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Marine and River Water Quality in Hong Kong in 2019

INTRODUCTION

The Environmental Protection Department (EPD) conducts long-term monitoring of marine and river water quality and publishes the annual reports in the following year. The 2019 marine and river water quality reports are now available for public access at the EPD website (http://www.epd.gov.hk). This paper summarises the state of marine and river waters in Hong Kong in 2019 for Members' information.

MARINE WATER QUALITY

2. In 2019, the overall Water Quality Objective (WQO) compliance rate for marine waters maintained a rising trend observed in the last decade and improved slightly from 88% in 2018 to 89% in 2019 (see **Figure 1 in Annex**). Among the four water quality parameters used for compilation of the overall compliance rate, the compliance rates of unionised ammonia nitrogen (NH_3-N) and *E. coli* bacteria maintained at 100%. The compliance rate of total inorganic nitrogen (TIN) remained unchanged at 68% while that of dissolved oxygen (DO) increased from 91% to 96%.

3. The water quality of Victoria Harbour continued to unveil noticeable improvements along with the staged implementation of the Harbour Area Treatment Scheme (HATS) (see **Figure 2 in Annex**). A snapshot of the situation in 2019 as compared with that before the introduction of HATS (1997-2001) is captured as follows:

a) *E. coli* bacteria reduced by 92%;
b) NH_3-N reduced by 38%;
c) TIN reduced by 23%; and
d) DO increased by 16%.

4. Among the ten Water Control Zones (WCZs), the Deep Bay WCZ and Western Buffer WCZ exhibited improved WQO compliance rates at 67% and 100% respectively in 2019, while that of the other eight WCZs remained the same as the previous year, including the Eastern Buffer WCZ (100%), Junk Bay WCZ (100%), Port Shelter WCZ (100%), Mirs Bay WCZ (100%), Victoria Harbour WCZ (97%), North Western WCZ (89%), Tolo Harbour and Channel WCZ (79%) and Southern WCZ (73%).

5. In 2019, the total number of red tide incidents reported in Hong Kong waters was 12, as compared with an average of 14 incidents in the past five years (2014-2018) (see **Figure 3 in Annex**). These 12 red tide incidents were caused by seven plankton taxa, all of which are non-toxic and commonly found in Hong Kong waters. No red tide-related fish kill was recorded in 2019.

RIVER WATER QUALITY

6. The overall water quality of Hong Kong's rivers continued to perform well in 2019. In terms of the key WQOs, the overall compliance rate in 2019 was 90%, lying within the normal range of fluctuations over the past ten years while exhibiting significant improvement over the 48% in 1987, achieved against the pressure of population having doubled over the 30 years in the New Territories where most of the rivers lie (see **Figure 4 in Annex**).

7. With regard to the Water Quality Index (WQI) which indicates the general state of health of the watercourses, 85% of the river monitoring stations were graded "Excellent" or "Good" in 2019, as compared with only 26% in 1987. These more pristine watercourses are mainly located in Lantau Island, eastern and southwestern New Territories, and Kowloon.

8. The high WQO compliance rates and WQI gradings were the result of the implementation of pollution control legislation, including the Water Pollution Control Ordinance and the Livestock Waste Control Scheme introduced under the Waste Disposal Ordinance, as well as progressive extension of the sewerage network to more remote villages in the New Territories under various Sewerage Master Plans.

9. In spite of the overall improvement in river water quality, some rivers in the western part of the New Territories such as Yuen Long Creek and Kam Tin River stayed below 50% in WQO compliance and recorded "High" to "Very High" levels of *E. coli* bacteria, i.e. over 10 000 counts/100mL. The main pollution sources in these areas include runoff from unsewered village houses, expedient connections in the old districts and illegal discharges from livestock farms. To improve the situation, the Government will make further enhancement in the sewerage infrastructure in the districts concerned by upgrading the sewage treatment facilities and expediting the extension of existing sewerage network to unsewered villages in consultation with the local community. Other pollution abatement options including possible installation of dry weather flow interceptors will also be considered, and vigilant enforcement against illegal discharges will continue.

