**Drinking Water Safety Advisory Committee**
**Third Meeting**

**Date :** 5 December 2018 (Wednesday)
**Time :** 9:30 a.m. to 11:50 a.m.
**Venue :** Conference Room 7, G/F, Central Government Offices,
2 Tim Mei Avenue, Tamar, Hong Kong

## Minutes of Meeting

**Members Present**

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| Ir LEUNG Kwong Ho, Edmund | Chairman |
| Ir Dr CHAN Hon Fai | Vice Chairman |
| Dr CUNLIFFE David Anthony | |
| Mr HO Kui Yip, Vincent | |
| Prof LAU Kar Pui, Susanna | |
| Ir Prof LO Man Chi, Irene | |
| Dr MA Yiu Wa, Anthony | |
| Prof TSE Lap Ah, Shelly | |
| Dr WONG TAAM Chi Woon, Vivian | |
| Mr WONG Chung Leung | Director of Water Supplies |
| Mr CHAU Siu Hei, Francis | Deputy Secretary for Development (Works) 3 |
| Dr CHING Cheuk Tuen, Regina | Consultant Community Medicine (Non-Communicable Disease), Department of Health |
| Mr CHU Siu Ki, Alex | Secretary<br>Chief Assistant Secretary (Water Safety), Development Bureau ("DEVB") |

**Members Absent with Apology**

Prof HO Kin Chung

Dr WONG Siu Ming, Raymond

Ir WONG Yiu Sun, Peter

**In Attendance**

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| Ms FOK Ka Lai | Assistant Secretary (Water Safety) 1, DEVB |
| Mr CHAN King Yuen | Assistant Secretary (Water Safety) 2, DEVB |
| Mr AU Yat Wah, Calvin | Assistant Secretary (Infrastructure Coordination) 2, DEVB |
| Ms YEUNG Man Yan, Didi | Executive Manager (Water Safety), DEVB |
| Mr CHAU Sai Wai | Deputy Director of Water Supplies |
| Mr LAM Saint Kit, Byron | Assistant Director/Special Duty, Water Supplies Department ("WSD") |
| Mr KWOK Yau Ting, Kelvin | Chief Chemist, WSD |
| Mr YU Chi Wing | Senior Chemist/Water Quality (Standards and Monitoring), WSD |

**Action by**

**Agenda Item 1: Confirmation of Minutes of the Last Meeting**

1. The Secretary had circulated to Members the draft minutes of the second meeting on 6 September 2018 and there was no comment received. There being no further comments from Members, the minutes of the last meeting were confirmed.

**Agenda Item 2: Matters Arising from Last Meeting**

2. Regarding the statistics of the failure rate of the 6-hour stagnation ("6HS") water sampling tests for commissioning of new plumbing works as mentioned in the previous meeting *(paragraph 5 of the minutes of the last meeting)*, the relevant statistics would be reported in Agenda Item no. 3.

3. Regarding the paper on Hong Kong Drinking Water Standards ("HKDWS") *(paragraph 8 of the minutes of the last meeting)* and the enquiry related to biologically active residue in raw water *(paragraph 31 of the minutes of the meeting)*, they would be discussed in Agenda Item no 5.

4. In connection with a Member's suggestion of exploring ways to recover the hydrogen gas generated during the operation of the on-site-chlorine-generation ("OSCG") plants for possible beneficial uses *(paragraph 27 of the minutes of the last meeting)*, Mr Kelvin KWOK, Chief Chemist of the WSD, advised that they had approached Towngas to discuss the issue. Owing to the small quantity of hydrogen gas generated by the OSCG plants, Towngas considered it not

economically viable to make use of the hydrogen gas for charging fuel cells. As such, once the hydrogen gas was generated by the OSCG plants, the WSD would immediately dilute it by an air-blower to a safe concentration level of less than 1% and then discharge it to the atmosphere on safety ground. Members had no further comment on that matter.

