
Symposium on "Advances in Water Resources Management"

in celebration of the 10th Anniversary of the IAHR-HK Chapter



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Demonstration Scheme on Reclaimed Water Uses in the North District of Hong Kong SAR, China

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Abstract:

In order to cope with the rapidly surging water demand in Hong Kong, the Government of Hong Kong Special Administrative Region has taken a proactive approach in launching a Total Water Management Programme to protect local water resources, enhance water conservation and explore new resources so as to make more effective use of Hong Kong's precious water resources. One key aspect of this water initiative is to explore the use of reclaimed water for a suite of non-potable applications including, toilet flushing, landscape irrigation and water features. To this end, a project entitled: "Demonstration Scheme on Reclaimed Water Uses in the North District - Investigation" (Demo Scheme) was commenced by the Environmental Protection Department (EPD) in 2005. The purpose of the Demo Scheme was to show to general public that the use of reclaimed water was not only economically viable and environmentally friendly, but also socially acceptable.

The new reclaimed water treatment plant (RWTP) with a capacity of 110 m³/d was sited within the exiting Shek Wu Hui Secondary Treatment Works (SWHSTW). Treatment processes used include: microstrainer, microfiltration and chlorination. The microporous membranes could achieve a process recovery rate of 93% on average. The product reclaimed water was supplied in different phases to designated users including primary and secondary schools, a village house and an elderly home for about 12 months each via dedicated distribution system for non-potable uses. The above designated users comprised a total of about 3,800 participants and the scheme was expected to be completed before end of 2008. Both the plant operational performance and the reclaimed water quality had been closely monitoring at a number of key locations. Till now they all fully complied with the stipulated performance requirements and water quality criteria.

A comprehensive water quality monitoring programme was set up comprising a total of eight water sampling points, - four along the treatment process line in the RWTP and the rest at the designated users. 33 water quality parameters, each at different sampling frequency, were being monitored. The achievable turbidity of the reclaimed water at less than 0.28 NTU (95th percentile) was way below the 2 NTU stipulated as the Adopted Criteria for turbidity. At the same time, the membrane could remove Giardia and Cryptosporidium totally as well as achieving a 5-log reduction of all Total Coliform. Coupled with disinfection process using Sodium Hypochlorite, more than 6-log removal of the Coliphage MS2 has been achieved. Chlorination also reduced about 66% of original colour in terms of Hazen units, while not causing noticeable increase in odour.

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Referring to the interim questionnaire surveys conducted so far, 93% of all respondents agreed that the reclaimed water is suitable for toilet flushing purpose whereas 6% of them had neutral responses. About 8% of the respondents noticed that the colour of the reclaimed water had a faint tint of yellow. All users for irrigation agreed that the reclaimed water was suitable for such purpose.