

# 立法會 *Legislative Council*

LC Paper No. CB(1)284/17-18(07)

Ref. : CB1/PL/HG

## **Panel on Housing**

**Meeting on 4 December 2017**

### **Background brief prepared by the Legislative Council Secretariat on testing of drinking water of public rental housing estates under the Enhanced Water Quality Monitoring Programme and the follow-up actions in respect of the excess-lead-in-water incident**

#### **Purpose**

This paper provides background information on the testing of drinking water of public rental housing ("PRH") estates under the "Enhanced Water Quality Monitoring Programme" ("the Enhanced Programme") and the latest progress of the follow-up actions in respect of the "excess-lead-in-water" incident, as well as the major views and concerns expressed by Members of the Legislative Council on the subject.

#### **Background**

##### Excess lead found in drinking water samples taken from PRH estates

2. Four water samples taken from Kai Ching Estate in Kowloon City under the arrangement by the Democratic Party between April and June 2015 were found to contain lead that exceeded provisional guideline value<sup>1</sup> in the World Health Organization ("WHO") Guidelines for Drinking-water

---

<sup>1</sup> As defined under the WHO Guidelines for Drinking-water Quality published in 2011, 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.

Quality ("the WHO Guidelines") of not more than 10 micrograms per litre for lead ("the WHO value").

3. In July 2015, after conducting its own test, the Government announced that excessive lead was found in water samples from PRH estates including Kai Ching Estate, Kwai Luen Estate (Phase 2) and Shui Chuen O Estate and in samples of solder used on water pipe joints. In light of this, the Government collected water samples for testing from PRH estates completed in and after 2005. In September 2015, the Government announced that water samples from 72 PRH developments were found to comply with the WHO value and 11 PRH developments were found to contain lead content that exceeded the WHO value<sup>2</sup>. The Water Supplies Department ("WSD") further conducted water sampling tests for the 144 PRH estates completed before 2005 by batches. On 18 November 2015, the Government announced that all tests had been completed and all samples were found to meet the WHO's guideline limit.

#### Measures to assist affected tenants

4. The Hong Kong Housing Authority ("HA") announced on 11 November 2015 that from 1 January 2016, tenants in 11 PRH developments in which excess lead in drinking water had been found would receive a subsidy of \$660 provided by the four contractors concerned<sup>3</sup> for offsetting part of the water charges and sewage charges payable.

5. For PRH estates where water samples were found to have exceeded the WHO value, the Housing Department ("HD") and WSD arranged for temporary water supply, including the supply of bottled water and the installation of temporary water tanks and pipes outside each block, to facilitate access to drinking water in each affected estate. Connection pipes were extended from the roof-top water tanks to each floor of the building, and lead-reducing water filters were installed for affected tenants.

---

<sup>2</sup> The 11 PRH developments included the Kai Ching Estate, Kwai Luen Estate (Phase 2), Wing Cheong Estate, Lower Ngau Tau Kok Estate (Phase 1), Shek Kip Mei Estate (Phase 2), Hung Hom Estate (Phase 2), Tung Wui Estate, Yan On Estate, Choi Fook Estate, Un Chau Estate (Phases 2 and 4), and Ching Ho Estate (Phase 1).

<sup>3</sup> The four contractors concerned were China State Construction Engineering (Hong Kong) Limited, Paul Y General Contractors Limited, Shui On Building Contractors Limited and Yau Lee Construction Company Limited.

### Replacement of non-compliant water pipes in PRHs

6. In March 2016, HA announced that the four contractors involved would replace non-compliant water pipes in the common areas and to change or clean the filter cores for the affected tenants in the 11 PRH developments with excess lead in water. Rectification works in the common areas of the 11 affected PRH developments were completed by June 2017. For replacement of non-compliant pipes inside individual flats, the contractor conducted a trial for works at Kwai Yuet House of Lower Ngau Tau Kok Estate Phase 1 starting from October 2016 and started works inside the domestic flats of the remaining affected PRH developments in April 2017. By September 2017, the HA had completed the replacement of non-compliant pipes in about 20% of the 29 000 households in the 11 affected PRH estates. Installation of water filters and provision of temporary water supply through standpipes and water points on each floor of the 11 affected PRH developments will continue to be in force until the rectification works for both the common areas and inside flats are completed.

