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For information

Interim Report on River and Marine Water Quality in Hong Kong in 2003

Introduction

This paper provides an overall assessment and a summary of water quality information at representative river and marine water sampling stations in Hong Kong in 2003. A full account of the river and marine water quality will be available on Environmental Protection Department's website (http://www.epd.gov.hk) at the end of 2004.

River Water Quality

2. With continuous enforcement efforts and gradual provision of sewage facilities since the mid 1980s, there has been a steady improvement in river water quality in the territory as shown in Figure 1. The year 2003 saw 76% of the monitoring stations to have achieved the Water Quality Index (WQI) gradings of "Good" and "Excellent", quite similar to that observed in 2002. Among the 12 major rivers in Hong Kong (Figure 2), seven rivers[1] have achieved an "Excellent" or "Good" water quality at their most downstream monitoring stations (Figures 3 a-b). However, even for these rivers, most were unable to comply with the Water Quality Objective for *E.coli* bacteria which indicates the continued presence of sewage pollution.

3. Some 15% of the monitoring stations were categorized as "Bad" or "Very Bad" in 2003. These monitoring stations were mainly located at major rivers in the Deep Bay catchment, including Kam Tin River, River Ganges and Yuen Long Creek (Figure 3 b-c). Rivers in the mainly rural catchments have suffered from the presence of unsewered villages and/or livestock farms.

4. Overall, the bacterial levels of many rivers were still high in 2003. For example, Lam Tsuen River in the Tolo Harbour catchment has an annual mean of 20,000 cfu/100 mL, due mostly to discharges from village houses, and Kam Tin River in the Deep Bay catchment has an annual mean of 1,600,000 cfu/100 mL, due mainly to livestock farms and village houses. Some reductions in *E.coli* bacteria, however, have been noted in Mui Wo River, Shing Mun Main Channel, Tuen Mun River, River Ganges and River Indus in 2003.

[1] The seven rivers are Mui Wo River, Ho Chung River, Shing Mun Main Channel, Lam Tsuen River, Tai Po River, Sam Dip Tam Stream and Tuen Mun River.

Marine Water Quality

5. In 2003, the overall compliance with the marine Water Quality Objectives (WQOs) was 87%, which was among the best ever recorded since the mid 80s (Figure 4). In general, the water quality of Port Shelter and Mirs Bay continued to be excellent, with very low sewage bacterial and nutrient levels, and high dissolved oxygen (DO) content. On the other hand, the water quality in Inner Deep Bay remained poor, with relatively low DO content and high level of nutrients (nitrogen and phosphorus).

6. In 2002, after the full commissioning of Stage 1 of Harbour Area Treatment Scheme (HATS), the compliance for DO and total inorganic nitrogen (TIN) Water Quality Objectives in the Victoria Harbour Water Control Zone (WCZ) had experienced a major improvement from 38% and 44% (averaged compliance in the last decade) to 90% and 100% respectively. There were also significant decreases of sewage bacteria in the eastern and central harbour areas even though there were some increases in the western harbour area. The notable improvements of water quality in the Victoria Harbour WCZ in 2002 were sustained in 2003.

7. A summary of the long-term water quality data from representative marine monitoring stations, located roughly in the middle of the ten Water Control Zones, is shown in Figures 5, 6a. to 6j. The marine water quality in 2003 was largely similar to that in 2002.

8. Figure 7 shows the number of red tides in Hong Kong waters from 1980 to 2003. Most red tides occurred in the eastern and southern waters. In 2003, there were a total of 20 incidents of red tides in the territory, similar to the number reported in 2002 (21 incidents). There was no red tide related fish kill reported during the year.

Conclusions

9. In 2003, 76% of the river monitoring stations attained a “Good” or “Excellent” WQI grading which was the highest since the mid 1980s. High bacterial levels were noted in many of the rivers, while the overall water quality of the major rivers in the Deep Bay catchment remained unsatisfactory due to pollution from livestock farms and unsewered villages.

10. The overall compliance rate of 87% for with the marine WQOs was among the best ever recorded. The marine water quality in the territory in 2003 was largely similar to that in 2002. Notable water quality improvements in the eastern and central parts of Victoria Harbour, as a result of the full commissioning of Stage 1 of HATS, were sustained in 2003.

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