**Agenda Item 3: Updates on Action Plan for Enhancing Drinking Water Safety in Hong Kong**

5. Mr Kelvin KWOK updated Members on the latest situation of the implementation of the Action Plan.

6. A Member noted that, under the Action Plan, the WSD might adopt testing of water samples with a longer stagnation period, say 24 hours, for commissioning of new plumbing works in future. In response, the WSD advised that trials of collecting water samples with a stagnation period of 24 hours for testing were being conducted in some new plumbing works. The Chairman suggested that the WSD might share the findings of the trials with the Committee in the next meeting. **WSD**

7. In respect of the surveillance programme for the plumbing materials under the General Acceptance ("GA") scheme, a Member asked about the types of the GA products tested and the testing standards adopted under the programme. Mr Kelvin KWOK advised that over 100 samples of GA products, including pipes, pipe fittings, soldering materials, valves, taps/mixers and water closet inlet valves, had been procured randomly in the retail market and tested in the material testing laboratory of the WSD. So far, all samples tested under the surveillance programme were in compliance with the relevant standards specified in the Waterworks Regulations. Mr CL WONG, Director of Water Supplies, supplemented that the objective of the surveillance programme was to ensure the quality of the GA products. Although leaching test was not a prevailing requirement for plumbing materials, the WSD was reviewing the existing legislation and might include such test as one of the requirements for plumbing materials in future. The WSD had conducted some trials of leaching test using overseas standards such as AS/NZS 4020:2005. Members requested the WSD to share the trial results in the next meeting. Mr CL WONG also appreciated Members' sharing and update of overseas practice on the adoption of leaching test for plumbing material. **WSD**

8. A Member enquiries that there had been exceedance of lead and nickel

content in a few Tier One Random Daytime ("RDT") samples taken under the Enhanced Programme but their respective Tier Two 30-minute stagnation ("30MS") samples were in compliance with the HKDWS. Mr Kelvin KWOK explained that the exceedance in the RDT samples might be due to long stagnation time before sampling or sporadic presence of metal particles. He added that the compliance of the 30MS samples with the HKDWS showed that drinking water in the concerned premises was safe.

9. A Member asked about the follow up action for the 41 failed samples of 6HS water sampling test in the commissioning of new plumbing works, in which 35 samples were with lead exceedance. Mr Kelvin KWOK explained that copper alloy normally contained lead as one of its components and the leaching rate of lead would be higher for new copper alloy fittings. To cater for such a phenomenon, the WSD had devised a systematic flushing protocol as one of the commissioning requirements for new plumbing works. For the 41 cases with failed 6HS samples, systematic flushing had to be carried out again at the concerned premises, and subsequently the results of the 6HS water sampling tests were all satisfactory.

10. In response to a Member's enquiry of whether 6HS water sampling test was required for online re-plumbing work in existing buildings, Mr CL WONG explained that in order to avoid causing inconvenience to the residents concerned, 30MS water sampling test had been adopted for the online re-plumbing works. That said, the WSD had imposed requirements for online re-plumbing works including adoption of pipes and fittings with low metal leaching rate, pretreatment of pipes and fittings before installation, etc. to reduce leaching of metals from the new pipes and fittings. Furthermore, the WSD had required the responsible licensed plumbers to notify/alert the affected residents not to use tap water for drinking and cooking purposes before the plumbing system concerned was tested to be in compliance.

11. A Member was concerned about the availability of qualified laboratories in Hong Kong to carry out the necessary tests for the plumbing materials, such as leaching test. Mr CL WONG responded that the information about the number of accredited laboratories in Hong Kong capable of conducting tests for plumbing materials could be provided to Members after the meeting. As regards the availability of accredited laboratories in Hong Kong for conducting leaching tests, he advised that the protocol of the leaching test for plumbing materials were still under development. Once the protocol was firmed up, the WSD would liaise with relevant stakeholders regarding the accreditation of laboratories for the test.

*[Post-meeting notes: The Water Authority will accept laboratories accredited by the Hong Kong Laboratory Accreditation Scheme ("HOKLAS") under the following sub-categories for testing plumbing materials: -*

| *Category* | *Sub-category* |
|---|---|
| *Construction Materials* | *i) Metallic materials*<br>*ii) Pipes*<br>*iii) Showers*<br>*iv) Tapwares and valves* |

*There are currently 18 accredited laboratories for testing plumbing materials. More information on the accredited laboratories under the abovementioned sub-categories is available from the website of the HOKLAS at: - http://www.itc.gov.hk/en/quality/hkas/doc/common/directory/hoklas_cm_en.pdf]*

12. Regarding the retesting programme of post-2005 unaffected public rental housing estates for lead, Mr Kelvin KWOK advised that about 140 samples had been tested in the programme and all of them were in compliance with the HKDWS for lead.