### Investigation into the causes of the incidents

7. To investigate into the "lead-in-drinking-water" incidents, the Development Bureau ("DEVB") established a Task Force on Excessive Lead Content in Drinking Water ("the Task Force"), and HA formed a Review Committee on Quality Assurance Issues Relating to Lead in Fresh Water of Public Housing Estates ("the Review Committee"). The final report by the Task Force was submitted to and accepted by the Secretary for Development in October 2015, and the Review Committee's final report was submitted to and accepted by HA in January 2016.

8. A Commission of Inquiry ("CoI") was also set up in August 2015 under the Commissions of Inquiry Ordinance (Cap. 86) to investigate the matter. The CoI recommended that the Government should, inter alia, review the existing legislative and regulatory system, and establish the "Hong Kong Drinking Water Standards" by making reference to overseas experience and practices. To follow up with the recommendations of the CoI report, DEVB established an International Expert Panel on 1 June 2016. WSD also engaged expert consultants to review the drinking water standards and water sampling protocols of the WHO, the European Union and other developed countries and possible applications for investigating lead contamination in PRH estates, and to provide advice on a Water Safety Plan.

## Action Plan to Safeguard the Drinking Water Quality in Hong Kong

9. The Administration launched the Action Plan for Enhancing Drinking Water Safety ("the Action Plan") on 21 September 2017 with a view to further safeguarding drinking water quality in Hong Kong through a multi-pronged approach. Under the Action Plan, the Government adopts the WHO Guidelines as the drinking water standards and enhances the current water quality monitoring programme of WSD to collect water samples from drinking taps of randomly selected consumers of the territory for testing with a view to monitoring the drinking water quality in the territory. The six metals<sup>4</sup> that can be present in the internal plumbing systems will be tested. The collected local water quality data will be used as a basis to review the Hong Kong drinking water standards including the appropriateness to adopt standards beyond the WHO Guidelines for certain parameters.

### The Enhanced Programme

10. Under the Action Plan, the Enhanced Programme monitors the quality of drinking water at consumers' taps. Participating premises, including PRH estates, will be randomly selected from all water accounts using a pre-defined random sample selection methodology. Under the Enhanced Programme, approximately 670 water samples will be collected for testing annually. Based on the population ratio of PRH estates vis-à-vis the total population of the territory, the Administration estimates that about one-third of the said samples would be from PRH estates; thus, about 200 water samples would be collected from PRH estates annually.

### **Major views and concerns expressed by Members**

11. The views and concerns expressed by Members on the subject at the meetings of the Panel on Housing, Panel on Health Services and the House Committee since July 2015 are summarized in the ensuing paragraphs.

### Ascertaining the source of excess lead found in tap water

12. Members noted the Task Force's conclusion that leaded solder joints installed in the inside service were the cause of excess lead in drinking water in Kai Ching Estate and Kwai Luen Estate (Phase 2) and the Review Committee's view that the "lead-in-drinking-water" incidents were, to a large extent, caused by a "lack of awareness" in the industry as well as within HA

---

<sup>4</sup> The six metals are lead, antimony, cadmium, chromium, copper and nickel.

and the HD. However, some Members considered that the crux of the problem was the absence of an effective mechanism for monitoring plumbing works.

#### Scope and validity of water sampling tests of PRH estates

13. Some Members queried the validity of the water sampling tests conducted by the Government as the water samples were collected after running the tap for a few minutes. In light of CoI's recommendation for the assessment of lead content of stagnant water in new water pipes, Members urged the Administration to consider adopting the approach to take "initial draw-off" samples, instead of the flushing methodology. Members also requested the Government to collect and test samples of stagnant water in pipes, with latest technologies such as X-ray fluorescence device and 3M petrifilms.

14. The Administration explained that the water sampling means and procedures varied across countries/cities depending on their unique situations. The current practice of collecting samples after running the taps for two to five minutes complied with the WHO standard, whereas samples of stagnant water in pipes were only indicative of the quality of drinking water upon remaining in the water pipes for a period of time, and did not reflect the quality of the water to be taken by an individual daily.