CONCLUSION

10. The environmental water quality in Hong Kong continued to perform well in 2019, with the overall marine WQO compliance rate of the territory setting a record high of 89% and that for river WQO reaching 90%. It was the outcome of sustained enforcement of pollution control legislations, upgrading of sewerage infrastructure, connection of village houses to public sewers and implementation of HATS in the past two decades. There are still challenges ahead to strive for enhancement of near-shore water quality of Victoria Harbour through implementation of multi-pronged solutions to tackle stormwater pollution. In addition, EPD will continue to tackle local river pollution problems in the New Territories through further pollution abatement works and law enforcement efforts.

Environmental Protection Department
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Annex

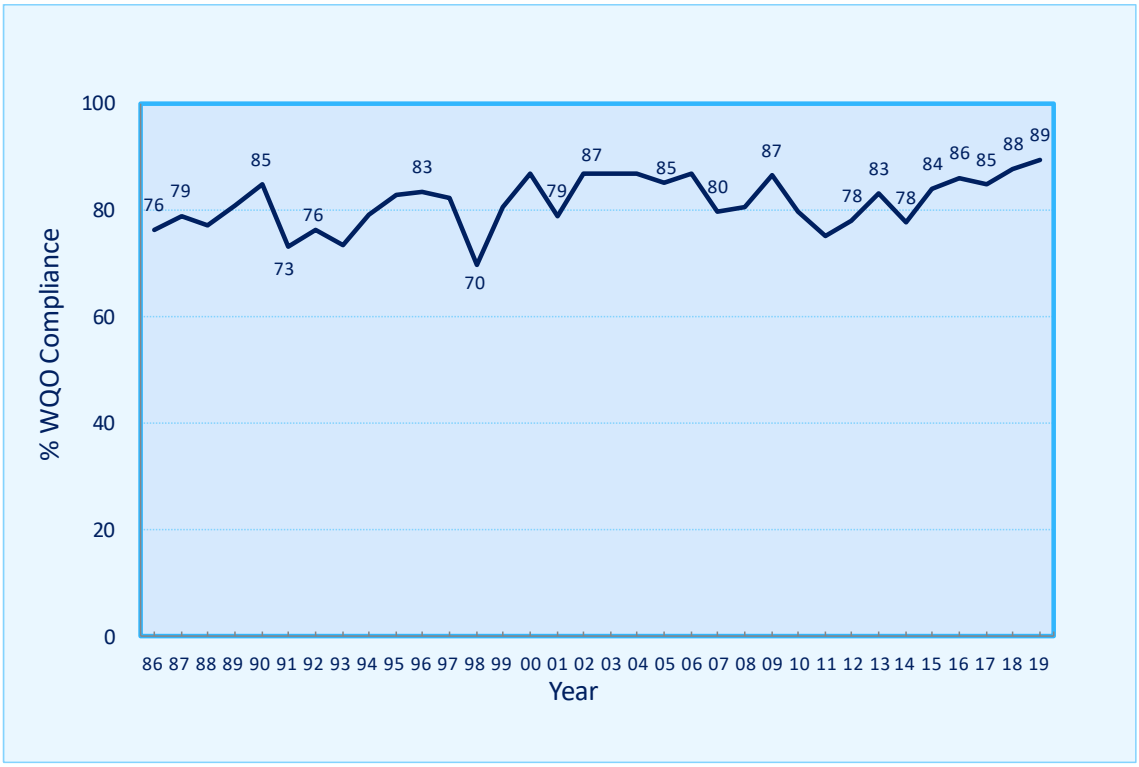

Figure 1 Overall marine WQO compliance rates of Hong Kong, 1986-2019

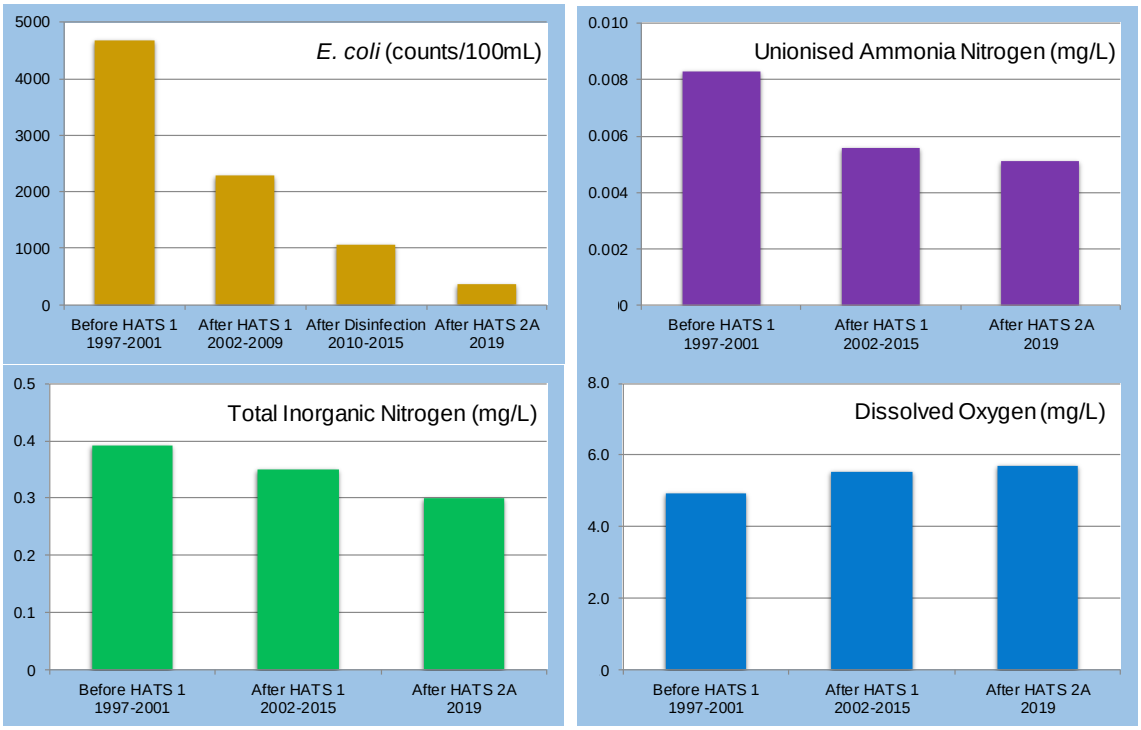

Figure 2 Improvement in water quality of Victoria Harbour since the implementation of Harbour Area Treatment Scheme (HATS)