13. In response to a Member's enquiry of the water quality of schools, Mr Kelvin KWOK explained that, since the Enhanced Programme was a non-mandatory programme and premises were randomly selected for testing, there had been no sample collected from schools so far under the programme. He further advised that the WSD had been encouraging the implementation of water safety plan ("WSP") at schools, including formulation and publication of templates for WSP for schools after conducting two pilot trials. He considered that implementation of WSP at schools should be the best way to ensure the water quality in schools. Mr SW CHAU, Deputy Director of Water Supplies, supplemented that the WSD had also conducted briefings and seminars on WSP for schools' representatives. Mr Francis CHAU, Deputy Secretary for Development (Works) 3 of DEVB, added that the DEVB and the WSD would communicate with the Education Bureau to explore ways to encourage more schools to implement the WSP. With reference to overseas experience, Members noted that it would take times to propagate the WSP for buildings. **DEVB/WSD**

14. In response to another Member's enquiry, Mr CL WONG advised that plumbing materials to be used in plumbing projects would need to be submitted to the WSD for approval and such materials should be GA products. As there were non-GA products on sale in the retail market, he supplemented that the WSD had

strengthened public education including promotion of the use of GA products through the Voluntary Labelling Scheme. A Member asked if the surveillance programme for the GA products could be extended to cover the non-GA products in the market so that the latter's quality could also be monitored. Mr CL WONG advised that the legislation review being undertaken by the WSD would consider controlling all the plumbing materials including those in the retail market.

15. A Member questioned about the advice to be given to the public when there was exceedance in the Tier One RDT sample while the Tier Two 30MS sample was in compliance with the HKDWS. Mr Kelvin KWOK advised that under such circumstance, the water quality of the household concerned would be regarded as complying the HKDWS, and the WSD would inform the household of the exceedance in the RDT sample and offer it pamphlets on safe use of water including flushing after prolonged stagnation. Mr CL WONG supplemented that according to the test results obtained under the Enhanced Programme so far, the water quality in Hong Kong was good.

**Agenda Item 4: Research and Development on Drinking Water Quality**
(DWSAC Paper No. 9/2018)

16. Mr Kelvin KWOK briefed members on WSD's Research and Development ("R&D") initiatives on drinking water safety. He reported that the WSD had commissioned several R&D projects on drinking water safety including the Biosensing Alert System, olfactometer, phosphate removal methodology for raw water, and enhancement of water treatment. Besides, the WSD had been exploring new R&D initiatives including testing of antibiotics in the raw water, methodology and technology for removal of refractory chemicals in water and application of floating wetland. The Chairman encouraged Members to advise new development/concerns from overseas countries that had come to their attention and/or propose R&D projects in relation to drinking water safety, if any, after the meeting.

17. Noting the increasing use of photovoltaic ("PV") panels at impounding reservoirs, Members asked about its impact on the environment and ecology, and whether any toxic material would be leaked out from the PV panels. In response, Mr Kelvin KWOK advised that the WSD had been closely monitoring the water quality in impounding reservoirs. Mr CL WONG supplemented that the WSD would cover the impact on the environment and ecology in the study to be carried

out for large scale implementation of the PV panels in impounding reservoirs.

18. A Member shared that there was growing concern around the world on microplastics and polyfluoroalkyl substances ("PFAS"). For microplastics, Mr CL WONG advised that the WSD had engaged consultants to collect information on that topic and conducted review of its risks on drinking water safety. Although the effect of microplastics on drinking water safety was considered minimal, the WSD would closely monitor the development of related international researches including the monitoring protocol and drinking water standard for microplastics. As for the PFAS, Mr Kelvin KWOK advised that the WSD had conducted researches to check the background level of PFAS in Hong Kong and would keep in view of the future development of related international researches.

19. In response to a Member's suggestion of carrying out a health risk assessment to evaluate the chemical burden and health risk of Hong Kong people arising from drinking water, Mr CL WONG pointed out that HKDWS had adopted Guideline Values/Provisional Guideline Values of the World Health Organization's Guidelines for Drinking-water Quality ("WHO's Guideline"), which had been set by taking into account a host of factors including the acceptable chemical burden and health risk of mankind arising from drinking water.