15. Members expressed concerns over whether the test parameters of the water samples covered all heavy metals found in the soldering materials. The Administration advised that WSD had promulgated additional test parameters of water samples covering the four heavy metals of lead, chromium, cadmium and nickel on top of the original eight test parameters.

16. Members strongly urged the Administration to conduct water sampling tests in all PRH estates. At the special meeting held on 22 July 2015, the Panel on Housing carried a motion calling on the Administration to conduct water sampling tests in all PRHs and subsidized housing estates in the territory (including old housing estates where water pipes have been newly replaced under the "Total Maintenance Scheme" in recent years).

#### Blood tests and medical follow-up for affected tenants

17. Members strongly urged the Administration to expand the scope of free blood tests to cover children who were under six years old when moving into the concerned PRH estates and residents suffering from chronic diseases. Some Members considered that blood tests should also be provided for

people who belonged to the three easily affected groups and were residing in the affected PRH estates even though they were not the family members of the PRH tenants of the affected estates.

18. Members were deeply concerned about the long waiting time of around three to four weeks for the blood testing services provided by the Hospital Authority and the Department of Health ("DH"). In Members' view, the Administration should expedite collection and testing of blood samples, such as by way of portable devices, and/or deploying additional resources in collaboration with the private healthcare sector. Some Members considered that the Administration should enhance the overall blood lead testing capacity through public-private partnership, such as providing affected residents with "blood testing vouchers" for taking the tests in the private sector, arranging outreach blood-taking services, engaging more overseas laboratories and purchasing more equipment for blood testing.

19. The Administration advised that the Hospital Authority had arranged seven public hospitals to provide blood taking service at weekends, and made arrangement with two private hospitals in providing additional blood taking service. The Hospital Authority had endeavored to enhance the throughput of blood taking and testing with the purchase of new blood testing equipment, sending of blood samples to overseas laboratories for testing, and the deployment of the Hospital Authority healthcare personnel to work overtime.

20. Some Members were concerned that the current blood test might not be able to detect residue of lead contamination in the body, given that the half-life of lead in blood was approximately 30 days once the source of contamination had been eliminated. They suggested that other than blood test, hair and urine tests for lead should be considered. The Administration advised that whole blood lead level was 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 for lead were not suitable for screening and diagnosis.

21. Members considered that the Administration should explain clearly to tenants the potential health impacts associated with taking lead-contaminated water, and provide medical assistance to affected tenants with an elevated blood lead level.

22. Regarding the 126 children found to have borderline raised blood lead levels, the Administration advised that DH had been conducting developmental surveillance for them. 30 of them had been found to have mild developmental problems for which surveillance and follow-up are required; another 11 children had been found to have signs of developmental delay. Children identified with mild developmental problems or developmental delay had been referred to appropriate rehabilitation services, such as training, special education support, and clinical service, etc. Children showing no signs of developmental problems had already been referred to the Maternal and Child Health Centres or the Student Health Service for enhanced developmental surveillance to facilitate appropriate follow-up.

#### Replacement of non-compliant pipes

23. Members noted that contractors were responsible for replacing the non-compliant pipes inside domestic units of the 11 PRH developments in which excess lead in drinking water was found, and that HA had asked the contractors to make good any damages to the furnishings as a consequence of the rectification works and to handle any compensation claims by tenants. Some Members enquired how the Administration would deal with tenants' requests for opting out of the rectification works inside their flats.

24. The Administration replied that in considering the matter, HA needed to take into account its and tenants' legal obligations under the Waterworks Ordinance/Waterworks Regulation. It was stipulated in the tenancy agreement that PRH tenants should allow HA to carry out works deemed necessary in their flats. HA believed that to safeguard the quality of drinking water, tenants should allow contractors to replace water pipes inside their flats. As some tenants might not be able to make arrangements to tie in with contractors' works programs, such cases would be dealt with after the contractors completed other units of the same estate.

