

## **Effect of Red Tides on Seawater for Toilet Flushing**

### **Seawater for Toilet Flushing**

Since late 1950's, Hong Kong has been using seawater extensively for toilet flushing. The seawater flushing system is an effective way to conserve fresh water as Hong Kong has never been self-sufficient in fresh water supply. About 80 per cent of the population is now provided with seawater for toilet flushing, thus effectively reducing the fresh water demand by as much as 20 per cent.

Seawater is abstracted at the seafront pumping stations for treatment before supply. It is not treated to the same standard as fresh water but its quality still has to comply with the guidelines laid down by the Water Supplies Department(WSD) to prevent objectionable characteristics. Seawater is firstly screened by strainers to remove debris and large-sized particles. It is then disinfected by sodium hypochlorite produced on-site by electro-chlorination before being distributed to consumers or pumped to service reservoirs.

Small-sized particles will pass through the strainers and enter into the seawater flushing systems. They may settle inside pipes, service reservoirs and storage tanks. WSD regularly flushes water pipes and cleans service reservoirs to remove those small particles. However, property management agents should also clean their water tanks regularly to help keep up the quality of the seawater provided for toilet flushing.

### **Red Tide and Its Effect on Seawater for Toilet Flushing**

Red tide is the natural phenomenon caused by rapid and massive proliferation of algae. Most algal blooms do not last long unless the conditions favourable to their growth persist (i.e. sunny weather and nutrient rich environment). They often disappear within a few days under windy conditions or after heavy rains. Most of the algae species found in Hong Kong waters are non-toxic and harmless. However, the presence of abundant algae discolours the seawater to different hues, e.g. red, brown, reddish brown, deep green etc., and may make it smelly.

As the seawater provided by WSD for toilet flushing is abstracted from seafront pumping stations, the quality of the seawater may be affected whenever there is red tide in the vicinity of the pumping station.

## **Measures Taken by the Water Supplies Department to Tackle the Effect of Red Tide**

WSD will take the following measures at the affected salt water pumping stations as appropriate to minimise the discoloration and odour problems:

- (i) Step up monitoring of seawater quality.
- (ii) Increase dosage of sodium hypochlorite.
- (iii) Reduce the seawater intake rate to varying extent as necessary and augment the salt water supply with fresh water. Increase the output of the water treatment works concerned to meet the additional demand due to augmentation.
- (iv) Deploy floating booms around the seawater pumping stations, wherever practicable, to minimise the intrusion of algae into the intake culverts.
- (v) Top up salt water service reservoirs whenever the seawater quality is good or when algal growth subsides.
- (vi) Clear away any algae that may find its way and settle in the intake culverts.
- (vii) Add finer (geotextile) screeners at the entrance or intake culverts of the seawater pumping stations.
- (viii) Install silt curtains at the seawater pumping stations.
- (ix) Desilt the intake culverts of the seawater pumping stations.
- (x) Flush salt water distribution mains.

## **What Should You Do When You Find the Flushing Water Discoloured or Smelly?**

WSD constantly and closely monitors the qualities of seawater at the seafront pumping stations and in the distribution system to ensure that the quality of seawater provided for flushing complies with the department's guidelines. When you find that the flushing water of your premises has become discoloured or smelly, you should first check with your property management agent to see if the abnormality is caused by problems of the plumbing system of your building. If it is not, you should call WSD's hotline 2824 5000 to check whether the flushing water quality is affected by red tide. WSD will arrange inspection of the flushing water quality of your premises as necessary.