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DRINKING WATER SAFETY ADVISORY COMMITTEE

Annual Water Quality Statistics of the Enhanced Water Quality Monitoring Programme in 2019

PURPOSE

This Paper reports the annual water quality statistics of the Enhanced Water Quality Monitoring Programme ("Enhanced Programme") in 2019[1] and the associated observations.

BACKGROUND

2. The Water Supplies Department ("WSD") launched the Enhanced Programme in December 2017, as one of the five components of the Action Plan for Enhancing Drinking Water Safety in Hong Kong promulgated in September of 2017. The Enhanced Programme monitors the drinking water quality at consumers' taps and will collect local water quality data over a period of three to five years for review of the Hong Kong Drinking Water Standards ("HKDWS").

3. Under the Enhanced Programme, the WSD has engaged an independent consultant to select premises randomly from all water accounts of the 18 district council districts ("DCDs") in Hong Kong according to the population distribution of the individual DCDs based on the sampling rate of 8 premises per 5 000 - 100 000 people. In 2019, water samples were collected from the drinking water taps of the 663[2] selected premises using a two-tier sampling protocol to test for six metals, viz. antimony, cadmium, chromium, copper, lead and nickel, which might be present in an internal plumbing system as follows:

Tier 1 – Random Day Time ("RDT") sampling: the purpose was to monitor the water quality in respect of the six metals. A 1-litre unflushed sample was randomly taken during daytime.

Tier 2 – 30-minute stagnation ("30MS") sampling: the purpose was to verify

[1] Water samples from 663 premises were taken during the period from 1 January 2019 to 31 December 2019.

[2] In fact, a total of 664 premises were selected in 2019 but one of the visits on the last day of December 2019 was unsuccessful. As a result, another visit was made on the first working day in January 2020 as a substitution.

the metal exposure of consumers in case exceedance was found in the Tier 1 RDT sample. The tap would first be flushed for 5 minutes and then stagnated for 30 minutes. After stagnation, a 1-litre unflushed sample would be taken.

MONITORING RESULTS

4. The statistics of the test results of the water samples collected in 2019 under the Enhanced Programme is summarised in Table 1 below.

Table 1: Statistics of Monitoring Results in 2019 under the Enhanced Programme

	Minimum	Maximum	Average	95th percentile	Standard Value	Compliance of water quality with HKDWS*
Antimony (μg/L)	<1	<1	<1	<1	20	✓
Cadmium (μg/L)	<1	2	<1	<1	3	✓
Chromium (μg/L)	<1	3	<1	<1	50	✓
Copper (μg/L)	<3	390	20	63	2 000	✓
Lead (μg/L)	<1	19	<1	2	10	✓
Nickel (μg/L)	<1	52	2	4	70	✓

* A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme, i.e. the parameter will be regarded as complying with the HKDWS if (i) there is no exceedance found in the RDT sample or (ii) there is no exceedance found in the 30 MS sample in case the Tier 1 sample fails.

5. An analysis of the monitoring results in 2019 under the Enhanced Programme is as below:

(a) The maximum contents of antimony of all RDT samples were below the reporting limit[3] of < 1 μg/L. It indicates that the contents of antimony in the drinking water at consumers' taps in Hong Kong are very low.

(b) For cadmium, the maximum value and the 95th percentile among all RDT samples were 2 μg/L and <1 μg/L respectively, both of which were below the standard value of 3 μg/L in the HKDWS. In fact, the 99th percentile value was also below the reporting limit of < 1 μg/L. It indicates that the risk of exceedance of cadmium content in the drinking water at consumers' taps in Hong Kong is low.

(c) For chromium, the maximum value and the 95th percentile among all RDT samples were 3 μg/L and <1 μg/L respectively, both of which were well below the standard value of 50 μg/L in the HKDWS. It indicates that the risk of

[3] Reporting limit is the lowest level within an analytical method's operation range.

exceedance of chromium content in the drinking water at consumers' taps in Hong Kong is low.

(d) For copper, the maximum value and the 95th percentile among all RDT samples were 390 μg/L and 63 μg/L respectively, both of which were well below the standard value of 2 000 μg/L in the HKDWS. It indicates that the risk of exceedance of copper content in the drinking water at consumers' taps in Hong Kong is low.

(e) For nickel, the maximum value and the 95th percentile among all RDT samples were 52 μg/L and 4 μg/L respectively, both of which were below the standard value of 70 μg/L in the HKDWS. It indicates that the risk of exceedance of nickel content in the drinking water at consumers' taps in Hong Kong is low.

