,059	興勝建築有限公司	102	0
7	德朗邨	2014	8,164	有利 - 新昌聯營	198	0
8	豐和邨	2013	1,607	新昌營造廠有限公司	50	0
9	長沙灣邨	2013	1,390	中國建築工程(香港)有限公司	42	0
10	龍逸邨	2013	990	瑞安承建有限公司	33	0
11	美田邨(美全樓)	2013	1,216	新昌營造廠有限公司	33	0
12	石籬(二)邨(石歡樓)	2013	839	協興工程有限公司	26	0
13	晴明商場	2013	-	A區: 中國建築工程(香港)有限公司 B區: 有利 - 新昌聯營	20	0
14	石硤尾邨第五期 (美益樓, 美賢樓, 美笙樓, 美盛樓)	2012	2,496	瑞安承建有限公司	73	0
15	元洲邨第五期(元滿樓, 元慧樓, 元逸樓)	2012	1,486	中國建築工程(香港)有限公司	55	0
16	天本型及油塘社區會堂	2012	-	中國建築工程(香港)有限公司	8	0
17	彩福邨(彩歡樓)	2011	915	新昌營造廠有限公司	27	0
18	彩德邨(彩仁樓, 彩義樓)	2011	1,586	新昌營造廠有限公司	40	0
19	葵聯邨第一期(聯欣樓, 聯喜樓)	2011	1,470	瑞安承建有限公司	41	0
20	美東邨(美仁樓)	2010	799	中國建築工程(香港)有限公司	27	0
21	彩德邨(彩俊樓, 彩敬樓, 彩亮樓, 彩賢樓)及彩德商場	2011	2,704	中國建築工程(香港)有限公司	82	0
22	沙田坳邨(和田樓, 順田樓)	2011	1,278	其士(建築)有限公司	53	0
23	油麗邨第五期(卓麗樓, 雅麗樓)	2011	2,002	瑞安承建有限公司	35	0
24	油麗邨第六期(即油麗商場)	2011	-	瑞安承建有限公司	4	0
25	善明邨(善智樓, 善禮樓)	2011	1,974	瑞安承建有限公司	49	0
26	天晴邨天晴社區綜合服務大樓	2011	-	保華建築營造有限公司	24	0
27	紫灣邨(灣畔樓, 灣映樓)	2010	1,600	西松建設株式會社	46	0
28	彩德邨(彩誠樓, 彩信樓)	2010	1,462	興勝建築有限公司	69	0
29	牛頭角上邨第二, 三期 (常興樓, 常盛樓, 常富樓, 常榮樓, 常康樓, 常泰樓), 牛頭角上邨商場及循道衛理觀塘社會服務處牛頭角青少年綜合服務中心	2009	4,584	保華建築營造有限公司	124	0
30	天晴邨第三期(晴滿樓, 晴喜樓, 晴悅樓)	2009	2,365	保華建築營造有限公司	65	0
31	石硤尾邨第一期(美如樓, 美映樓)	2006	2,033	保華建築營造有限公司	55	0
32	秀茂坪(南)邨 (秀好樓, 秀旺樓)	2009	1,598	正宏工程有限公司	130	0
33	秀茂坪(南)邨 (秀美樓, 秀德樓, 秀善樓)	2009	2,397	興勝建築有限公司		
34	黃大仙上邨(詠善樓)	2009	714	俊和建築工程有限公司	22	0
35	油麗邨第四期 (翠麗樓, 康麗樓, 仁麗樓)	2009	2,369	瑞安承建有限公司	121	0
36	油麗邨第三期 (盈麗樓, 豐麗樓)	2008	1,598	中國建築工程(香港)有限公司		
37	碩門邨第一期 (健碩樓, 美碩樓)及超級市場	2009	1,958	保華建築營造有限公司	45	0
38	藍田邨(藍輝樓, 藍泰樓, 藍碧樓, 藍蔚樓)	2009	3,036	瑞安承建有限公司	102	0

(註) 水泉澳邨在喜泉樓其中一個來自空置單位的樣本驗出含鉛量每公升14微克, 稍為超出世衛指引數值。其餘三座均無驗出超標樣本。水務署已在該樓宇抽取更多水樣本以確定情況, 經分析後得出的結論是超標的水樣本有機會受到環境因素影響。

**List of relevant papers on the public health measures for
the lead in drinking water incidents**

Government press releases

Date of issuance	Press release
11 July 2015	Press release entitled "Inter-departmental efforts in tackling quality of drinking water at Kai Ching Estate"
13 July 2015	Press release entitled "Task force to investigate cause of excessive lead content in drinking water at Kai Ching Estate"
14 July 2015	Press release entitled "Government discusses temporary and long-term measures to tackle excessive lead content in drinking water"
15 July 2015	Transcript of remarks made by the Secretary for Food and Health ("SFH") to the press on the lead in drinking water incidents ("the incidents") on 15 July 2015 (Chinese version only)
16 July 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 16 July 2015 (Chinese version only)
18 July 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 18 July 2015
	Press release entitled "Government releases blood test results of public estate residents affected by lead in drinking water incidents"
	Press release entitled "Opening remarks by SFH at press conference on excessive lead content in drinking water"
19 July 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 19 July 2015
21 July 2015	Press release entitled "Government releases latest blood test results of public estate residents affected by lead in drinking water incidents"
	Press release entitled "Opening remarks by SFH at press conference on excessive lead content in drinking water" (Chinese version only)

Date of issuance	Press release
22 July 2015	Speaking note of SFH at the special meeting of the Panel on Housing on 22 July 2015 (Chinese version only)
25 July 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 25 July 2015
26 July 2015	Transcript of remarks made by SFH to the press on the incidents on 26 July 2015
29 July 2015	Press release entitled "Opening remarks by SFH at press conference on excessive lead content in drinking water" (Chinese version only)
2 August 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 2 August 2015
4 August 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 4 August 2015
7 August 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 7 August 2015 (Chinese version only)
9 August 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 9 August 2015 (Chinese version only)
15 August 2015	Transcript of remarks made by SFH to the press on, among others, the incidents on 15 August 2015 (Chinese version only)

Letters from members of the Panel on Health Services

Date of letter	Letter
17 July 2015	Letter from Dr Hon KWOK Ka-ki (Chinese version only)
10 August 2015	Letter from Dr Hon Fernando CHEUNG Chiu-hung (Chinese version only)