

# ADVISORY COUNCIL ON THE ENVIRONMENT

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for information

## MARINE AND INLAND WATER QUALITY IN HONG KONG FOR 1992 AND BEACH WATER QUALITY FOR 1993

### INTRODUCTION

The purpose of this paper is to brief members on the status of Hong Kong's environmental waters including inland and coastal waters (status in 1992), and beach waters (status in 1993).

### BACKGROUND

2. Comprehensive accounts of the water quality of coastal waters, rivers and streams, and beach waters are summarized respectively in the following reports: "Marine Water Quality in Hong Kong for 1992", "River Water Quality in Hong Kong for 1992", and "Bacteriological Water Quality of Bathing Beaches in Hong Kong, 1993", copies of which are distributed with this paper.

### Marine Waters

3. A comprehensive marine water quality monitoring programme was started in 1986. In 1992 the quality of seawater and bottom sediments was monitored at 80 seawater, 65 sediment and 22 typhoon shelter monitoring stations. At each sampling location, a range of physical, chemical and biological parameters are measured. The marine report reviews the seawater and bottom sediment quality for 1992 and gives the compliance with the key water quality objectives in the seven gazetted water control zones in existence in 1992.

### Inland Waters

4. There are hundreds of streams, rivers and open nullahs in Hong Kong. Clearly, not all of these can be monitored all the time. In 1992, samples were collected from 74 sampling stations in 27 river systems. The status of the rivers is assessed by using a Water Quality Index which reflects the extent of organic pollution in the rivers. Using this system rivers are classified as excellent, good, fair, bad and very bad.

### Bathing Beaches

5. As for the bathing beaches, the bacteriological water quality of 42 gazetted beaches and 14 ungazetted beaches in the territory are monitored under the department's beach water quality monitoring programme. The status of the beaches is assessed through a grading system which links pollution level with swimming-associated health risks. Beaches are graded as good, fair, poor or very poor. Beaches in the "good" and "fair" category meet the relevant water quality objective. The annual ranks of these gazetted and ungazetted beaches are provided in the bathing beach report. The report also analyzes the bacteriological water quality trends of bathing beaches, and discusses the sources of pollution of beaches in various districts and the remedial actions required.

### STATUS OF HONG KONG WATERS

#### Marine Waters

6. Marine water quality in Hong Kong showed no significant improvement during 1992. High turbidity, low dissolved oxygen concentration, high faecal coliform density and excessive nutrient concentration were still recorded in some marine areas. In 1992, there were 19 red tides reported, five more than in 1991. Tolo Harbour showed a marked increase with 9 blooms in 1992 compared with two in 1991. The bottom sediments of Hong Kong were anoxic and contaminated with heavy metals and organic pollutants. Overall compliance with water quality objectives in 1992 stood at 70%.

7. Domestic sewage, livestock and industrial wastes continue to be the major pollution sources either by direct discharge into the sea or via the polluted watercourses that flow into it. In addition, in 1992, there were massive civil engineering projects which involved much dredging and dumping at sea. These increased sea activities may also have had an effect on the marine environment.

#### Inland Waters

8. In 1992, 64.9% of the inland water monitoring stations were deemed to be fair or above in terms of the Water Quality Index, a 5.5% increase over 1991 (Annex I). These improvements are the result of the control of pollution at its source, mostly under the Water Pollution Control Ordinance and through the livestock waste control scheme (where it has been possible to apply it), and the provision of new or improved sewerage in the lower urban areas of the stream catchments.

9. A preliminary assessment of the water quality of the monitored rivers in the declared water control zones indicates, however, that in 1992 none of the rivers showed full compliance with all the stipulated water quality objectives. The compliance with the objective for biochemical oxygen demand was particularly low. This is probably due to the continuing severity of organic pollution, particularly from livestock waste. Long stretches of river in some cases running through modern new developments are little more than open sewers for the carriage of these fetid wastes.

### Bathing Beaches

10. In the 1993 bathing season, there were 17 gazetted beaches ranked good, 12 fair, 10 poor and 3 very poor. The number of beaches in different ranks over the last five years is shown in Annex II. The general momentum towards improvement in bacteriological beach water quality, built up in 1980's, has stopped and there is now clear evidence of a deteriorating trend.

11. Bacteriological water quality at Approach, Butterfly, Casam, Castle Peak, Gemini, Hoi Mei Wan, Kadoorie, Lido, New Cafeteria and Ting Kau beaches was consistently poor during 1993, while water quality at Anglers', Old Cafeteria and Rocky Bay beaches was very poor. All these thirteen beaches failed the bacteriological water quality objective for bathing beaches.

### CONCLUSIONS

12. The marine water quality in Hong Kong showed no overall improvement during 1992. The situation is unlikely to improve significantly until the bulk of the sewerage master plans, and the strategic High Priority Programme for new sewerage, have been implemented.

13. River water quality in 1992 showed an overall improvement over 1991 and resumed the gradual improving trend which started in the late 1980's. The trend is encouraging but there are considerable uncertainties as to whether it can be maintained. Recent changes in the livestock waste control scheme will involve the replacement of a clear single standard with a set of phased standards, the first of which is equivalent to domestic sewage. This standard is far removed from what is needed to meet water quality objectives in New Territories rivers. It is certain therefore that loads will remain well above assimilative capacity for many years to come, and continued improvement cannot be taken for granted.

14. Beach water quality shows evidence of a deteriorating trend, and gains made in the late 1980s are in danger of being lost as polluting flows build up. The situation is particularly severe along the Tsuen Wan to Tuen Mun coastline. Improvements in these areas will probably only be seen when the various plans for local sewerage are implemented, and properties connected to the new sewers.

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