(f) For lead, six RDT samples exceeded the standard value of 10 μg/L with a maximum value of 19 μg/L whilst no exceedance was found in the corresponding 30MS samples. This represents that the drinking water quality of the six concerned premises complied with the HKDWS. The exceedances of the RDT samples were likely due to (i) unduly long stagnation time before sampling or (ii) sporadic presence of metal particles. Since the 95th percentile of the RDT samples of lead was 2 μg/L which were well below the corresponding standard value of 10 μg/L in the HKDWS, the risk of exceedance of lead content in the drinking water at consumers' taps in Hong Kong is low.

6. Overall, the test results of the water samples showed that the contents of the six metals in the drinking water of all premises randomly selected for sampling under the Enhanced Programme in 2019 were all in compliance with the corresponding standard values of the HKDWS.

OBSERVATIONS

7. The level of antinomy in all RDT samples collected in 2019 under the Enhanced Programme were below the reporting limit of < 1μg/L. If the situation persists in the next two years, it may not be necessary to continue to collect water samples at consumers' tap [4] for testing of antinomy under the Enhanced Programme for monitoring. The Drinking Water Safety Advisory Committee will be consulted on this in due course. In respect of the contents of cadmium,

[4] Although antinomy may be excluded from the Enhanced Programme for monitoring at consumers' taps, it will continue to be monitored in the water supply systems of the WSD.

chromium, copper, lead and nickel in the RDT samples in 2019, their 95th percentiles were <1 μg/L, <1μg/L, 63 μg/L, 2 μg/L and 4 μg/L respectively which were all well below the corresponding standard values of 3μg/L, 50μg/L, 2 000μg/L, 10 μg/L and 70 μg/L in the HKDWS. It indicates that the risk of having exceedance of cadmium, chromium, copper, lead and nickel contents in the drinking water at consumers' taps in Hong Kong is low.

8. As mentioned in paragraph 5(f) regarding the exceedance in lead content in several RDT samples due to unduly long stagnation time before sampling or sporadic presence of metal particles, the WSD would continue to conduct publicity and public education to advise consumers to flush the taps[5] after long periods of stagnation (such as after several hours or overnight) before using the water for drinking or cooking.

PUBLICATION OF STATISTICS OF ANNUAL MONITORING RESULTS

9. The WSD will publish on its webpage[6] ("the Webpage") the statistics of the annual monitoring results of the Enhanced Programme in 2019 including:-

(i) the overall statistics for the whole territory of Hong Kong (as in Table 1 above); and

(ii) summary tables showing the minimum, maximum and average values of the contents of the six metals in the water samples taken in each DCD under the Enhanced Programme (Appendix I).

10. Apart from the above statistical data, the background of the Enhanced Programme as well as the analyses and observation of the monitoring results will also be provided in the Webpage.

Development Bureau
Water Supplies Department
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[5] Flushing the taps is a common and effective practice to lower the metal level in the drinking water.
[6] The website of Enhanced Programme at WSD's website is: - https://www.wsd.gov.hk/en/core-businesses/water-quality/action-plan-for-enhancing-of-drinking-water-safety/drinking-water-standards-enhanced-water-quality/index.html

Enhanced Water Quality Monitoring Programme
Central and Western District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	24	<1	<1	<1	20	✓
Cadmium	24	<1	<1	<1	3	✓
Chromium	24	<1	<1	<1	50	✓
Copper	24	4	100	32	2 000	✓
Lead	24	<1	1	<1	10	✓
Nickel	24	1	3	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Wan Chai District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	16	<1	<1	<1	20	✓
Cadmium	16	<1	<1	<1	3	✓
Chromium	16	<1	<1	<1	50	✓
Copper	16	<3	110	18	2 000	✓
Lead	16	<1	12[(3)]	2	10	✓
Nickel	16	<1	28	4	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

(3) The lead content of a Tier 1 Random Day Time (RDT) sample from one of the premises was 12 µg/L. According to the established two-tier sampling protocol, the Tier 2 30-minute stagnation (30MS) sample would be tested when exceedance in metal content was found in the Tier 1 RDT sample to verify the test result. Water Supplies Department tested the relevant Tier 2 30MS sample and the result (5 µg/L) complied with the standard, representing compliance of the drinking water quality of the concerned premises with the standard. The exceedance of the Tier 1 RDT sample is likely due to unduly long stagnation time before sampling or sporadic presence of metal particles.