#### Monitoring of waterworks projects

25. Members considered it of paramount importance to enhance the plumbing trade's awareness of the use of lead-free soldering materials for fresh water pipes and to put in place preventive measures, such as stepping up training for the trade. Members also considered that the incident of excess lead found in drinking water reflected inadequacies in respect of waterworks monitoring and inspection, and urged the Administration to take rectification measures to ensure that the supply of water in new housing developments would be up to standard. In this connection, some Members

suggested that the Administration should review the Waterworks Ordinance and the licensing requirements for Authorized Persons and licensed plumbers.

26. The Administration advised that subsequent to the incidents, HA had put in place measures to incorporate in all relevant HA contracts additional water sampling requirements and the checking of lead content, and to step up inspection on soldering materials used at water pipe joints of public housing estates. Noting the inadequacies in the past quality controls system of HA, HA would also actively follow up and implement enhancement measures to prevent recurrence of similar incidents.

#### Contractual actions against contractors

27. Referring to the performance bond provided by contractors to HA involved in the incident, Members enquired about the situation under which HA could seek recovery from the guarantor and such cases of recovery, if any.

28. The Administration advised that since the incident, HA had been taking actions against the four contractors for their liabilities under the contracts. On 6 November 2015, HA announced that the four contractors had agreed to provide a performance bond undertaking, in respect of each of the affected PRH developments, to provide additional commitment to implementing measures to provide safe water supply to residents. If the contractors were verified to be in default of performing any of these measures, HA could seek recovery according to the terms of the performance bond.

#### **Council Questions**

29. Dr Hon LAM Tai-fai, Hon WU Chi-wai and Dr Hon Helena WONG Pik-wan raised questions related to the excess-lead-in-water incident and the progress of rectifications to be implemented by the relevant authorities. Details of the questions are hyperlinked in the **Appendix**.



### **Latest development**

30. The Administration will brief members on the Enhanced Programme and the latest updates related to the incident at the Panel meeting on 4 December 2017.

### **Relevant papers**

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

Council Business Division 1  
Legislative Council Secretariat  
1 December 2017

**Testing of drinking water of public rental housing estates under the Enhanced Water Quality Monitoring Programme and the follow-up actions in respect of the excess-lead-in-water incident**

**List of relevant papers**

Papers issued for Committee meetings

<b>Committee/ Date of meeting</b>	<b>Relevant papers</b>
<p>Panel on Housing (Special meeting on 22 July 2015)</p>	<p><a href="#">Paper</a> provided by the Administration entitled "Excessive Lead in Fresh Water Supply in Public Housing Estates"</p> <p><a href="#">Background brief</a> prepared by the Legislative Council ("LegCo") Secretariat entitled "Excessive Lead found in Tap Water Samples from Public Rental Housing Estates"</p> <p><a href="#">Speaking note</a> of the Secretary for Transport and Housing (Chinese version only)</p> <p><a href="#">Speaking note</a> of the Acting Secretary for Development (Chinese version only)</p> <p><a href="#">Speaking note</a> of the Secretary for Food and Health ("SFH") (Chinese version only)</p> <p><a href="#">Motion</a> on "Excessive lead found in tap water samples from public rental housing estates" passed at the special meeting</p> <p><a href="#">The Administration's response</a> to the concerns and suggestions raised by Members at the special meeting</p>
<p>Panel on Health Services (Special meeting on 24 August 2015)</p>	<p><a href="#">Paper</a> provided by the Administration entitled "Public health measures for the lead in drinking water incidents"</p> <p><a href="#">Background brief</a> prepared by the LegCo Secretariat entitled "Public health measures for the lead in drinking water incidents"</p>
<p>House Committee (Special meeting on 1 September 2015)</p>	<p><a href="#">Paper</a> provided by the Administration entitled "Lead in drinking water incidents"</p> <p><a href="#">Background brief</a> prepared by the LegCo Secretariat entitled "Lead in drinking water incidents"</p>

