

Memorandum for the Hong Kong Housing Authority

Updates on Issues Arising from the “Excess Lead in Drinking Water in Public Rental Housing Estates” Incident

PURPOSE

In Paper No. HA 7/2016 issued in March 2016, we reported on developments on various issues arising from the “excess lead in drinking water in public rental housing (PRH) estates” incident. This paper updates Members in respect of the following areas:

- (a) water sampling tests;
- (b) relief measures to assist affected tenants;
- (c) rectification works in the 11 PRH developments with excess lead in drinking water; and
- (d) recommendations of the Housing Authority (HA)’s Review Committee on Quality Assurance Issues Relating to Fresh Water Supply of Public Housing Estates (Review Committee).

WATER SAMPLING TESTS

2. HA and Water Supplies Department (WSD) started to conduct water sampling tests for PRH estates in July 2015, and completed such tests for all PRH estates (including non-domestic portions) on 18 November 2015. The sampling test results are summarized as follows:

- (a) **For PRH estates completed in and after 2005:** We conducted “systematic sampling tests” for a total of 46 PRH estates, involving 83 PRH developments. A total of 4 821 water samples were taken, of which 91 samples taken from 11 PRH developments exceeded the World Health Organization (WHO)’s Provisional Guideline Value (PGV) for lead^{Note 1}.
- (b) **For PRH estates completed before 2005:** We conducted “screening tests” of water. We took 2 635 water samples from 144 PRH estates, and all of them complied with the WHO’s PGV for lead.

3. During the hearings of the Commission of Inquiry into Excess Lead Found in Drinking Water (COI), there were queries about certain water samples being discarded. In response to press inquiries, we issued a press statement on 5 February 2016 to repeat some information that we had previously published and why we had discarded some water samples.

4. As mentioned in the press statement, WSD and HA had found cases where water samples “with excess lead” were suspected of contamination during the sampling process, which led to deviation in the test results. Under these circumstances, more water samples had to be taken before the water quality of the estates concerned could be determined. If, after analysis, it was concluded that the water samples “with excess lead” had been affected by environmental factors, the samples would be discarded. For example, both WSD and HA have explained to the public on various occasions in the past that a sample “with excess lead” at Shui Chuen O Estate was discarded after further investigation showed that it was affected by environmental factors^{Note 2}.

5. There were also cases where we discovered after samples had been taken that the fresh water supply systems inside the units were installed by the tenants themselves. Such samples were also discarded. This was also explained to the public through HA’s press statement issued on 5 February 2016.

Note 1 The provisional guideline value for lead in drinking water established by WHO’s Guidelines for Drinking-water Quality (2011) is 10 micrograms per litre.

Note 2 For example, one sample taken from a vacant unit at Hei Chuen House of Shui Chuen O Estate was found to have a lead level of 14 ug/L, which slightly exceeded the World Health Organization’s limit. The water samples taken from the other three domestic blocks in the same estate did not exceed the limit. WSD then took more water samples from Hei Chuen House for testing to ascertain the situation. After analysis, it was concluded that the water sample which exceeded the limit had been affected by environmental factors and should be discarded, and that no excess lead in water was found in Shui Chuen O Estate.

6. We have now confirmed with WSD that altogether 49 samples were discarded. Among them, 27 ^{Note 3} were discarded for two main reasons, namely (a) the samples were affected by environmental factors; or (b) the fresh water supply systems from which the samples were taken were installed by the tenants themselves. Another 22 were discarded as they had been taken inadvertently from premises that are not existing PRH estates ^{Note 4}.

RELIEF MEASURES TO ASSIST AFFECTED TENANTS

7. Since the “excess-lead-in-water” incident, to minimise the inconvenience caused to tenants of the 11 affected PRH developments in gaining access to safe drinking water, the WSD and HA have taken a series of measures including the provision of water wagons/tanks and standpipes, supply of bottled water, requesting the contractors concerned to install temporary water points by connecting pipes from the roof-top tank to each floor of the block, as well as to install water filters and replace filter cartridges for two years after installation for the affected domestic households free of charge. The latest developments are set out below:

- (a) **Water wagons/tanks and standpipes:** Currently, only the standpipes remain in use, but we note that water consumption has decreased gradually as tenants in the 11 affected PRH developments have been able to gain access to safe drinking water following the installation of water filters and temporary water points (see items (c) and (d) below). We will keep in view the usage of the standpipes and consider withdrawing them at an appropriate time, having regard to actual circumstances on the ground, tenants' sentiments and progress of rectification works, etc.
- (b) **Bottled water:** HA ceased the distribution of bottled water to the 11 affected PRH developments on 28 December 2015. HA had distributed a total of 9.96 million bottles of bottled water, involving a total cost of around \$60 million.
- (c) **Water filters:** Filter installation was completed in all 11 affected PRH developments by October 2015, save for those households who refused the installation of filters and those with whom we have

Note 3 Among the 27 discarded samples, 8 were taken from the 11 affected PRH developments.