Enhanced Water Quality Monitoring Programme
Eastern District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	48	<1	<1	<1	20	✓
Cadmium	48	<1	2	<1	3	✓
Chromium	48	<1	<1	<1	50	✓
Copper	48	<3	110	16	2 000	✓
Lead	48	<1	4	<1	10	✓
Nickel	48	<1	13	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Southern District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	24	<1	<1	<1	20	✓
Cadmium	24	<1	<1	<1	3	✓
Chromium	24	<1	2	<1	50	✓
Copper	24	<3	110	16	2 000	✓
Lead	24	<1	<1	<1	10	✓
Nickel	24	<1	2	1	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Yau Tsim Mong District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	32	<1	<1	<1	20	✓
Cadmium	32	<1	<1	<1	3	✓
Chromium	32	<1	<1	<1	50	✓
Copper	32	<3	220	21	2 000	✓
Lead	32	<1	10	<1	10	✓
Nickel	32	<1	3	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Sham Shui Po District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	40	<1	<1	<1	20	✓
Cadmium	40	<1	<1	<1	3	✓
Chromium	40	<1	<1	<1	50	✓
Copper	40	<3	120	18	2 000	✓
Lead	40	<1	6	<1	10	✓
Nickel	40	<1	4	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Kowloon City District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	39	<1	<1	<1	20	✓
Cadmium	39	<1	<1	<1	3	✓
Chromium	39	<1	<1	<1	50	✓
Copper	39	<3	320	25	2 000	✓
Lead	39	<1	5	<1	10	✓
Nickel	39	<1	18	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Wong Tai Sin District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	40	<1	<1	<1	20	✓
Cadmium	40	<1	1	<1	3	✓
Chromium	40	<1	<1	<1	50	✓
Copper	40	<3	260	19	2 000	✓
Lead	40	<1	2	<1	10	✓
Nickel	40	<1	13	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Kwun Tong District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	56	<1	<1	<1	20	✓
Cadmium	56	<1	<1	<1	3	✓
Chromium	56	<1	3	<1	50	✓
Copper	56	<3	90	20	2 000	✓
Lead	56	<1	5	<1	10	✓
Nickel	56	<1	23	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Kwai Tsing District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	48	<1	<1	<1	20	✓
Cadmium	48	<1	<1	<1	3	✓
Chromium	48	<1	1	<1	50	✓
Copper	48	<3	390	25	2 000	✓
Lead	48	<1	14[(3)]	<1	10	✓
Nickel	48	<1	34	3	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

(3) The lead content of a Tier 1 Random Day Time (RDT) sample from one of the premises was 14 µg/L. According to the established two-tier sampling protocol, the Tier 2 30-minute stagnation (30MS) sample would be tested when exceedance in metal content was found in the Tier 1 RDT sample to verify the test result. Water Supplies Department tested the relevant Tier 2 30MS sample and the result (<1 µg/L) complied with the standard, representing compliance of the drinking water quality of the concerned premises with the standard. The exceedance of the Tier 1 RDT sample is likely due to unduly long stagnation time before sampling or sporadic presence of metal particles.

Enhanced Water Quality Monitoring Programme
Tsuen Wan District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	32	<1	<1	<1	20	✓
Cadmium	32	<1	<1	<1	3	✓
Chromium	32	<1	<1	<1	50	✓
Copper	32	<3	120	15	2 000	✓
Lead	32	<1	11[(3)]	<1	10	✓
Nickel	32	<1	3	1	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

(3) The lead content of a Tier 1 Random Day Time (RDT) sample from one of the premises was 11 µg/L. According to the established two-tier sampling protocol, the Tier 2 30-minute stagnation (30MS) sample would be tested when exceedance in metal content was found in the Tier 1 RDT sample to verify the test result. Water Supplies Department tested the relevant Tier 2 30MS sample and the result (3 µg/L) complied with the standard, representing compliance of the drinking water quality of the concerned premises with the standard. The exceedance of the Tier 1 RDT sample is likely due to unduly long stagnation time before sampling or sporadic presence of metal particles.

Enhanced Water Quality Monitoring Programme
Tuen Mun District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	40	<1	<1	<1	20	✓
Cadmium	40	<1	<1	<1	3	✓
Chromium	40	<1	<1	<1	50	✓
Copper	40	<3	48	13	2 000	✓
Lead	40	<1	19[(3)]	<1	10	✓
Nickel	40	<1	42	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

(3) The lead content of a Tier 1 Random Day Time (RDT) sample from one of the premises was 19 µg/L. According to the established two-tier sampling protocol, the Tier 2 30-minute stagnation (30MS) sample would be tested when exceedance in metal content was found in the Tier 1 RDT sample to verify the test result. Water Supplies Department tested the relevant Tier 2 30MS sample and the result (<1 µg/L) complied with the standard, representing compliance of the drinking water quality of the concerned premises with the standard. The exceedance of the Tier 1 RDT sample is likely due to unduly long stagnation time before sampling or sporadic presence of metal particles.