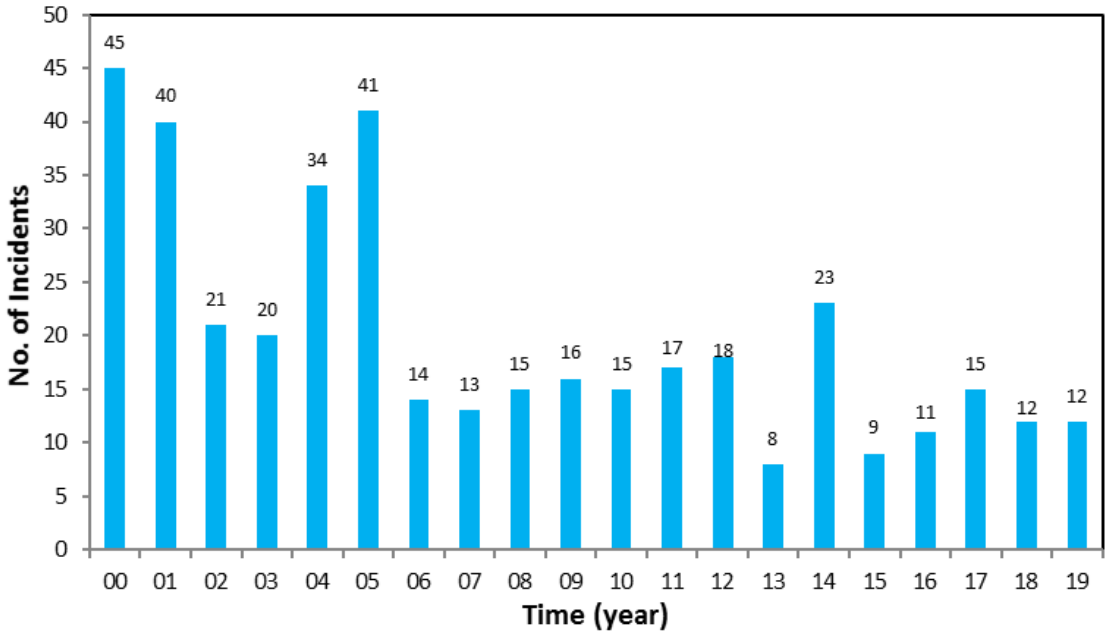

Figure 3 Occurrence of red tides in Hong Kong waters, 2000-2019

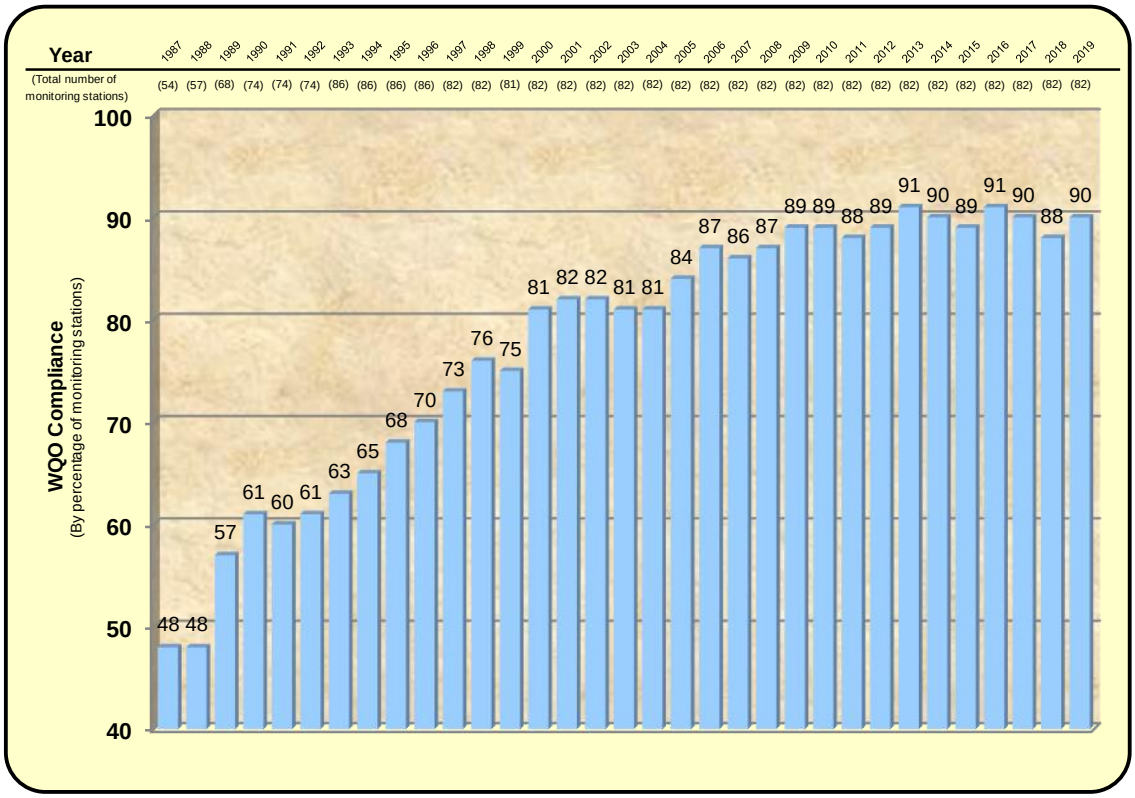

Figure 4 Overall river WQO compliance rates of Hong Kong, 1987-2019