

DRINKING WATER SAFETY ADVISORY COMMITTEE

Monitoring System for Assuring Drinking Water Quality

PURPOSE

In view of the increasing public expectation on drinking water quality, the Development Bureau (“DEVB”) has set up a dedicated team, namely the Drinking Water Safety Unit (“DWSU”) to oversee, amongst other aspects, the performance of the Water Supplies Department (“WSD”) in respect of drinking water quality. This paper aims to seek views from the Drinking Water Safety Advisory Committee on the monitoring regime being undertaken by the DWSU in assuring drinking water quality.

MONITORING APPROACHES

2. The DWSU will adopt the following means to monitoring the performance of the WSD in respect of drinking water quality -

- (A) Examining the results of the WSD’s water quality monitoring programme;
- (B) Conduction audits on the WSD’s Drinking Water Quality Management System; and
- (C) Monitoring the implementation of the WSD’s Water Quality Incident Management Plan.

(A) Examining the results of WSD’s Water Quality Monitoring Programme

3. The WSD monitors the quality of water throughout the entire water supply chain systematically through a comprehensive water quality monitoring programme so as to ensure that the drinking water supply in Hong Kong can meet the Hong Kong Drinking Water Standards¹ in full. Under the programme, water samples are taken at catchment, receiving point of

¹ The government has adopted the corresponding guideline values/provisional guideline values in the fourth edition of the World Health Organization’s Guidelines for Drinking-water Quality published in 2011 as the Hong Kong Drinking Water Standards.

Dongjiang water at Muk Wu Pumping Stations, impounding reservoirs, water treatment works, service reservoirs, distribution systems and consumers' taps.

4. More than 160 000 samples are taken and tested each year to monitor the quality of water at different locations of the supply chain. The Water Science Division of the WSD is responsible for taking samples and carrying out testing at the department's laboratories.

5. The WSD will submit quarterly reports of the testing results under the comprehensive water quality monitoring programme for scrutiny by the DWSU. The quarterly reports will also provide summary of water quality complaints and any issues that require the attention of the DWSU. For any reported non-compliance, the DWSU will require the WSD to carry out investigation into the root cause and recommend improvement measure(s) to prevent recurrence.

6. As part of the monitoring programme, WSD will also analyze the variation of the water quality data by comparing with the corresponding sets of data obtained in previous years with a view to identifying any worsening trend that requires attention. Upon detection of any worsening trend by the WSD, such as continual increase in certain contaminants, the DWSU would follow up with the WSD to carry out investigation into the cause of the problem and review if the existing control measures are to be stepped up or corrective actions are required to reduce the potential risk to drinking water safety.

7. A Task Group on Health-related Issues of Drinking Water Supply, comprising representatives from the DWSU, the WSD and the Department of Health (DH), has been set up to review and discuss on a bi-yearly basis the monitoring data collected by the WSD under its water quality monitoring programme. Where necessary, DH will offer its expert advice from the health perspective.

(B) Conduction audits on the WSD's Drinking Water Quality Management System

8. In July 2017, the WSD promulgated its Drinking Water Quality Management System ("DWQMS")², which encompasses all the elements of the

² The DWQMS is a management system based on the Framework for Safe Drinking-water of the WHO, which comprises health-based targets, WSP and surveillance to ensure safety of drinking water.

Water Safety Plan (“WSP”) of WSD³. The DWQMS not only sets out the water quality policy and operational monitoring of the control measures in the drinking water supply, but also lays down a systematic plan for reviewing and auditing with a view to verifying conformity with the documented requirements of the DWQMS and improving the system continually.

9. Accordingly, the dedicated Special Duty Unit (“SDU”) of the WSD has started to launch an annual internal audit programme for the DWQMS since September 2017. Within the audit cycle, the internal audit will cover all key controls/procedures prescribed to be implemented by all relevant operation Branches/Divisions in the WSD, and the step-by-step checking for selected potential hazards⁴. All audit results will be communicated to the auditees and the DWQMS Steering Group of the WSD for effecting appropriate corrective and/or improvement actions. Audit reports will be submitted to the Director of Water Supplies and the DWSU for regular review.