Enhanced Water Quality Monitoring Programme
Yuen Long District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	56	<1	<1	<1	20	✓
Cadmium	56	<1	<1	<1	3	✓
Chromium	56	<1	<1	<1	50	✓
Copper	56	<3	56	11	2 000	✓
Lead	56	<1	18[(3)]	<1	10	✓
Nickel	56	<1	15	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

(3) The lead content of a Tier 1 Random Day Time (RDT) sample from one of the premises was 18 µg/L. According to the established two-tier sampling protocol, the Tier 2 30-minute stagnation (30MS) sample would be tested when exceedance in metal content was found in the Tier 1 RDT sample to verify the test result. Water Supplies Department tested the relevant Tier 2 30MS sample and the result (<1 µg/L) complied with the standard, representing compliance of the drinking water quality of the concerned premises with the standard. The exceedance of the Tier 1 RDT sample is likely due to unduly long stagnation time before sampling or sporadic presence of metal particles.

Enhanced Water Quality Monitoring Programme
North District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	32	<1	<1	<1	20	✓
Cadmium	32	<1	<1	<1	3	✓
Chromium	32	<1	<1	<1	50	✓
Copper	32	<3	120	24	2 000	✓
Lead	32	<1	17[(3)]	1	10	✓
Nickel	32	1	6	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

(3) The lead content of a Tier 1 Random Day Time (RDT) sample from one of the premises was 17 µg/L. According to the established two-tier sampling protocol, the Tier 2 30-minute stagnation (30MS) sample would be tested when exceedance in metal content was found in the Tier 1 RDT sample to verify the test result. Water Supplies Department tested the relevant Tier 2 30MS sample and the result (4 µg/L) complied with the standard, representing compliance of the drinking water quality of the concerned premises with the standard. The exceedance of the Tier 1 RDT sample is likely due to unduly long stagnation time before sampling or sporadic presence of metal particles.

Enhanced Water Quality Monitoring Programme
Tai Po District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	24	<1	<1	<1	20	✓
Cadmium	24	<1	<1	<1	3	✓
Chromium	24	<1	<1	<1	50	✓
Copper	24	<3	68	22	2 000	✓
Lead	24	<1	2	<1	10	✓
Nickel	24	1	10	3	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Sha Tin District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	56	<1	<1	<1	20	✓
Cadmium	56	<1	1	<1	3	✓
Chromium	56	<1	<1	<1	50	✓
Copper	56	<3	360	40	2 000	✓
Lead	56	<1	9	<1	10	✓
Nickel	56	<1	52	3	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Sai Kung District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	40	<1	<1	<1	20	✓
Cadmium	40	<1	<1	<1	3	✓
Chromium	40	<1	<1	<1	50	✓
Copper	40	<3	81	14	2 000	✓
Lead	40	<1	1	<1	10	✓
Nickel	40	<1	3	1	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
Islands District
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[(1)] (µg/L)	Compliance of water quality with HKDWS[(2)]
		Minimum	Maximum	Average		
Antimony	16	<1	<1	<1	20	✓
Cadmium	16	<1	<1	<1	3	✓
Chromium	16	<1	1	<1	50	✓
Copper	16	<3	20	6	2 000	✓
Lead	16	<1	<1	<1	10	✓
Nickel	16	<1	5	1	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

Enhanced Water Quality Monitoring Programme
The Whole Territory
for the Period from 1/1/2019 to 31/12/2019

Monitoring Data of the Random Day Time (RDT) samples taken at Consumers' Taps

Parameter	No. of RDT Samples Tested	Monitoring Data (µg/L)			HKDWS[1] (µg/L)	Compliance of water quality with HKDWS[2]
		Minimum	Maximum	Average		
Antimony	663	<1	<1	<1	20	✓
Cadmium	663	<1	2	<1	3	✓
Chromium	663	<1	3	<1	50	✓
Copper	663	<3	390	20	2 000	✓
Lead	663	<1	19[3]	<1	10	✓
Nickel	663	<1	52	2	70	✓

Note:

(1) The Government currently adopts 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 ("HKDWS").

(2) A "✓" indicates compliance of drinking water quality with the HKDWS in all selected premises based on the two-tier water sampling test results of the Enhanced Programme.

(3) The lead content of six Tier 1 Random Day Time (RDT) samples from six of the premises were 18, 17, 14, 12, 19 and 11 µg/L. According to the established two-tier sampling protocol, the Tier 2 30-minute stagnation (30MS) samples would be tested when exceedance in metal content were found in the Tier 1 RDT sample to verify the test result. Water Supplies Department tested the relevant Tier 2 30MS samples and the results (<1, 4, <1, 5, <1 and 3 µg/L respectively) complied with the standard, representing compliance of the drinking water quality of the concerned premises with the standard. The exceedance of the Tier 1 RDT samples are likely due to unduly long stagnation time before sampling or sporadic presence of metal particles.