Committee/ Date of meeting	Relevant papers
	<p><a href="#">Information</a> on the test results of blood lead level of public estate residents affected by lead in drinking water incidents (as at 1700 hours on 27 August 2015) provided by the Administration</p> <p><a href="#">Speaking note</a> of the Chief Secretary for Administration (Chinese version only)</p>
House Committee (Special meeting on 8 October 2015)	<p><a href="#">Paper</a> provided by the Administration entitled "Lead in drinking water incidents"</p> <p><a href="#">Updated background brief</a> prepared by the LegCo Secretariat entitled "Lead in drinking water incidents"</p> <p><a href="#">Speaking note</a> of the Chief Secretary for Administration (Chinese version only)</p> <p><a href="#">Speaking note</a> of the Acting Secretary for Transport and Housing (Chinese version only)</p>
House Committee (Meeting on 9 October 2015)  Legislative Council (Meeting on 14 October 2015)	<p><a href="#">Joint letter</a> dated 14 August 2015 from 27 Members seeking the Council's authorization for the appointment of a select committee to inquire into lead in drinking water incidents and related issues (Chinese version only) <i>(for discussion at the House Committee meeting)</i></p> <p><a href="#">Two motions</a> moved by Hon Gary FAN Kwok-wai and Hon Cyd HO Sau-lan under the Legislative Council (Powers and Privileges) Ordinance (Cap. 382)</p>
Panel on Housing (Meeting on 2 November 2015)	<p><a href="#">Paper</a> provided by the Administration entitled "Excess lead in drinking water in public housing estates incident"</p> <p><a href="#">Background brief</a> prepared by the LegCo Secretariat entitled "Lead in drinking water incidents"</p> <p><a href="#">Speaking note</a> of the Under Secretary for Transport and Housing (Chinese version only)</p> <p><a href="#">The Administration's response</a> to the concerns and suggestions raised by members at the meeting</p>

<b>Committee/ Date of meeting</b>	<b>Relevant papers</b>
Panel on Housing (Meeting on 1 February 2016)	<p><a href="#">Paper</a> provided by the Administration entitled "Final Report of the Review Committee on Quality Assurance Issues Relating to Fresh Water Supply of Public Housing Estates"</p> <p><a href="#">Updated Background brief</a> prepared by the LegCo Secretariat entitled "Lead in drinking water incidents"</p> <p><a href="#">Speaking note</a> of the Under Secretary for Transport and Housing (Chinese version only)</p>
Panel on Housing (Meeting on 5 December 2016)	<p><a href="#">Paper</a> provided by the Administration entitled "Updates on Issues Arising from the Excess Lead in Drinking Water in Public Rental Housing Estates Incident"</p> <p><a href="#">Updated background brief</a> prepared by the LegCo Secretariat entitled "Excess lead in drinking water in public rental housing estates incident"</p> <p><a href="#">The Administration's response</a> to the enquiries raised by members at the meeting</p>

#### Hyperlinks to relevant Council Questions

<b>Date</b>	<b>Council Questions</b>
4 November 2015	Council question raised by Hon LAM Tai-fai <a href="http://www.info.gov.hk/gia/general/201511/04/P201511040362.htm">http://www.info.gov.hk/gia/general/201511/04/P201511040362.htm</a>
18 May 2016	Council question raised by Hon WU Chi-wai <a href="http://www.info.gov.hk/gia/general/201605/18/P201605180344.htm">http://www.info.gov.hk/gia/general/201605/18/P201605180344.htm</a>
6 July 2016	Council question raised by Dr Hon Helena WONG Pik-wan <a href="http://www.info.gov.hk/gia/general/201607/06/P201607060745.htm">http://www.info.gov.hk/gia/general/201607/06/P201607060745.htm</a>
30 November 2016	Council question raised by Dr Hon Helena WONG Pik-wan <a href="http://www.info.gov.hk/gia/general/201611/30/P2016113000430.htm">http://www.info.gov.hk/gia/general/201611/30/P2016113000430.htm</a>

#### Action Plan for Enhancing Drinking Water Safety in Hong Kong

Details about the Action Plan for Enhancing Drinking Water Safety in Hong Kong and the Enhanced Water Quality Monitoring Programme are available on the following website:

<http://www.wsd.gov.hk/en/core-businesses/water-quality/action-plan-for-enhancing-of-drinking-water-safety/index.html>

Government press releases

Press releases issued by the Government on the incidents of excess lead in drinking water are available on the following website:  
<http://www.isd.gov.hk/drinkingwater/eng/press.html>.