10. On top of the WSD’s own internal audits, the DWSU will conduct third-party audits (“DWSU audits”) to examine the operation of water supplies and regulation of plumbing materials by the WSD. Following the auditing guidelines for the WSP as recommended by the WHO, the DWSU audits would look at all aspects of the WSD’s DWQMS, including water supply system description, hazard identification and risk assessment, improvement plan, operational monitoring as well as the verification, auditing, review and revision of the DWQMS.

11. In addition, the DWSU will conduct surprise checks to WSD’s daily operations so as to provide an additional level of assurance on whether the control processes allocated with higher risk in the DWQMS are operating effectively and whether the records are prepared timely and kept up-to-date.

12. In order to better utilize resources, it is necessary to perform the DWSU audits and surprise checks in a systematic way. In this connection, the DWSU will adopt a risk-based approach to monitor the safety-critical areas. As a start, the DWSU has selected the WSD’s control of plumbing installation for auditing. Furthermore, the DWSU will participate as an observer in WSD’s

³ The WSD has developed, implemented and regularly updated its WSP since 2007.

⁴ A number of potential hazards were selected by the DWQMS Steering Group based on risk identified in the DWQMS document. Such potential hazards would be randomly selected by the internal audits in which a step-by-step checking of the identification, control measures, operation monitoring and corrective actions regarding the events will be carried out.

internal audits to walk through the whole DWQMS holistically.

13. Although the DWSU can carry out its audits by its members who are independent of the WSD, the DWSU will also engage external parties to carry out part of its planned audits to enhance public confidence over the WSD's DWQMS. When the Government has formulated the water safety regulatory regime for Hong Kong, which is under study in a consultancy for completion in about 18 months, we will review again the arrangement of the external audits as mentioned above.

(C) Monitoring the implementation of the WSD's Water Quality Incident Management Plan

14. On and off, incidents may happen that affect or may affect the quality of drinking water supply. As a result, public health may be at risk or it may give rise to considerable public concern.

15. Whilst the regulatory framework on water safety is being developed, the DEVB and the WSD is devising a Water Quality Incident Management Plan ("WQIM Plan")⁵ to manage drinking water quality incidents by making reference to similar practice currently adopted by overseas countries.

16. The objectives of the Water Quality Incident Management Plan are to (i) help WSD assess expeditiously whether the water is potable and the possible impact on its water supply; (ii) reinstate water supply or provide alternative supply; and (iii) disseminate important information to relevant parties and the affected consumers. The WQIM Plan will delineate the roles and responsibilities of all parties concerned and set out operational procedures (covering the deployment of resources and implementation of actions) and communication plans having regard to the gravity of the incident. The WQIM Plan will also lay down the notification mechanism to keep the DWSU and the DH informed of the incident, and to seek their advice as and when needed. The DWSU will oversee the WSD's responses to ensure appropriate follow up are implemented.

17. When the incident is under control, WSD will conduct investigation to find out the causes of the incident and implement improvement measures to prevent recurrence. In this regard, the DWSU will follow up with the WSD

⁵ The WQIM Plan will be finalized in August 2018.

regarding their post-incident follow up actions, including assessing the adequacy of the improvement measures, monitoring the implementation of such improvement measures through quarterly reports and annual review as well as communicating with WSD to ensure that sufficient training and guideline will be provided to frontline staff and relevant contractors, etc.

18. The WSD may arrange independent investigation for incidents under the WQIM Plan and, where necessary, DWSU may step in and engage external party for conducting independent investigation depending on the severity of the cases.

Publication of Annual Summary of Work

19. To increase the transparency and credibility of the monitoring regime, the DWSU will publish at the DEVB's website annually a summary of work of the DWSU containing the following information:-

- (i) Overall situation of the water quality from source to taps;
- (ii) Summary of drinking water incidents including their nature and cause, details of action taken by WSD and the main findings from WSD's investigation; and
- (iii) Summary of the DWSU's audit findings.

ADVICE SOUGHT

20. Members are invited to offer views on the monitoring regime undertaken by DWSU for assuring drinking water quality.

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