20. A Member suggested that the WSD should coordinate with the Drainage Services Department to organize a R&D forum covering all aspects of water management so as to facilitate exchange of knowledge and ideas among academic institutions and research centres. Mr CL WONG welcomed the idea and remarked that the International Water Association – Asia Pacific Regional Group Conference would be held in Hong Kong in late 2019.

**Agenda Item 5: Review of the Hong Kong Drinking Water Standards - Parameters and Standard Values**
(DWSAC Paper No. 10/2018)

21. Mr Kelvin KWOK briefed Members on the review of the HKDWS and the proposal in respect of establishing (i) a list of parameters for incorporating into the HKDWS, viz. the Recommended List, (ii) a list of parameters subject to surveillance, viz. the Surveillance List, (iii) a list of parameters subject to observation, viz. the Watch List, and (iv) a set of aesthetic guidelines for drinking water in Hong Kong.

*[Mr Vincent HO left at this juncture.]*

22. A Member asked if a more stringent standard value for lead could be adopted based on test results of the water samples collected under the Enhanced Programme so far. Mr Kelvin KWOK advised that the WSD would conduct a thorough review for the metal parameters in the HKDWS after collecting adequate data under the Enhanced Programme in three to five years.

23. Regarding the mechanism of regular review and update of the parameters in the Watch List, Mr Kelvin KWOK advised that a framework for the review would be developed in the on-going consultancy study being conducted by the Water Research Centre of the United Kingdom. He added that a review on the frequency and location of collecting water samples for testing of the parameters in the Recommended List would also be covered in the said consultancy study.

24. A Member commented that the selection of appropriate parameters with sufficient testing frequency was important to verify the successful implementation of WSP. He, however, pointed out that water utilities should not lose sight of the overall water quality management regime nor over-rely on the water quality monitoring. Furthermore, as there was public expectation on having a sufficient number of parameters subject to monitoring, a communication plan might be developed for enhancing communication with the public on the overall water quality monitoring regime. On the selection criteria for inclusion of parameters in the HKDWS, he suggested that consideration should be given to whether the concentration of a parameter was at a level that would/would not cause health concern, instead of whether a parameter was detectable or not. This would avoid giving an unrealistic impression that the criteria for those parameters to be included in the surveillance list should always be at undetectable level.

25. Another Member pointed out that, except for a limited number of parameters in the HKDWS that would give rise to acute health effects in case of one single exceedance, most of the other parameters in the HKDWS would not give rise to health concern unless the cumulative exposure in the long run exceeded certain threshold and their standard values should be set by taking into account the lifetime exposure effect. As such, it was considered appropriate to follow WHO's Guidelines in setting the HKDWS unless there was genuine need for deviation from the standard values adopted in the WHO's Guidelines.

26. In response to a Member's question regarding the choice of the "slope factor" value of each chemical in deriving the "point of departure", Mr Kelvin KWOK

explained that the values in the WHO's Guidelines had been adopted, which aligned with the international practice. He highlighted that WSD's consultant had also taken into account different slope factors adopted by other jurisdictions before arriving at the slope factors to be adopted in devising the standard values of the parameters in the HKDWS.

27. A Member suggested including Malachite Green in the Surveillance List or the Watch List for monitoring purpose, as while the use of Malachite Green was banned in the food industry, it was sometimes found in the food products, especially fish, in Hong Kong. Mr Kelvin KWOK replied that the parameters for monitoring in the food industry and water industry might not be the same, but he agreed to work with WSD's consultant to review the risk of that chemical in drinking water.

28. A Member suggested the WSD exploring the inclusion of other parameters that might be of concern to public health into the Watch List. Mr Kelvin KWOK responded that WSD's radar system would regularly review those parameters of concern in the water industry for inclusion into the Watch List.

29. Subject to the Members' comments to be addressed by the DEVB/WSD, Members endorsed the proposal.

**Agenda Item 6: Summary on International Water Quality Incident**

30. Mr Kelvin KWOK updated Members the review conducted by the WSD on major international water quality incidents for the period from May to September 2018. He shared with Members the lessons learnt by the WSD from the incidents including possible risks associated with loss of pressure in the distribution, early alert to possible organic contamination, avoidance of use of plastic pipes in contaminated site to prevent possible permeation by organic chemicals, etc. Besides, a robust Water Quality Incident Management Plan to deal with incidents in a prompt manner was considered important. All Members noted.

**Agenda Item 7: Any Other Business**

31. There being no other business, the meeting adjourned at 11:50 a.m.