Note 4 14 samples were taken from a block uncompleted at the time, and 8 samples were taken from Link's property.

had difficulty in getting in touch. To ease tenants' concerns about the effectiveness of the water filters, water tests were conducted again for the units in the 11 affected PRH developments in which samples with excess lead content had been found and filters were subsequently installed by the contractors. HA announced on 2 November 2015 that such water tests had been completed, and all test results complied with the WHO's PGV for lead. Since the water filters have been used for some time, the four contractors have been cleaning the filter cartridges or replacing them for tenants^{Note 5} in accordance with the manufacturer's instructions for the brand of the filter.

HA and the contractors concerned have received feedback from some tenants on the use of filters, such as the outflow water capacity. We have explained to tenants that they should follow the manufacturer's instructions on the use of the filter to ensure its function and performance, and quality of the filtered water (e.g. hot water should not be filtered, filtered water should be used for drinking or cooking only etc.). The contractors/ manufacturers have set up a hotline for enquiries and may pay a visit to individual households where necessary.

- (d) **Temporary water points on each floor:** The temporary water points in all 11 affected PRH developments were put into use by 9 December 2015. In response to some tenants' queries about the milky appearance of water from the temporary water points on certain floors, we have explained that this was attributed to air bubbles in the system; the water would become clear again after running the tap or letting the water stand in a container for a while for the bubbles to escape; this phenomenon does not affect the quality of the drinking water. As with the standpipes, we will keep in view the usage of the temporary water points and consider withdrawing them at an appropriate time, having regard to actual circumstances on the ground, tenants' sentiments and progress of rectification works, etc.

Note 5 For the households with filters installed in Wing Cheong Estate and Tung Wui Estate, Paul Y. General Contractors Limited cleans the filter cartridges about once every three months, and replaces the filters once within 12 months' time. Paul Y. has cleaned the filter cartridges for these households twice already, and will conduct the next round of cleaning in June 2016. The remaining three contractors replace the filter cartridges for the households in their affected PRH developments about once every six months. Since filters were installed in the 11 affected PRH developments at different times, the timing for replacement of the filter cartridges varies from one estate to another. To date, replacement of filter cartridges in the households of affected PRH estates has been substantially completed.

8. HA and the contractors concerned have been maintaining close communication with the affected tenants to answer their queries and address their concerns. In the Estate Newsletter published in May 2016 and distributed to the 11 affected PRH developments, we have included some useful tips for use of water filters and temporary water points for the affected tenants' reference.

RECTIFICATION WORKS IN THE 11 AFFECTED DEVELOPMENTS

Rectification Works in the Common Area of Affected Blocks

9. In order to rectify the problem of excess lead in water, HA has requested the four contractors concerned to replace the non-compliant pipes and fittings in the 11 affected PRH developments. The rectification works in the common areas of domestic blocks in the 11 affected PRH developments started on 14 March 2016 and are in progress. The actual time required for completion of works in the common areas varies from one housing block to another, depending on a number of factors such as design of the blocks involved, weather conditions and allocation of resources, etc.

10. The rectification works will unavoidably cause inconvenience to tenants of the 11 affected PRH developments. HA has asked the contractors to minimize the inconvenience as far as practicable and the following measures have been put in place for better communication with tenants –

- (a) notices providing details of the works (e.g. the scope, dates, sequence and water suspension time, etc.) were posted in the lobbies of the 11 PRH developments, and newsletters were distributed into tenants' mailboxes;
- (b) we held briefings for relevant Estate Management Advisory Committees;
- (c) contractors have deployed ambassadors at each estate to answer tenants' enquiries;
- (d) each contractor has set up a hotline to answer tenants' enquiries (from 9 am to 6 pm, Monday to Saturday); and

- (e) regular communication meetings are held among the contractors, estate management staff and Housing Department (HD)'s project team to enhance communication and to work out how to minimize nuisance and inconvenience to tenants.

11. As mentioned in para. 10 above, frontline staff of HA and the contractors have maintained close communication with the affected tenants through various channels in order to address issues or concerns raised by the latter while rectification works are in progress. So far, only a few minor complaints have been received, such as cleaning and tidying up work areas after work, and the issues have been resolved satisfactorily.

Next stage – Works inside flats

12. HA will announce the arrangements for rectification works inside flats after the works in the common areas have been completed. There are some issues that we will have to resolve before we can firm up a programme for works inside flats. For example, some tenants are very concerned about damages that might be caused to their furnishings by the rectification works. The latest thinking of the contractors is to adopt the piping's existing routing as far as practicable. If it is impracticable to adopt the existing routing, a new routing would be adopted to avoid or minimize the damage to existing furnishing as far as practicable. As a start, HA has asked the contractors to assess the different scenarios that may be encountered inside flats. We will also draw experience from HA's past large-scale re-plumbing works in PRH estates. In addition, to prepare for the eventual works inside flats, the four contractors have each chosen a vacant flat to carry out trial works. Subject to the experience of such trials, further trial works may be carried out inside vacant flats as necessary.

13. Another issue which has also been raised by tenants is whether they can opt out of the works inside flats. HA will continue to liaise closely with WSD on this issue.

IMPLEMENTATION OF RECOMMENDATIONS OF THE REVIEW COMMITTEE

14. HA's Review Committee recommended the following measures in its Report on Interim Findings and its Final Report, which were published on 6 October 2015 and 8 January 2016 respectively –

- (a) to require the main contractors to test water samples for lead and other heavy metals for newly established inside service in accordance with the Water Authority (WA)'s latest requirements;
- (b) to require the main contractors to submit and comply with a management plan covering stringent plumbing subcontractor supervision and on-site monitoring, central procurement of solder materials by themselves or by the plumbing subcontractors, material submission, purchasing, delivery, storage, use of materials and on-site monitoring, and supervision of licensed plumbers;
- (c) to use quick test methods to check for the presence of lead in soldering joints ^{Note 6};
- (d) to include soldering/brazing alloys, and copper pipes and fittings in the list of on-site delivery verification items; and to include soldering/brazing joints in the list of plumbing items that require checking by the site inspection staff;
- (e) to train site inspection staff to inspect whether the main contractors have duly conducted their supervisory checks or not, and conduct audit check of the soldering and brazing joint materials; and
- (f) separately, training institutions to enhance their training programmes for licensed plumbers and workers in the plumbing trade.

15. The above enhancement measures which are relevant to HA/HD (i.e. items (a) to (e)) have already been put into practice. As for (f), prohibition of use of leaded solder in fresh water plumbing systems has already been included in the training institutions' training programmes. These training institutions viz the Vocational Training Council (VTC) for licensed plumbers and the Construction Industry Council (CIC) for plumbing workers have also been approached for necessary enhancement in light of the excess-lead-in-water incident. Amongst others, VTC has highlighted the importance of materials purchasing and control to the licensed plumber trainees whilst CIC has included in the training programme for plumbing workers the latest requirements for control of the construction of inside services provided in WSD's circular letters.

Note 6 In using the quick test methods to check current contracts in hand, we will be able to identify quickly if there is any non-compliance and fix it immediately before testing of water samples towards end of completion.

16. In its Final Report, the Review Committee also noted that HA/HD had put in place the following enhancement measures in relation to jointing of water pipes –

- (a) in respect of existing PRH estates that would undergo maintenance and improvement works, HA/HD would continue with the existing practice and require the contractors to use copper pipes with compression joints. If the use of soldering joint is unavoidable at isolated locations, the contractor would be required to submit an application for the HA/HD's approval. HA/HD would carry out the necessary checks and require contractors to test water samples in accordance with WSD's latest requirements; and
- (b) in respect of new PRH projects under construction, in addition to measures mentioned in para. 14 above, contractors would also be encouraged to use mechanical jointing of water pipes.

17. After the discovery of the excess-lead-in-water incident in July 2015, we mentioned to the public that as leaded solder joints were the cause of excess lead in drinking water, HA/HD would explore methods other than soldering for copper pipe connection to minimize the risk. Having consulted relevant industry stakeholders and after further consideration, we consider that with the implementation of enhancement measures mentioned in para. 14 above, contractors should be permitted to continue to use soldering for copper pipe connection in PRH projects. Meanwhile, HA will continue to explore other methods of copper pipe connection and alternative piping materials such as stainless steel pipes which have been put on trial in some of the pilot projects. Other alternative jointing methods may also be put on trial in pilot projects as appropriate.

LOOKING AHEAD

18. The COI, which was set up on 13 August 2015, is expected to report to the Chief Executive within nine months. We will keep in view COI's findings and recommendations when its report is published. Meanwhile, we will continue with the follow-up work in connection with the 11 affected PRH developments, and will continue to keep the public informed of the developments.

INFORMATION

19. This paper is issued for Members' information.

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File Ref. : HD (C) DS 624/1
(Strategy Division)
Date of Issue : 9 May 2016

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